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PROLEGOMENA TO THE STUDY OF BIOMORPHIC MODERNISM:

BIOCENTRISM, LÁSZLÓ MOHOLY-NAGY'S "NEW VISION"

AND ERNŐ KÁLLAI'S BIGROMANTIK

by

OLIVER ÁRPÁD ISTVÁN BOTAR

A thesis submitted in conformity with the requirements
for the degree of Doctor of Philosophy
Graduate Department of the History of Art
University of Toronto

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ABSTRACT
Prolegomena to the Study of Biomorphic Modernism: Biocentrism, László Moholy-Nagy’s "New Vision" and Ernő Kállai’s Bioromantik
Doctor of Philosophy, 1998
Oliver Arpád István Botar
Graduate Department of the History of Art
University of Toronto

Focusing on Weimar Germany, I ground the study of biomorphic Modernism in Ernő Kállai’s 1932 identification of a trend he termed Bioromantik. Kállai wrote from a biocentric position, an amalgam of Nature Romanticism and biologism espoused by Nietzsche, Ernst Haeckel, Ludwig Klages, Oswald Spengler, Raoul Francé and Hans Prinzhorn in the early 20th century, here established as a politically-charged category of intellectual history. Kállai characterized Bioromantik as art, the imagery, forms or themes of which express Monist, Neo-Vitalist, lebensphilosophisch and Organicist, i.e. biocentric concepts such as the life-force, creative/destructive aspects of nature, and our unity with it. The work of artists he cited (Arp, Klee, Moore, Kandinsky, Ernst, etc.) is biomorphic Modernist in style. Kállai’s conception derives from his realization of the similarity between biomorphic art and scientific photography, here termed the "naturamorphic analogy," a topos traceable to Kandinsky’s pre-war writing. Probably inspired by Walter Benjamin’s review of Karl Blossfeldt’s photographs, Kállai’s epiphany occurred in the Moholy-Nagy-curated "Raum-1" of the 1929 Film und Foto show in Stuttgart; in effect a three-dimensional statement of his "New Vision" that aestheticized scientific photography, and that -- like Moholy’s entire pedagogical project -- I show to be rooted in biocentrism. Thus, the profound effect biocentric thinkers had on the milieux Moholy emerged from is discussed: The fin-de-siècle Haeckelian tradition of normative aestheticized sci-
Scientific imagery is shown to underlie New Vision; the biocentric wing of the Jugendbewegung is revealed as a source of Moholy’s biocentric pedagogy; inspired by France, "Biocentric Constructivism" is identified as a discourse engaged in by Mies, Moholy, Lissitzky, Hausmann and Meyer; the Bauhaus, with attention to Gropius, Klee, Kandinsky, Schlemmer and Meyer, is recast as a locus of biocentric ideas. Like others, Kállai proposed a "psychobiological" explanation for the naturamorphic analogy: the artists’ identity with nature and their consequent intuitive imaging of its unseen aspects also revealed by science. I show how the aestheticization of scientific images effected by New Vision enabled Modernist artists and critics to be exposed to such imagery -- an historical alternative to the essentialist explanation that constitutes a basis for research on biomorphic Modernist art.
ACKNOWLEDGEMENTS

This work is dedicated to my mother, Gabriella Botar and my brother Gábor, who defined for me a place within "nature."

Thanks to my supervisor, Robert Welsh, for believing in my work, no matter what turns it may have taken, to faculty members -- current and former -- in the Department of Fine Art of the University of Toronto who advised and supported me in this project: Elisabeth Legge, Matt Kavaller, Anne Kuttner, Hans Lücke, Roald Nasgaard, Denis Reid, Robert Siebelhoff, Alina Payne and Bogomila Welsh-Ovcharov. Thanks to the other members of the Graduate Faculty and to the departmental librarians and staff for their friendly assistance. Special thanks to Peter J. Smith of the University of Alberta Department of Geography for planting seeds which have here borne fruit. I wish to express gratitude to László Beke, Katalin Kesérű, Krisztina Passuth and Júlia Szabó for luring me to art history, and to them and George Bisztray for instilling in me a passion for Modernist Hungarian studies. Heartfelt thanks to Hattula Moholy-Nagy, without whose support, friendship and hospitality I could not have done this work; to Levente Nagy, who shared his insights and collection on his uncle; to Ernő Kállai’s friends and students who spoke with me: the late Max Bill and József Jakovits, as well as Tamás Lossonczy, Tihamér Gyarmathy, Árpád Mezei, and particularly Imre J.J. Koroknay and Julius Marosán; to Juliet and György Kepes, who were my gracious hosts under difficult circumstances; Claudia Meyer, for her kind letter concerning Kállai and Hannes Meyer, to Alexander Klee, who generously allowed me access to his grandfather’s library at a moment’s notice, Richard Filipowski for a conversation on Moholy-Nagy. Appreciation is due to colleagues -- some of them friends -- who advised, informed, and encouraged me: Porter Aichele, Mark Antliff, Barbara Arciszewska, Éva Bajkay, Carel Blotkamp, Christian Bromig, Catherine David, Vivian Endicott-Barnet, Cliff Eyland, Gladys Fabre, Gerti Fietzke, Mitchel Frank, Éva Forgács, Hubertus Gassner, Wolfgang Geinitz, John Hatch, Linda D. Henderson, Stephan E. Hauser, Jane Hancock, Kai-Uwe Hemken, Sara Lynn Henry, Joop Joosten, Barbara Keyser, Joanna Kleiverda, Éva Körner, Marytka Kosinski, Valéria Majoros, Victor Margolin, Katherine Jánszky Michaelson-Falz, Michael Parke-Taylor, Gábor Pataki, Judith Pearlman, Evert van Straaten, Angela Thomas, Rose-Carol Washton-Long, Anna Wessely, Monika Wucher, Isabelle Wunsche, and most particularly Charlotte Douglas, Alain Findeli, Gerta Moray and Tanya and Hilmar Frank. Extra thanks are due to Douglas, Sjarel Ex, Findeli, Gassner, Gilles Gheerbrant, Marosán, and Passuth for generous permission to work in their private libraries. For hospitality during my research travels apart from those already named I thank Attila Ara-Kovács, Jacqueline Benotti, David, Thokla and Sebastian Boettcher, Anna Cseke-Gál, Lisa Couwenbergh, Diane Davis, Isabel Draelants, Max Dopfer, Rosemarie Faber, Thomas Falmagne,
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biomorphic art. [A]bstract art in which shapes and masses are abstracted from the ... animate rather than geometric and inanimate objects. (Haggar 1962)^

Modern art tends to be written about the artists and their friends ... and by generalizers and popularizers ... with the result that the mosaic of movements has remained largely unaffected, to the detriment of unorganized artists and traditions. For example, there is a line of biomorphic art, that, to the extent that it is discussed in the usual framework, could only be viewed as part of Surrealism. What failed to fit would come under such headings as Precursors of, or The Inheritance of, Surrealism, or, maybe, just plain Independents ... or nuts, off the main-line. (Alloway 1965)

The [biomorphic] works on these pages were created over ... three decades and belong to no single "school" ... the many traits they have in common indicate that they are part of a continuing tendency. (Goldwater 1969)

[In the publication] of the 1950s, devoted to contemporary art, the [works] give the impression of a standard abstraction. The superficial effect is that of sweeping curves, undulating masses, "organic" forms, signs and "écriture" of a more or less controlled wildness.... This "informal" art was undeniably a style.... Amongst the ... modern styles perhaps the postwar style, whether one calls it Stil Novo, Sputnik, Brussels, Kidney-table-style or whatever, had the widest span. It was a style which ... pervaded all areas of daily life.... It was an international style that ranged from high art through lower art to the design of consumer goods. (Van Geest 1983)

Thirties biomorphism, both Surrealist and non-Surrealist, was ... associated with the ... formal possibilities provided by a near-abstract glimpse of the natural world through microscopes and telescopes, [which] provided new paradigms for looking at and depicting nature... [A]rtists used biomorphic style to celebrate the micro-macro vision of nature ... as a modern, liberating principle of pictorial design. (Weiss 1985)
The great achievement of our era is biological thinking, which has revolutionized science and art. Expressionist art aims at inner truth and away from the external world; it is biological thinking that has taught us that "the invisible inner element produces visible form." (Stadelmann 1916)

Begriffe wie Expressionismus und Surrealismus, die auf Franz Marc und Klee oder Max Ernst ... zutreffen, sind ... geeignet, den besonderen Sinn zu bezeichnen, der die Vision dieser Künstler den Grenzen der bürgerlichen Romantik entführt. Es gehören ihrer Reihe zudem auch Maler und Bildhauer an, die ... jeglicher Gegenständlichkeit in ein Phantasiegefüge von Elementarformen dringen. Und gerade bei diesen bildnerischen Urzeichen des Lebens ist der Leitgedanke jener Entwicklung am deutlichsten, die von Franz Marc bis Hans Arp, von Archipenko bis Brancusi reicht. Eine Bioromantik ist dabei, den Geist ... zu den Urquellen und Trieben des Lebens zu führen .... Das Bewusstsein um die irrationalen Verstrickungen des ichts mit den Keimwesen und -Strukturen der Natur fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei.... Die Kunst kehrt in den mütterlichen Schoss der Schöpfung zurück. Das ist der Sinn ihrer Bioromantik. (Kállai 1932)'

It is hardly accidental that ... modernism... arises ... simultaneously with modern biology. The two viewed in tandem ... offer the most substantial proof for the unity of cultural development and pose a significant challenge to those who claim that large concurrent cultural movements usually have little impact on each other. And it is ... the vitalism inherent in early modern biology that must concern us if we hope to grasp why modernism has emerged at a particular moment under specific cultural conditions. (George Rousseau 1992)'

As a result of a century-long tendency [by biologists] to incorporate esthetic principles in the interpretation of organic forms ... the external forms of organisms had gained greatly in esthetic value [especially] ... at the microscopic level, where emergent order induces the most direct expression of formative principles. In the art of the twentieth century there are innumerable examples of exquisite sensitivity to the inner formative properties of organisms and these stand in direct historical continuity with the efforts of biologists...
over the previous century to describe the processes by which forms arose. (Ritterbush 1968)'

Following Rodin, other sculptors, both representational and abstract in their work, adopted the vitalistic attitude.... [I]t was one of the few ideas in modern sculpture that sculptors often mentioned when explaining their work process and attitudes toward materials .... Perhaps the personal, almost religious, fervour of the vital impetus made it incomprehensible to the non-artist...

[T]he critic had to confront both a literary or overtly stylistic influence, and a biological relationship between the artist and his materials. Not until the 1950s did any critic really begin to look at vitalism as a separate and specific philosophy for the creation of sculpture.... If Bergson proposed neo-vitalism as a philosophical doctrine at the beginning of this century, then why did it take nearly half a century for a major critic to identify vitalism as a central doctrine of modern sculpture? (Burnham 1968)'

The organic metaphor has been dominant in most discussions of similar images from art and science. In modernism, the organic metaphor was deeply pervasive .... The creative process has been explicated in terms of biology. Predictably, German artists (those closest to idealist Romanticism) have attempted to build systems based on organic correspondence. Klee and Kandinsky are the leading examples. The Surrealist enterprise is the final apotheosis of the organic. And the biomorphic form it donated to art has been durable.... Is it too obvious to suggest that artists ... might, at the beginning of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? Deeply immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young abounded in such illustrations. An examination of artists’ journals and libraries from this point of view is indicated. (O’Doherty 1978)'

Despite the efforts of critics like Greenberg and Danto modern art cannot be forced into the straightjacket of linear development.... A more responsible approach to the art and architecture of the century requires an openness to patterns of change that cannot be synthesized to create a comprehensible totality. (Taylor 1992)
Art history has begun to make a significant contribution to the understanding of modernity, yet its practice remains too confined within national boundaries, and to a structure of inquiry still constrained by those reified constructs of national schools. ... An international and comparative approach would help to counteract the undue and misleading prominence given to French culture as the exemplary culture of modernity -- a prominence that has everything to do with received value judgements, institutional deadweight, and the academic job market, and nothing to do with the needs of serious historical method. (A. Hemingway 1996)  

If we wish to understand and appreciate formal beauty we must ... concentrate on the details, on the form of the root of a tree, on the way in which a leaf is connected to its stalk.... Our eye must note ... every nuance in the form. For there is only one point in our field of vision ... which is clearly seen, which can hold some meaning for us. If we see in this way, an immensely rich new world is revealed to us, full of totally new experience.... Nature seems to live and we begin to understand that there really are sorrowing trees and ... terrible, gruesome flowers. (Endell 1897-8)  

Scientific ... expeditions ... have brought to light an undreamed abundance of new organic forms.... A new world was revealed by the great advance of microscopic research ... and especially by the discovery of the marvellous inhabitants of the deep sea ... the peculiar beauty and diversity of which far transcend all the creations of the human imagination. (Haeckel 1899)  

I am like an ancient mariner who has spent his life traveling from isle to isle in the ocean of Nature ... but who, paying heed to oar and sail and helm, has been unable to devote himself to these tempting sights. Now at ... last I have learned and seen with my own eyes that the immeasurable abyss has been fathomed; that the infinite variety of forms deriving from utter simplicity has been lifted into the light of day in all its interrelationships; and that the great work ... has been duly done. (Goethe)  

I am a form in the green ocean of being. (Egyptian "Book of the Dead")  

Creating forms means: Life. (Schlemmer 1915)
The shapes of time are the prey we want to capture. The time of history is too coarse and brief to be an evenly granular duration such as the physicists suppose for natural time; it is more like a sea occupied by innumerable forms of a finite number of types. A net of another mesh is required, different from any now in use. (Kubler 1962)

As a series, these passages indicate a lack in the art historical literature. They point to the need for a systematic study of "biomorphic" style. They hint at a level of complexity which requires special measures. They suggest historiographic strategies which are formal as well as contextual and thematic, both diachronic and synchronic rather than linear and teleological; critically historical rather than fixated on surfaces and epistemological problems; interdisciplinary and international rather than limited by disciplinary and national boundaries. They direct us towards the waters I troll in this dissertation. They outline the templates I use to weave the mesh of my net. They establish the metaphor I employ in this introduction -- one which suggests my conceptual inclinations. Though they are both aquatic, I oppose Goethe's and Kubler's (ancient*) oceanic metaphor of historical time to the fluvial one employed by Alfred Barr in his 1936 flow chart published in Cubism and Abstract Art. Currents exist at sea, but flow is not in one direction only. (Fig. 1-1)

Because these waters are so vast, I undertake here the prolegomena to a study of some still little-understood phenomena to be found in the overfished waters of early- to mid-20th century Modernism. My net is woven to catch artworks termed "biomorphic" or "organic" in form; works by artists such as Hans Arp, Willy Baumeister, Constantin Brancusi, Alexander Calder, Arthur Dove, Max Ernst, Naum Gabo, Arshile Gorky, Raoul Hausmann, Barbara Hepworth, Wassily Kandinsky, Paul Klee, Frantisek Kupka, Franz Marc, André Masson, Mikhail Matiushin, Joan Miró, László Moholy-Nagy, Henry Moore, Isamu Noguchi, Georgia O'Keeffe, Picasso, Jackson Pollock, Kurt
Schwitters, Ján Styrysky, Yves Tanguy and Toyen. My customized net also hauls up objects of "New Look," "Stil Novo" or "Curvilinear Modernist" biomorphic design by Alvar Aalto, Herbert Bayer, Fulvio Bianconi, Charles Eames, Arne Jacobsen, Friedrich Kiessler, Henning Koppel, Carlo Mollino, Noguchi, Eero Saarinen, Hans Wegner, Tapio Wirkkala, Russel Wright and Eva Zeisel; and "organic" architectural forms by Aalto, Le Corbusier, Hermann Finsterlin, Buckminster Fuller, Bruce Goff, Hugo Häring, Erich Mendelsohn, Pier Luigi Nervi, Richard Neutra, Oskar Niemeyer, Eero Saarinen, Hans Scharoun, Rudolf Steiner, Bruno Taut and Frank Lloyd Wright. Hauled in with the rest of the catch are, finally, the products of Modernist close-up nature photography such as prints by Karl Blossfeldt, Imogen Cunningham, Ernst Fuhrmann, Raoul Hausmann, Paul Nash, Man Ray, Albert Renger-Patzsch, Edward Weston and Wols. Adapting my term from the English critic Geoffrey Grigson, who first applied the term "biomorphic" to Modernism, and from Alfred Barr, who established the taxonomy of Modernist art as it is still employed, and who conceived of this art as a category in formal terms, I employ "biomorphic Modernism" to describe this artistic style.

Many -- though by no means all -- of these works are to be found at the confluence of the currents of Neo-Romantic nature ideologies and of the at first sight odd combination of Art Nouveau, Expressionist, "Primitivist," International Constructivist, Neue Sachlichkeit, Surrealist and Abstract Expressionist artistic production. To refer to the biologic, nature-centric aspect of the neo-Romantic groups and ideologies which informed the attitudes of the relevant thinkers, artists and critics (Lebensphilosophie, the Reformbewegung, neo-Vitalism, Bergsonisme, the Monistenbund, Organicism, Holism, neo-Lamarckism, neo-Transcendentalism), I revive a German term employed during the first third or so of the 20th century by the neo-Vitalist philosopher Ludwig Klagges, his disciple Hans Prinzhorn, and the ecologist and popular
biologistic philosopher Raoul H. Francé: Biozentrlik. As such, Biozentrlik is here constituted as the intersection of that bundle of opinions, theories, ideas and practices within these intellectual currents, which privileged biology as an epistemological source as well as the concept of our inseparability from and dependence on "nature," and which emphasized flux or Becoming, rather than stasis, or Being in nature. It can best be characterized as Naturromantik updated by 19th-century biologism, what Stadelmann, probably following Jakob von Uexküll, referred to as "biologisches Denken" in 1916.

The cognate English term "biocentrism" has a history of usage. The 1933 edition of the Oxford English Dictionary defines "biocentric" as "treating life as a central fact,"25 while in his introduction to Prinzhorn's study of the art of mentally disabled people, Bildnerei der Geisteskranken, James L. Foy writes that "Biocentrism provides an outlook on man through a new kind of recognition of man's intimate and inescapable kinship with, and dependence upon, the self-regulating animal, vegetable and inorganic worlds,"26 that is through a kind of anti-anthropocentrism.27 Eco-ethicist Paul Taylor's usage of it shows that "biocentrism" continues to be employed in that sense today, though it now carries a much stronger connotation of radical, "deep" environmental thinking.28

The biocentric attitude rejected anthropocentrism, decentering the human species in favour of the totalizing eighteenth century constructs "nature" and "life."29 In place of Jean-Jacques Rousseau's Enlightenment call for a "return to nature," which implied a dualistic division between the "human" and the "natural," humans -- rather than as producers of culture, nature's "other" -- were now seen to be part of this larger whole of "nature." Everything humans did and produced was now seen as part of nature, and hence explicable in its terms. Nietzsche called for a wholesale rethinking of ethics and morality in the light of this stupendous shift in Weltanschauung. As Raoul Francé put it in the early 20s, "seen
from the height of our contemplation[,] existence and happening, world and processes of the world melt into one, into the notion of the natural."³⁰ "There is only one law. We, natural beings, can only repeat the law of protoplasm and the structure of the world. The laws of mechanics are exemplified before our eyes in the objects of nature."³¹ Paul Klee phrased it thus at that time: "The artist cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature."³² Max Ernst wrote that "Arp’s soft semi-organic forms, his amoeba-like suggestions... teach us to understand the language spoken by the universe itself."³³ The English organicist philosopher so influential on English Neo-Romanticism, Alfred North Whitehead, wrote of the realization that "human beings are merely one species in the throng of existences. These are animals, the vegetable, the microbes, the living cells, the inorganic physical activities."³⁴ Herbert Read articulated this attitude thus:

What we have to find ... is some touchstone outside the individual peculiarities of human beings, and the only touchstone which exists is nature. And by nature we mean the whole organic process of life and movement which goes on in the universe, a process which includes man, but which is indifferent to his generic idiosyncrasies....³⁵

Most succinct was Jackson Pollock, when, in answer to Hans Hofmann’s warning not to paint his work "by heart" but rather from nature, he replied, "I am nature.... Your theories don’t interest me,"³⁶ and "My concern is with the rhythms of nature, the way the ocean moves, I work inside out like nature."³⁷

Implicit in such views are the themes of flux, change, metamorphosis, formation and formlessness; an eternally burgeoning life-complex, of the privileging of "Becoming" over "Being,"³⁸ of the passage from informe to form and back again. With roots in the thinking of Heraclitus, and central to the work of philosophers from Goethe and Nietzsche³⁹ to Bergson, the centrality of formlessness and its temporal corollary,
flux, is implicit in organicist biological views of nature, and its "representation" is pivotal to biomorphic Modernism.40

Within the biocentric discourse, however, I discern a rupture around World War One, and a subsequent emergence into the highly-charged political landscape of Weimar Germany. From a more romantically-inclined Neue Naturphilosophie, as Raoul Francé termed turn-of-the-century biocentrism -- suffused with what Max Scheler referred to as kosmovitale Einsfuhlungen -- the practice and thinking of Francé, Klages, Jacob von Uexküll, Oswald Spengler and others constituted an interwar biocentrism which was both more biologistic and functionalist (as defined by von Uexküll in his "biologische Weltanschauung" declared in 1916 and Francé in his "Objective" or "Biocentric Epistemology" announced in 1920), and more pessimistic, as articulated by Spengler and by Klages' Biozentrik.

It was as a concomitant of interwar biocentrism that people in Germany became aware of environmental degradation. An outgrowth of fin-de-siècle Kulturkritik in Germany, Ludwig Klages -- like Francé, Theodor Lessing and Heidegger41 -- systematically considered this danger, and he laid blame with materialism, industrialism and technology, in short with modernity. At a lecture given for the founding meeting of the Freideutsche Jugend in 1913, Klages thundered:

Schrecklich ... sind die Wirkungen des 'Fortschritts' auf das Bild besiedelter Gegenden. Zerrissen ist der Zusammenhang zwischen Menschenschöpfung und Erde, vernichtet für Jahrhunderte, wenn nicht für immer, das Uralid der Landschaft.... Unter den Vorwänden von 'Nutzen', 'wirtschaftlicher Entwicklung', 'Kultur' geht er in Wahrheit auf Vernichtung des Lebens aus.42

Francé, in his many popular publications, emphasized the importance of natural and historical preservation in the Heimat, a view which fed as easily into anarchist notions of cultural and economic autonomy and harmony, as it did into Walter Darré's Völkisch ideology of Blut und Boden.43 British
historian Anna Bramwell has termed the intellectual-political movement towards ecological views of nature and environmental preservationist ideas since about 1880 "ecologism." Ecologism is thus a category of intellectual history closely related to though not identical with biocentrism.

As suggested by the use made of Francé's writings, this environmental concern sometimes had a sinister, indeed dangerous edge to it. Robert A. Pois has identified a "Religion of Nature" within National Socialism, a fusion of neo-Romantic nationalistic nature mysticism and a mean-spirited biologism, thus highlighting the Nazis' participation in some of the popular intellectual trends of their time. As Pois puts it, "Even the core of the National Socialist religion of nature was not something utterly alien to Western/Central European cultural history in general, and that of Germany in particular. In part it was rooted in a general malaise that was a byproduct of material progress, a malaise which found articulation in 'the return to nature.'" Indeed, Bramwell has confirmed this ecological side of Nazism as part and parcel of the general "ecologistic" tradition. With the coming to power in 1933 of National Socialism -- an aspect of which was essentially a biocentric variant of Fascism -- the political context of biocentrism in general shifted greatly.

Because of the inestimable horror brought on by the Nazis' policies, the period of National Socialism has acted as a kind of black hole of history, distorting any ideas which passed by it much as the powerful gravitational field of the black hole does even the seemingly unalterably vectorial phenomenon of light itself. This distortion, like that exercised by those great gravitational sinkholes, can act retroactively as well as subsequently. The psycho-social trauma of National Socialist political power was such that it casts its shadow in both directions along the temporal axis, resulting in historical absurdities such as the retroactive characterization of Nietzsche, Ernst Haeckel and indeed all pre-World-War-II...
War-One Monists as Nazis avant-la-lettre.\textsuperscript{18} Furthermore, because of the biologistic nature-centrism of National Socialist ideology, all biocentrism has since been tainted, though through an interesting case of selective memory and marking, the post-war environmental movement has tended to be exempted from this.\textsuperscript{49} The problem is not necessarily with the environmentalist movement or its goals, or with biocentrism in general, but with a crude if emotionally understandable approach to history of a kind of guilt by association. While it is important to determine the role biocentrism played in the historical catastrophe of World-War-Two Europe (Bramwell and Pois have begun to examine this question) one need not throw the baby out with the bath water.\textsuperscript{50}

In 1931-32, on the eve of Nazi political power the Hungarian pedagogue and art critic active in Weimar Germany, Ernö Kállai, was the first to observe the cultural shift towards biocentrism among artists of his day, referring to the results of the interaction as the cultural pattern of Bioromantik:

Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken....\textsuperscript{51} Mann sollte in diesem seltsamen [bioromantische] Phantasien ... auf die Zeichen einer geistigen Wendung achten, die auch an anderen Fronten der Zeit festzustellen ist als entschiedene Abkehr vom Rationalismus-Materialismus-Utilitarismus. Die naturverbundene Leib-Seele-Einheit des Menschen, vom mechanistisch-quantitativen Produktions- und Ordnungsapparat der Zivilisation grausam in Stücke zerschlagen, sucht ihre ursprüngliche Geltung im Zurückgehen auf letzte Kraftreserven und -Reservate wiederzufinden.\textsuperscript{52}

These anti-materialistic, anti-mechanistic, anti-technological and nature-centric aspects of biocentrism place it into what Jackson Lears has termed "antimodernism."\textsuperscript{53} While Lears' "antimodernism" was a North American cultural trend related to the Arts and Crafts movement, it is now -- perhaps somewhat unfelicitously -- being employed in an expanded sense to refer to the ambivalent attitude towards modernity. Both "antimodernism" -- what Gianni Vattimo has, I think, more happily
termed "the crisis of humanism" -- and modernity, were sociocultural phenomena which were accelerating in the late 19th century, and with particular force in Germany, which will be the primary locus of this study. Moreover, as we have seen, the biologistic and monistic nature-centrism of Nazism renders the biocentrism of the artists and thinkers we are dealing with here problematic, and some will see any biocentric infusions into Modernist artistic practice as "reactionary," even Fascist moves.

Apart from the ahistorical and anachronistic aspects of such views already pointed to however, the cases of Kállai, Raoul Hausmann, Hannah Höch, Moholy-Nagy, Hannes Meyer, Lucia Moholy, Lazar El Lissitzky, Walter Benjamin, and other Leftist biocentric intellectuals who promoted a rapprochement between "nature" and modernity precisely during the rise of a biocentric Fascism, demonstrate that the interrelations between "antimodernity," modernity, biocentrism and politics are far more complex than one would think given prevailing attitudes among historians today. Recent research has illustrated just how complex and contradictory the picture really is. Just as Hartmut Nowacki has shown that Lebensphilosophie (a crucial component of biocentrism) was central to the philosophical development of the German Communist Party between the wars, and Seth Taylor has documented Nietzsche's formative influence on left-wing Expressionist intellectuals, Jeffrey Herf and Andrew Hewitt have demonstrated that there were decidedly "Modernist" elements in Fascist aesthetics, and that such aesthetics accepted, even promoted, the technological elements of modernity, while Kenneth Silver has documented the right-wing and nationalist aspects of World-War-One and post-war French Modernism.

Taylor's revaluation of Nietzsche's influence is exemplary with respect to my critique of prevailing historical attitudes:

The Nietzsche renaissance after the Second World War
stripped away the myths surrounding Nietzsche's own philosophy but it never challenged the myth surrounding Nietzsche's role in German history. That myth was simply that Nietzsche was unequivocally the philosopher of the German right. The reality was quite different. Long before the German right appropriated Nietzsche's philosophy in defence of German culture, the Expressionist left used that same philosophy to try and change German culture.58

Nietzsche's much-maligned Will to Power is, according to Joan Stambaugh, to be understood as the force determining the pattern of becoming in the world (a pre-Bergsonian élan vital), and not -- as the Nazis understood it -- a justification for power politics: "Power for Nietzsche has essentially nothing to do with political power or any sort of power over others. In Nietzsche's radically dynamic view of the world, whatever does not increase in power automatically decreases. There is no stasis, no status quo."59 Thus, "the world [according to Nietzsche] is not mechanistic, nor teleological, but a play of forces increasing and decreasing in the innocence of becoming where there is no order already present in things, but a multitude of free possibilities for creativity to work."60 This is why Nietzsche privileged art over philosophy, and -- presumably -- why so many artists responded to this idea:

According to Nietzsche, the philosophers looked at the world passively and objectively. They reified and substantialized the flux of becoming. In contrast, the artist is active; he does not contemplate objects, but creates new forms. In so doing, he transforms the world and himself... When he is in an 'artistic' condition... man experiences the oneness of himself and the world; not passively in some sort of mystic absorption, but actively in transforming everything into reflections of his power and perfection.61

It is crucial for historians to at least attempt to deal with complexity rather than paper it over. It is important, furthermore, to avoid anachronisms, false logical associations and premature conclusions. One must come to expect the unexpected, "unholy" alliances, as it were. Just as antimodernity
was espoused by members of both the Left and Right, the political position of biocentrically-minded individuals was often fluid, moving between these poles, sometimes avoiding both. I discuss this fluidity in Chapter Two, and propose an adapted form of Bramwell's political taxonomy as a partial solution to the problem.

In his brilliant 1953 article "The Eye is Part of the Mind," Leo Steinberg writes of nature's "gestating images, shapes antecedent to the visible,"\(^6\) in effect, of what Georges Bataille refers to as the *informe*, all terms which suggest that these images were meant to signify the flux of Becoming. As Alexander Dorner has pointed out, at least since the age of Romanticism, some artists had adopted the curved line or form, i.e. the "biomorph," as the "hieroglyph" of Becoming.\(^6\)\(^3\) Such shapes also appear in the products of imaging modalities like biological illustrations, and in microscopic, telescopic, x-ray and undersea photographs and films. Because of their formal similarities with biomorphic Modernist artworks, scientific images such as these are also caught in my trawl. As Metzger writes, "The hidden aspects of nature, changed in scale and in emphasis, are uncovered and focused upon rather than the surface appearances of forms ...."\(^6\)\(^4\) "The elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature," wrote Read.\(^6\)\(^5\) I term the recognition of the similarity between biomorphic Modernist art and unfamiliar but naturally-occurring forms, the "naturamorphic analogy." This analogy has been a recurrent topos of art criticism since the 1920s. A subset of the naturamorphic analogy, the recognition by Modernist critics of the similarity between biomorphic Modernist art and scientific images -- especially what Harry Robin has referred to as the products of scientific "self-imaging" such as microscopic, telescopic and x-ray photography and film -- I refer to as the "scientific image analogy."\(^6\)\(^6\) I
distinguish the naturamorphic and scientific image analogies from the related organic metaphor, which sees artworks as being akin to organisms in their genesis and/or structure.

By their debris, I identify others who have been in these waters before me. Artist-theorists who took part in what I term the "biocentric Constructivist discourse," such as László Moholy-Nagy and Lazar El Lissitzky, were becoming conscious of the naturamorphic analogy by about 1924, while a key nature-centric artist such as Kandinsky anticipated such ideas before the war, and articulated them clearly by 1926. Among the earliest critics to do so were Walter Benjamin, in a 1928 review of Karl Blossfeldt's album of fin-de-siècle close-up plant photographs Urformen der Kunst; the Czech avant-garde editor Karel Teige, who that same year compared the Surrealist paintings of Jan Stýrsky and Toyen to undersea film stills from the UFA film Wunder des Blauen Golfes in a layout of his avant-garde magazine ReD; and Erné Kállai, who, starting around 1929, was the first critic to treat the subject systematically. (Fig. Introduction 1)

Invoking what August Wiedmann has termed an organicist "cosmocentric," and what José Argüelles -- following Charles Henry and echoing Raoul Francé -- has called a "psycho-biological" theory of a deep structure common to humanity and "nature", Lissitzky, Benjamin, Kállai and writers after them suggested that the similar scientific and artistic forms arose spontaneously and independently of one another. As Wiedmann writes:

there existed a kind of parallelism according to which some of the essential forces of the universe have a duplicate subsistence in the mind of the painter. Such forces appeared in the organizing principles of the artist employed unconsciously in the construction of his pictures. In any event, the similarity between art and nature consisted in the fact that in both spheres production was spontaneous and autonomous.
M. H. Abrams associates this view with the organic metaphor: "The momentous historical shift from the view that the making of a work of art is a supremely purposeful activity to the view that its coming-into-being is, basically, a spontaneous process independent of intention, precept, or even consciousness, was the natural concomitant of an organic aesthetics."  

A related theme is the observation by mystics and artists of patterns or structures (in Johann Gottfried Herder's terms, hieroglyphs) repeating themselves at different scales, "on earth as in heaven." In the Hermetic tradition, from which Herder drew, this was referred to as the aurea catena, the golden chain, the analogy between macrocosm and microcosm. This topos is commonly invoked or observed by nature mystics, scientists, Neo-Vitalists and Monists of various kinds, because it implies a Monist approach, a unified field of Being. This "holy hieroglyph of Hermes" is the "one holy symbol: primordial image of creation, from which everything originated," which implies "One in All! and All in One! One universe of formation!" as Herder phrased it. That this theme continued among the Moderns is demonstrated by Herbert Read's 1945 text that "...the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature. What are these forms in nature? They are present in the vast interstellar spaces of the universe as well as in the most microscopic cells and molecules of matter." Just as the naturamorphic analogy and psychobiological explanations of it, the fashion for spiral form during the early 1920s in Central Europe discussed in Chapter Four, is closely connected to this topos. In chaos theory the repetition of structures and patterns at different scales is referred to as "self-similarity," and as chaos theory rather than Hermetic philosophy is the language of today's discourse on the subject, that is the term I will employ for this recurrent topos in the history of Modernist art.
Read's psychobiological explanation of the naturamorphic analogy is tempered by Siegfried Giedion through an approach that makes the point that it is the work of artists that opened the doors to the aesthetic appreciation of scientific imagery:

[gyorgy kepes' book the new landscape] with its fascinating display on the microscopic and the macroscopic forms of the physical world brings these within the range of emotional reaction. It reveals in its excellent pictures that the forms of the infinitely small and the forms of the infinitely large -- atoms and stars -- have reached the level of our emotional experience. The viewpoint is widened, but this enlargement of the psychic outlook has only been made possible by the preparatory opening of our emotional equipment by such modern painters as Kandinsky, Malevitch, Mondrian, Moholy Nagy, Klee, Arp and Miro, who -- with others -- have established stations along the road to a new vision of the world around us.\(^1\)

As we shall see in chapter five, beamont newhall made the same point concerning moholy-nagy's new vision as opening the gates to our appreciation of scientific imagery in an aesthetic manner.

While not discounting the possibility of the systemic or unconscious connection between natural structures and artists' minds (a similar argument is put forward, after all, by noam chomsky in his theory of our acquisition of language), I would hold, as o'doherty, steinberg, giedion, kalai and newhall have suggested, that an historically-based explanation is possible. As bousquet, ritterbush and schmidt-burkhardt have pointed out, and as a review of the secondary literature and of biomorphic modernist artists' writings shows, artists such as redon, kubin, arp, klee, kandinsky, gabo, kupka, masson, ernst, miró, moholy-nagy, moore, tanguy and zeisel either were looking through microscopes themselves, or were looking at scientific, particularly biological images such as microscopic photographs.\(^2\) Rather than prove such an interest in the case of every artist, however, in chapter five I demonstrate that
scientific imagery was available to artists not only in the science textbooks of the schooling most of them had by the late 19th century, but far more specifically, in exhibitions and publications they had easy access to once they were practising artists. This dissemination, begun by Ernst Haeckel at the turn of the century, was continued by his follower Raoul Francé, whose "Biocentric Epistemology" exercised an important effect on influential avant-garde practitioners in Weimar Germany such as Moholy-Nagy, El Lissitzky and Mies van der Rohe.

I argue in Chapter Four that Moholy’s New Vision emerged from the biocentric Constructivist discourse. This discourse -- with Hausmann, Lissitzky, Moholy-Nagy, Mies van der Rohe, and Hannes Meyer among its participants -- I show to have been inspired by Francé and his Biotechnik, forerunner of today’s biotechnology or bionics. Moholy’s introduction of biocentric Constructivist ideas at the Bauhaus fit in comfortably with the organicism of the Bauhaus’ predecessor Henry van de Velde and the "Biological Romantic" Jugendstil ambient he was part of, and major Bauhaus figures such as Schlemmer, Itten, Kandinsky, Klee, and even Gropius were biocentric. Also, I show that Gropius’ successor Hannes Meyer, was, despite personal differences with Moholy, Klee and Kandinsky, himself a convinced biocentric Constructivist. It was Meyer who hired Ernő Kállai as the Bauhaus publicist after Gropius and Moholy’s departure in 1928 and who directed Schlemmer to teach a course on "man in the world" based on biocentric principles. This discussion of International Constructivist artists highlights the fact that just as not all biomorphic Modernism is informed by biocentrism, biocentrically-informed artists did not always produce biomorphic Modernist art: Mies van der Rohe, of all the Modernists the most ardent follower of Raoul Francé, was also the most rigidly orthogonal in his formal vocabulary. The opposition, furthermore, between the functionalist-biologistic biocentrism of Francé and von
Uexküll on the one hand, and the Klages-Prinzhorn kulturpessimistisch biocentrism on the other, is the source of the opposition between biocentric figures such as Johannes Itten and László Moholy-Nagy, and between Paul Klee, Wassily Kandinsky and Ernő Kállai on the one hand; and Hannes Meyer on the other. Building on his dialectical view of nature-technology already present in his Constructivist theory of the early 1920s, this opposition was named by Kállai in 1932-33 as Bioromantik versus Technoromantik, a polarity which reflected the larger polarity of interwar biocentrism. Indeed the two major actors in this thesis, Moholy-Nagy and Kállai, were by the late 20s paradigmatic representatives of these poles, and it is out of the creative tension of their interaction that Kállai’s conceptualization of biomorphic Modernism as Bioromantik came about.

Thus, in Chapter Five I show that the crucial process of the aestheticization of scientific imagery was effected in Weimar Germany through the adoption of László Moholy-Nagy’s Neues Sehen, his New Vision. As a result, by the mid-to-late 20s there was a general interest in the products of scientific photography, especially x-ray and microscopic photographs and films, and a desire to show such work in contexts usually reserved for art photography such as photographic journals and exhibitions.

Though I cannot explore these themes in this dissertation, I wish to point out that in a manner parallel to Moholy’s New Vision in Germany, the Purists effected an aestheticization of scientific imagery in 1920s Paris through their search for structure, and the Surrealists continued the project in their quest for the "marvellous," the "uncanny," the "automatic," and the informe, affording biomorphic Modernist artists working in France analogous opportunities. Similar processes took place in what was then Czechoslovakia, in England, the United States, and probably elsewhere as well.50

Moholy articulated New Vision through publications from
1925 on, and gave it three-dimensional expression in Raum 1 of the 1929 Film und Foto exhibition of the German Werkbund in Stuttgart. It was in this "Room One" that Kállai had an epiphanic experience of the scientific image analogy. With Benjamin's insightful formulation probably on his mind, aware of the stylistic shift underway among artists around 1930, transformed by his experience in the exhibition, and cognizant of the Romantic background to the phenomenon he was experiencing, Kállai suggested a neologism to denote the interconnected problematic of scientific photography, biomorphic Modernism and biocentrism: Bioromantik. Thus, both Moholy’s New Vision, which contributed so fundamentally to the aestheticization of scientific photography, and so to the adoption of the biomorphic style among artists in Germany, and Kállai’s formulation of Bioromantik, were rooted in biocentrism and its Haeckelian tradition of aestheticized scientific imagery. Appropriately enough, Kállai’s term was reinvented by Robert Schmutzler thirty years later as "Biological Romanticism," to describe biomorphic abstract Art Nouveau production by artists such as Henry Van de Velde, August Endell and Hermann Obrist, inspired by Haeckel’s illustrations.

I identify the three following elements as the principal components of an ecology of discourses: biomorphic Modernism and the related concept of the informe, biocentrism and its constituent "psychobiology," and the naturamorphic analogy including the related topos of self-similarity. The interaction of these discourses and topoi comprises a cultural pattern which is the subject of this work, and which, following Ernő Kállai, I term Bioromantik, or the Bioromantic cultural pattern. I believe that the mapping out of this system, the description of this pattern, the construction of its history, will greatly assist us in examining not only biomorphic Modernism, which as Alloway, Goldwater, and others have indicated, is a neglected area of 20th-century art, but Modernist art and culture in general. It will also aid us in
seeing, taking cognizance of hitherto ignored artistic phenomena such as art micrography. I do not wish to suggest that all works which are biomorphic Modernist in style carry with them biocentric meaning. Nor do I wish to exclude the possibility that artists avoided the attachment of any "meanings" to their works; some biomorphic Modernist artworks were intended as formal exercises. I am choosing, rather, to study what I take to be their preeminent meaning.

Research on biomorphic Modernist artists has confirmed that not only were many interested in the products of scientific imaging as sources of visual inspiration, but that many were steeped in biocentrism, which as we have seen, derived from Nature Romanticism and its sibling, the science of biology. As Cohn writes of Dove’s painting, "The force lines of his art can now be understood as a pictorial analogue of nature’s invisible energies." Artists, and in some cases, scientists, viewed this work as a quasi-scientific kind of inquiry into natural morphology. Laurence Bass Becking was a scientist who recognized this quality in Edward Weston’s photographs as early as 1930:

Natural science, as an impartial student of form, cannot but marvel at the rediscovery of fundamental shapes and structures by an artist. Weston has described the ‘skeleton’ materials of our earth -- rock, bone, and wood -- in a way both naive and appealing: in other words like an inspiring scientific treatise. He shows living matter, contorted like wrestlers’ limbs, fighting the unseen forces of environment. He has seen the serene display of the spirals in the shell, the soft but stubborn curves of the kelps.... Reality makes him dream.

About the ability of biomorphic Modernist sculptors to represent the forces of nature Jack Burnham writes:

Vitalism, based as it is on nonphysical substances and states of life, is a metaphysical doctrine concerned with the irreducible effects and manifestations of living things. It was the great discovery of twentieth-century sculpture that these did not have to be appreciated through strict analogy. Visual biological metaphors exist on many levels
besides the obvious total configuration of an animal or human. The aesthetics of true organicism, on the other hand, is not grounded in the appearances of natural forms and their carryover into sculptural materials, but is concerned with the organization of processes and interacting systems.\textsuperscript{85}

A biocentric outlook, especially what Max Scheler referred to as its vitalmystisch component, also combined with occult tendencies in the work of some artists to produce art which fit the Bioromantic pattern.\textsuperscript{86} Just as Madame Blavatsky based her ideas partly on Darwin's theory of evolution and Rudolf Steiner was a scholar of Goethe's scientific writings, artists such as Bruno Taut, Kandinsky and Arthur Dove wedded science and the occult to produce their Bioromantik. As Cohn writes, for Dove

\begin{quote}

nature is both ... the raw data of physical perception and a mystic organism -- marvellous, mysterious and alive. It is both a scientific construct which can be empirically investigated and the projection of Dove's value-seeking imagination. It is an impersonal physical force indifferent to human existence and also the locus of transcendental truth.... Like his 19th century predecessors, Dove sought the pictorial means which could encompass this dualistic concept, but for him these means had to be consonant with the artistic values of the vanguard. To this end, he invented a highly personal style of painting informed on the one hand by contemporary discoveries in biology and physics and on the other by the literature of the occult. Contradictory as they may appear, science and occultism gave Dove new ways of depicting this hybrid vision.\textsuperscript{87}
\end{quote}

Artists were well aware of these meanings and sources for their Modernist work. In 1925 Le Corbusier wrote: "Le symbole esotérique, nous l'avons, pour les initiés d'aujourd'hui, dans les courbes que représentent les forces, dans les formules qui resolvent les phénomènes naturels."\textsuperscript{88} About his painting Dove wrote, "To make it breathe like the rest of nature, it must have a basic rhythm,"\textsuperscript{89} while on photography Edward Weston intoned:

\begin{quote}

Clouds, torsos, shells, peppers, trees, rocks, smokestacks, are but interdependent, interrelated
parts of a whole -- which is life. Life rhythms ... become symbols of the whole. The creative force in man recognizes and records -- with the medium most suitable to him, to the object of the moment -- these rhythms, feeling the cause, the life within the outer form. 

As August Wiedmann has pointed out, this is Romanticism: "What characterized the Romantic movement, above everything else, was its universal striving for unity and integration with the living order of creation." But it is insufficient to cite only the 19th-century Romantic precedent in the case of 20th-century artists, as the art historical literature has by and large done. Given the florescence of Neo-Romanticism at the last fin-de-siècle, its participation in what I term the biocentric discourse, and the further development of this discourse between the wars, a clearer picture of the geistesgeschichtlich context of this artistic production can only be given by the placement of such statements into their contemporary frameworks.

Thus, a pattern of association between 20th-century biomorphic style informed by scientific imagery and biocentric philosophy, i.e. a "Bioromanticism" can be confirmed. Within contemporary discourses, then, many biomorphic Modernist artworks figured patterns which signified natural forces and biocentric themes such as the life force, self-similarity, generation, flux and the "oneness" of humanity and "nature"; a reinterpretation of products of biomorphic Modernism in the light of this is in order. As such, Bioromantik was not merely a Neo-Romanticism. It was, rather, a late and refined aspect of "Primitivism." However, it was the "primitive" or Ur-forms of nature which served as the most common models for artistic and social regeneration, rather than those of the social or racial "Other."

As we shall see, biocentric meanings were inherent to the very invention of the term "biomorph" by Alfred Haddon in 1895, and to its initial application to Modernist art by Geof-
frey Grigson in 1934. They tended to be repressed, however, when Alfred Barr adapted this label to his own, formally-defined category of biomorphic or organic abstraction in 1936, and ignored as a result of the Post-War prejudice against biocentrism.

Arguing for a complex art historical method which seeks to identify formal, thematic and systemic patterns or structures in the past; and recognizing the relevance of its genetic ("Romanticism"), formal ("biomorphic"), contextual ("biocentric") and thematic ("biotic," "biology," "biocentrism") connotations, I propose the acceptance of Kállai’s suggestion that we term this ecology of discourses the "Bioromantic cultural pattern." Thus, my project (in the narrow sense) is to rehabilitate and expand Kállai’s aim to establish Bioromantik as an art historical category, to historicize the phenomenon -- indeed, following Meyer Schapiro’s complex definition, to define it as a "style." If I can achieve this, I feel that I will have laid a course of the foundation of a systematic study of biomorphic Modernist art.

The concerns of the relevant artists and critics, and the reach of the biocentric notions they implicitly or explicitly espoused, require the expansion of the limits of my inquiry to include scientific image-making, avoiding the limitation of my project within the strict bounds of Modernist high art production. My approach also draws on the conception of art history as Geistesgeschichte. To carry out a satisfactory historical analysis of the Bioromantic pattern requires, then, a strategy of interdisciplinarity -- one, which though it is based in art history, is informed by the histories of photography and architecture as much as it is by the history of ideas, of pedagogy, of science and scientific imaging, and of psychology.

Were I to treat the subject of Bioromantik fully, I would, in addition to the construction of the methodological framework such as I have done here, have to undertake more
systematic investigations of relevant anthropological and psychological theory, as well as of a larger number of paradigmatic artists, photographers and designers in Europe and North America, waters too vast to be explored in a single dissertation. Therefore, while I have here outlined an overall plan of exploration, specific soundings have been chosen for this expedition, soundings which constitute a methodological and historical basis for a future, more complete history. This is not a history of Bioromantik, but rather a prolegomena to its study.

In this thesis, then, I problematize biomorphic Modernism and I conceptualize or frame it and its constituent elements as the Bioromantic cultural pattern. In Chapter One, after addressing some terminological and historiographic issues, and discussing British biomorphic Modernism and Barr’s MOMA as the milieux in which "biomorphic" was first used in relation to Modernism, I review the literature. In Chapter Two I set up the historical construct of "biocentrism," look at some of its main players, identify its continuities and ruptures, and examine some political aspects. In Chapter Three I look at Moholy-Nagy and his intellectual origins in the anarcho-ecological, i.e. biocentric, wing of the German Youth Movement, the pedagogical reform movement and in the Bauhaus, here reviewed from the perspective of biocentrism. In Chapter Four I reconstruct the Raoul Francé-inspired biocentric Constructivist discourse in the fine arts and architecture of mid-20s Germany, and I situate the origins of Moholy’s pedagogical program of New Vision in these milieux. In Chapter Five I show how New Vision brought about the aestheticization of scientific photography in Weimar German exhibitions and photographic journals, and I speculate on the effect that Moholy’s biocentric theory of technologized image-making potentially had on the artistic practice of the time: This incorporation of the products of scientific self-imaging into the discourse of high art might have made them more easily
accessible to Modernist artists as visual models, a process which provides an historical alternative to psychobiological explanations of the naturamorphic analogy, and one that might at least partially account for the apparent stylistic shift around 1930 towards biomorphic Modernism. I also show that it was as a direct result of this process of aestheticization that Kállai engaged in his prescient framing work of the late 20s and early 30s. By examining the development of Kállai's conception of Bioromantik, I illuminate some of the historical and theoretical linkages that gave rise both to biomorphic Modernism and Kállai's recognition of it as Bioromantik.
Endnotes


5. Jeffrey Weiss, "Late Kandinsky: From Apocalypse to Perpetual Motion" Art in America (September 1985): 124.


20. The fact that this metaphor is used in the earliest literary work known, the so-called Book of the Dead, confirms its antiquity. Modern use of it may well derive from Goethe.


22. On this design tradition, see Lesley Jackson, The New Look: Design in the Fifties (London: Thames and Hudson, 1991), who refers to it as the "New Look," Malcolm Haslam, In the Nouveau Style (Boston: Bullfinch Press, 1989), who terms it "Curvilinear Modernist," and Richard Guy Wilson, The Machine Age in America 1918-1941 (New York: The Brooklyn Museum and Abrams, 1986), 58ff., who refers to it as the "biomorphic machine aesthetic," which Wilson sees as "an attempt to humanize the machine." (p. 58) While this is a clumsy way of approaching the subject, it is understandable given the dearth of writing on nature in the literature, and its plenitude concerning the mechanical. His discussion on the "organic" as related to the functional is more successful. The style is

"The term "biorhetoric"..." as explained in Chapter One. The adaptation from Barst's terms "non-geometric abstract..." as explained in Chapter One.


40. Since Christa Lichtenstern has done such a thorough job of examining the manifestations of Goethe's concept of metamorphosis in modern art from Philip Otto Runge to Josef Beuys, including biomorphic Modernists such as Klee, Moore, Baumeister and Masson; and Yve-Alain Bois and Rosalind Krauss have recently undertaken an exhaustive study of the concept of the *informe* in 20th century art, I will not focus on these themes in this dissertation, though I will touch on them. See Lichtenstern in the Bibliography for references. For an approach that develops Bataille's take on the subject, see Yve-Alain Bois and Rosalind Krauss, *L'informe. Mode d'emploi* exh. cat. (Paris: Centre Georges Pompidou, 1996). The text is published in English in a special issue of *October* 78 (Fall 1996) and will appear as a Zone book as *Formless. A User's Guide*.


43. On Darre, see Anna Bramwell, *Blood and Soil: Walter Darre and Hitler's 'Green Party'* (Bourne End, U.K.: Bucks, 1985). This concept, though without as strong an emphasis on ethnicity, has been revived in the 1970s by the "bioregionalists." On this, see Kirkpatrick Sale, *Dwellers in the Land: A Bioregional Vision* (San Francisco: Sierra Club, 1985). On Klages' and Francé's political development -- while the former refused Nazi party membership, there is evidence to suggest the latter did not -- see Chapter Two. For the view that anarchism and fascism are variants of a single category, "chiliasts," see Karl Mannheim, *Ideology and Utopia*.


46. Ibid., 170.
47. See Ibid. Though Pois is not very familiar with the larger geistesgeschichtlich context of biocentrism, he does essentially say this: "What Hitler had done was to wed a putatively scientific view of the universe to a form of pantheistic mysticism presumably congruent with adherence to 'natural laws.' In this, he bore a marked resemblance to such Darwinians as Ernst Haeckel who... informed their scientific endeavors with large doses of romanticism..." (pp. 39-40) Anna Bramwell argues that National Socialism differed from other European Fascisms in this respect, i.e. that the others were not nature-centric. Another nature-centric Fascist movement -- but one which did not achieve political power -- was that in England, which exercised an influence on British Modernists such as Wyndham Lewis, Ezra Pound and even D.H.Lawrence. See Bramwell, A History of Ecology in the Twentieth Century, Chapter Eight.


49. Bramwell and Pois have begun to point out the commonalities between Nazi nature ideology and that of the environmental movement, which they both find disquieting. This continues to be a highly controversial subject. For a longer version of this discussion, see Chapter Two.

50. For an historical analysis of the role of biocentrism within Nazi ideology, see Pois, National Socialism and the Religion of Nature, e.g., p. 133.


52. Ibid., 274.


54. On the accelerating forces of modernization and of the anti-modernist reactive cultural forces in Germany, see, e.g., Anne Harrington, Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler (Princeton: Princeton University Press, 1996), 19-33. Gianni Vattimo, The End of Modernity: Nihilism and Hermeneutics in Postmodern Culture (Baltimore: The Johns Hopkins University Press, 1988), 35-6. Adoption of the term "antimodernism" in the humanities would be unfortunate, because what Lears means, of course, is "antimodernity." What art historians would term "Modernist" artists, especially during the fin-de-siècle, were almost without exception antimodernists in Lears' sense, as expressed in their "primitivizing" artistic practices of one kind
or another, and/or their anti-materialism, as expressed through "abstraction" in painting and sculpture. To avoid confusion, I will use "antimodernity" to refer to the expanded sense of Lear's term.


56. While Kállai had associated with Leftists (including hard-core Communists) during most of the Weimar years, by 1929 his political position was both anti-Communist and anti-Fascist. For example, when writing of the art he would soon term Bio-romantik, and which he valorized, he wrote: "Naturally [this art] will not enliven economic life, and it will not win over the masses either for Adolf Hitler's [National Socialist] or for Thälmann's [Communist] parties." "Vissza az ornamentikához" [Return to ornament, 1929] in Ernő Kállai, Művészet vessélyes csillagzat alatt. Válogattott cikkek, tanulmányok [Art under dangerous constellations. Selected articles and studies]. Éva Forgács, ed. (Budapest: Corvina, 1981), 143. On Benjamin and biocentrism, see Chapter Five, endnote 265. On Höch's biocentrism, see Chapter 2, endnote 14.


60. Ibid., 24.

61. Ibid., 128-29.


65. Read, *Education Through Art*, 16.


69. Wiedmann writes that "The emphasis with the organic theory shifted from a purely 'egocentric' explanation of artistic creation to a 'cosmocentric' understanding which strove to comprehend the being and function of art in relation to the universe and its creative ground." *The Romantic Roots of Modern Art* (Old Working, Surrey: Gresham Books, 1979), 148. José Argüelles uses the term "psychobiological" in reference to Charles Henry's "psychophysical" aesthetics. He writes of Henry's text of 1922 that "[Henry's] idea that art might be a regulated psychobiological projection of an unconscious nature... is unique." *Charles Henry and the Formation of a Psychophysical Aesthetic* (Chicago and London: University of Chicago Press, 1972), 14.) Wiedmann and others, however, have traced this theory back to the Romantics. We shall see that Kallai did not exclude the possibility of direct influence of scientific imagery on artists however; he was ambivalent on this count. Note that though Argüelles quotes Henry as employing the term "psychobiological" in 1922, Raoul Francé worked his own "Psychobiologie" out before the First World War already, borrowing the term from O. Kohnstamm's use of it.
This is discussed in Chapter Two, endnote 75. See also Robert Bud, The Uses of Life: A History of Biotechnology (Cambridge: Cambridge University Press, 1993), 61. On Lissitzky in this regard, see Chapter Four.

70. Wiedmann, Romantic Roots in Modern Art, 174-75.


73. Herder quoted in ibid.


through microscopes in the 30s (Hans K. Roethel, *Kandinsky*, Munich: Piper, 1982, 160-61; Vivian Endicott Barnett, "The Introduction of Biological Images in the Paris Period" in *Kandinsky in Paris: 1934-1944* exh. cat., New York: Guggenheim Museum, 1985, 61-87). Moore was doing so by 1934. (On him, see Chapter One.) Kupka "is thought to have used the imagery of microscopes as a source of some of his abstract compositions in the 1920s." (Jennifer Mundy, "Form and Creation: The Impact of the Biological Sciences on Modern Art" in *Creation: Modern Art and Nature*, exh. cat., Edinburgh: Scottish National Gallery, 1984, 18.) On Zeisel, see Eva Zeisel, "On Being a Designer" in: *Eva Zeisel: Designer for Industry* (Montreal: Le Château Dufresne - Musée des Arts Décoratifs de Montréal, 1984), 92. (Thanks to Gina Obrodzinsky for pointing this out to me.) On Gabo and the illustrations of D'arcy Wentworth Thompson, see Martin Kemp, "Doing What Comes Naturally: Morphogenesis and the Limits of the Genetic Code," *Art Journal* 55, no. 1 (Spring 1996): 28-30. Kemp is uncertain about exactly when Gabo learned of Thompson's 1917 publication *On Growth and Form*, though he certainly did so by the time of his sojourn in Britain in the 1930s. I would suggest that Gabo's tendencies in this direction were grounded in a knowledge of the work of Raoul Francé, which Gabo would have encountered through Ernő Kállai, one of his closest friends in Berlin. On Kállai, see Chapter Five. On Moholy-Nagy, see Chapters Three and Four.

77. For example, in Alexander Klee's library in Berne, one finds among his grandfather, Paul Klee's books two school science texts, the richly-illustrated book by Fr. Polack et al., *Illustrierte Naturgeschichte der drei Reiche in Bildern, Vergleichungen und Skizzen* (Wittenberg: R. Herroşé, 1887); and Karl Friedrich Hoffrath Hoffmann's *Die Erde und ihre Bewohner* (Altona: G. Kalman & Cie., 1877), inscribed "Paul Klee 1895" the second year of Klee's Gymnasium studies. On Klee's science instruction at Gymnasium, see Sara Lynn Henry, "Paul Klee's Pictorial Mechanics from Physics to the Picture Plane," *Pantheon* 47 (1989): 147, 163. (Despite her inquiry, Henry was not informed by Felix Klee about Hoffmann's book, nor was she told that Polack is a school text.) Polack includes illustrations of shells, natural spirals, fossils, crystals, amoebas, protists, the "Ur- oder Protoplasmatiere," growth systems of plants, etc., themes which recur in Klee's art. Hoffman's book includes meteorological material of relevance to Klee's later work. Thanks to Alexander Klee for allowing me access to his library.

78. C.f. also the scientist-photographer Oscar Prochnow. Little has been written on Prochnow, who figured as a scientific theorist and historian of Lamarckism in Adolf Wagner's *Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart* (Stuttgart: Franckh'sche Verlagshandlung, n.d. [1909]); and who reappears in 1934 as
the author of *Formenkunst der Natur* (Berlin: Ernst Wasmuth, 1934), one of the most beautiful examples of the close-up nature photograph genre of interwar Germany. In any case, in the tradition of Haeckel and Francé, he was a part of the Neo-Lamarckian or "Psychobiological" "Neo-Nature Philosophy" (what I will define as "biocentrism") of the early twentieth century, and of the drive to popularize close-up nature photography later on. For an indication of his biocentrism, see Prochnow's "Zur Einführung" in *Formenkunst der Natur*.


Note, however, the important difference between the use of close-up photography in the Weimar German and Surrealist contexts, what Kállai would have called the contrast between the creative and demonic aspects of nature: "If we also find analogies between Brassai's disorienting close-ups of art deco ironwork, crystals, a potato with long antler-like sprouts..., all of which were... published in *Minotaure*, and certain photographs by Karl Blossfeldt or Renger-Patzsch, the formal resemblances leap out only when the photographs are removed from the cultural contexts in which they were produced. Blossfeldt's magnified views of plant forms in *Urformen der Kunst* and Renger-Patzsch's close-ups from *Die Welt ist Schön* (1928) emphasized formal structure and symmetries that evoked ideas of unity, harmony and universal order. By contrast, the Surrealists used such images, including Brassai's, to disorient the viewer and suggest the mysterious side of everyday objects." Marja Warehine, *Brassai: Images of Culture and the Surrealist Observer* (Baton Rouge: Louisiana State University Press, 1996), 11-12. The Purists' work was closer to that of the Germans. On the shift of the Purists' painting from geometric to organic forms, see Romy Golan, *Modernity and Nostalgia: Art and Politics in France Between the Wars* (Princeton, N.J.: Princeton University Press, 1995), 181, note 7.

82. Other components, such as the artistic use of scientific imaging devices such as microscopes and x-ray machines, and the organic metaphor, are arguably independent elements, but for the sake of simplicity, they are either not treated or subsumed into the naturamorphic analogy here. Note also that other discourses such as anthropology (whence the term "biomorph" derives as I show in Chapter One) and other types of psychology such as Freudian and Jungian psychoanalysis interact with those discussed here to result in Bioromantik. For reasons of limits on my time and energy, I have chosen not to focus on them here.

83. Cohn, Arthur Dove: Nature as Symbol, 43.


85. Burnham, Beyond Modern Sculpture, 94.

86. On Scheler and Vitalmystik, see Chapter Two.


91. Wiedmann, Romantic Roots of Modern Art, 3.

92. C.f. Alloway: "Particular cases of resemblances are not interesting: the point is the identity of everything with its simultaneous phases of seeding, sprouting, growing, loving, fighting, decaying, rebirth." "The Biomorphic Forties," 20.


94. On Schapiro’s definition of "style," see Chapter One.

96. See the December 1995 issue of the *Art Bulletin*, "A Range of Critical Perspectives: Inter / disciplinarity" on this, with contributions by Carlo Ginzburg, James D. Herbert, W. T. Mitchell, Thomas F. Reese, Ellen Handler Spitz and Elkins' "Art History and Images That Are Not Art."

97. I disagree with Jonathan Fineberg that American artists such as Calder and Pollock did not share with Europeans a biocentric view of art. Fineberg writes: "Like Calder, Hans Hofmann provided an important bridge between European modernism and the new American avant-garde, although Hofmann retained a European sensibility that neither Calder nor the American-born artists of the New York School ever developed. This 'European sensibility' is difficult to define precisely, but it has to do with a conception of the artist as a vehicle for the forces of nature and indeed as inseparable from nature..." *Art Since 1940*, 52.
CHAPTER ONE

"Biomorphic Modernism"

Historiography, Terminology, and Literature

[Style is] a system of forms with a quality and a meaningful expression through which the broad outlook of a group [is made] visible. It is also a vehicle of expression within the group, communicating and fixing certain values of religion, social, and moral life through the emotional suggestiveness of forms.... Style, then, is a means of communication, a language not only as a system of devices for conveying a precise message by representing or symbolizing objects and actions but also as a qualitative whole which is capable of suggesting the diffuse connotations as well and intensifying the associated or intrinsic affects.... Not the content as such, but the content as part of a dominant set of beliefs, ideas, and interests, supported by institutions and the forms of every-day life, shapes the common style. (M. Schapiro 1962)\(^1\)

Contemporary art historical research and criticism too often perpetuate the long tradition of borrowing their methodology from the outdated model of the discursive printed word. (B. Stafford 1992)\(^2\)

1. Forms

Since Meyer Schapiro's semiotically-informed definition of "style" as langue was published in 1962, art historians have shown how the very manner in which a work of art is rendered can signify independently of the subject matter of the work, enriching possible readings of artworks beyond iconographic ones.\(^3\) As Richard Schiff writes: "Form ... [can] both represent and embody content, and not in any obscure or mysterious manner."\(^4\) While this revisionist art history was itself a reaction to formalist art theories, one must remember that it is also a direct outgrowth of them -- their revision as refracted through structuralism and semiotics, rather than a volte face. It is the most recent incarnation of formalist art historical and critical practice reaching back through Greenberg, Barr, Giedion, Barnes, Fry, Bell, Wölflin and his
"history of the development of art based on form,"5 to Conrad Fiedler and Gottfried Semper. René Huyghe has traced the history of art historical theories about form:

A partir de Conrad Fiedler et de Hildebrand, certains penseurs s'attachèrent à la Forme, pour s'interroger sur son origine (que Semper crut technique, s'appuyant sur les arts décoratifs, ou elle est perceptible à l'état pur, mais que Alois Riegl fit dépendre d'une tendance intérieure, la Kunstwollen), ou sur ses lois organique d'évolution (Focillon ...); certains en renouvelèrent la psychologie (... la Gestalttheorie). D'autres préférèrent se pencher sur le contenu, et l'iconographie, de Male à Panofsky, en poursuivent l'étude aussi bien dans la traduction volontaire des idées que dans les révélations inconscientes.6

Huyghe developed a complex, synthetic approach to form which involved several of these approaches. The Goethean and Bergsonian morphological-organicist, or "functional" vein of formalism in the work of the architectural historians Adolf Göller and Siegfried Giedion, the zoologist Alfred Haddon, the art historian Henri Focillon, his student George Kubler, and the archaeologist David Clarke, holds that forms develop parallel to "natural" phenomena and much like them.7 As Jean Molino articulates it:

artistic creation, like all creation, is production about and based on the forms transmitted by tradition; the artist stores inherited forms and elaborates his or her own forms in a dialogue with forms from the past. As a result, these new forms bear the ... traces of the old forms among which they take their place.8 There are ... two significations that adhere to form: a specifically formal [one] that is allusion to other forms, and a nonformal ... [one] always present, but whose relation to form is largely arbitrary.9

This morphological-organicist vein is particularly relevant here because it partakes of the organic metaphor of art held by many of the artists and critics dealt with in this dissertation, an "organicism" which M. H. Abrams defined "as the philosophy whose major categories are derived metaphorically from the attributes of living and growing things."10
aesthetic isomorphism assists us in understanding biomorphic artistic and critical production, but at the same time it potentially hinders us by rendering impossible a critical meta-analysis. I will both incorporate and critically examine aspects of this approach.

Formalisms raise questions about classes of forms and their significations. They are useful in thinking about histories of form qua form. They are particularly useful in understanding how the forms of "abstract" art signify, and what they signify, and can usefully supplement -- rather than replace -- iconographic and contextual approaches to the study of abstract art. Finally, they are helpful in resisting discrimination among media of production, for as Jonathan Crary (working within a rich tradition of art historical practice) has shown,

The isolation of painting after 1830 as a viable and self-sufficient category for study becomes highly problematic, to say the least. The circulation and reception of all visual imagery is so closely interrelated by the middle of the [19th] century that any single medium or form of visual representations no longer has a significant autonomous identity. A study of Modernism which excludes popular, scientific, occult or other visual manifestations of modernity is untenable.

Formalist approaches underline the need for the further development of what James Elkins calls "image studies" and what Barbara Maria Stafford has termed a "pictology":

Uncritically to ally ourselves with those who treat actions and pictures merely as decodable texts or as some ignoble form of knowing will not reduce uncertainty and not guarantee the production of more rigorous research. The moment has come to forge theoretical models congruent with the showing and demonstrative nature of the fleeting appearances under investigation.... Figures must cease being taken for parerga. Rather than disposable accessories hovering on the intellectual margins, they must become integrated into, and shape, the mainstream of civic life. No longer defined as subjugated illustrations, or just better conveyers of extant verbal
information, images would be recognized as free agents needed to discover that which could not other-15 wise be known. The new-found power and ubiquity of images calls for teaching innovations and for altering venerable, but unexamined, epistemological models and textual metaphors ("codes", "alphabets", "letters", "spelling", "grammar").

Just as visual culture vies with textual culture for communicative dominance, visual means of analysis are as important as text-based, thematic and iconological ones. We can build on traditions of visuality already present in the discipline.

A morphological approach such as Kubler's would recognize what he terms a "formal sequence" of "biomorphic abstraction" extending back to the dawn of image-making. An awareness of such a sequence -- as sketched out by the former director of the Landesmuseum in Hanover, Alexander Dorner,19 and René Huyghe, who called it l’esthetique de la sinuosité and formes fluide20 -- is important for placing 20th-century biomorphic abstraction into its formal historical context: that (moving in reverse) of Expressionism, the Art Nouveau,21 aspects of Symbolism and Romanticism, the Rococo, the Baroque, Flamboyant Gothic, Islamic art, Scandinavian and Hiberno-Saxon art, and so on down to Minoan art and Alfred Haddon's "biomorphs" on prehistoric pottery shards.22 Such a regression makes one aware of the formal pedigree of what one is dealing with, and it is useful for that reason, even if it is not helpful in framing a subject of study, for it renders it vast. It also lends legitimacy to the formalist framing of Modernism devised by the long-time Museum of Modern Art director Alfred Barr, a framing which dominated the discourse for decades -- and so is familiar to art historians -- even if it has been in disrepute of late. Though the problematic of the art we are dealing with could be approached from either the thematic or formalist angles, I begin here with a formally-defined category by laying the groundwork for the examination of art which bears the labels "biomorphic," "organic," "organ-ic abstract," and "biomorphic abstract."23 These signifiers, deriving from the
terms "biomorph" and "organism," denote a style familiar to students of early 20th-century Modernism.

This category, as defined by Barr and his successors, includes not only "abstract" images but also art -- usually Surrealist -- which is derived from or still contains recognizable imagery. Therefore, unless I am engaged in terminological history, I will employ the more generous "biomorphic Modernism" to refer to Barr's formally defined category. "Biomorphic Modernism" has the advantages not only of including both mimetic and "non-mimetic" biomorphic work produced within the discourse of Modernist art, but of acknowledging that discourse as well. I propose that biomorphic Modernism is a style in Schapiro's complex sense, a formal and connotational language determined by its context, and that the style of biomorphic Modernism can more precisely and suggestively be referred to as "Bioromanticism."

2. Frames

The usefulness of the concept of style is that it establishes a unity where there is apparently no unity, but the artistic coherence of the works concerned is greater than their divergence from each other. (Hauser 1965)²⁴

And it is only the destining into objectifying representation that makes the historical accessible as an object for historiography. (Heidegger 1953)²⁵

If I hadn't believed it with my own mind, I never would have seen it. (Bard College graffiti 1951)²⁶

Hauser points to a basic problem of art history, that of taxonomy. In "Frames" I will first examine the history of taxonomical terms and categories used in connection with biomorphic Modernism, after which I will engage in a discussion of such "frames," proposing finally a framing model for use.
a. Read, Worringer, and the "Organic"

Within the discourse of Modernism the term "biomorphic abstraction" seems to have been first employed in London around 1934 in the "Unit 1" circle around the biocentric anarchist critic Herbert Read and the journal *Axis*. Read's involvement with biomorphic Modernism was as complicated and problematic as his theoretical approaches to art were, and this prevented him from playing the role one might otherwise have expected him to play in the adoption of "biomorphic" into the artistic vocabulary. Indeed, it was not Read, but the critic, poet and editor Geoffrey Grigson who introduced the term "biomorphic" to the discourse of Modernism.

In the early 30s, when Read started writing and publishing on contemporary art, he was indebted intellectually to Wilhelm Worringer, whom he eventually befriended and referred to as his "esteemed master in the philosophy of art." In his 1908 dissertation *Abstraction and Empathy*, Worringer -- inspired by the ideas of Theodor Lipps, Alois Riegl, and his teacher Heinrich Wölfflin -- proposed the binary psychological theory of artistic production, that human mental abstraction gives rise to geometrical abstract art, while empathy is the impulse for naturalistic or "organic" art. Though Worringer's dissertation functioned as both theory and legitimizing force for Expressionist (including abstract) art in the teens, it has not often been remarked that his schema, like all (of necessity, reductionist) conceptual structures (including my own), has its limitations, its problems with "fit." Jack Burnham is one of the few commentators to point out the limitations of Worringer's work: "By nature art historians are pattern-creating creatures, and patterns abound in art history; but, like so many broad conceptions, they begin to show serious flaws when applied to specific cases." Thus, Worringer's identification of naturalism with the organic, and his linking of this category with empathy and the art of certain historical periods, does not easily allow
for naturalistic art among some ancient peoples, e.g. palaeolithic cave painters and the ancient Minoans, nor for organic abstraction at all, much less among the moderns.

Sensing this as a difficulty, Worringer engaged in an ingenious argument which recast organic abstraction as naturalism in disguise. He argued that organic abstraction was not the result of the "organic analogy" (what I here term the "naturamorphic analogy"), of abstraction from forms of organic nature. Rather, he maintained, it was the result of the organic metaphor, in other words that it was developed according to the laws of creation in nature. By this means he removes organic abstraction from the realm of abstraction and returns it to the domain of naturalism:

It then becomes immediately apparent that organic regularity, even when represented in the abstract, has a milder effect upon us and is more closely bound up with our own vital sensations. It makes a stronger appeal to the activation of these vital sensations of ours, and is thus calculated gently and gradually to entice out man's latent impulse to empathy. The fact that some organic abstraction is based on the naturamorphic analogy did not enter into Worringer's argument.

The -- in effect -- inability of Worringer's dual structure of impulses to account for what by the late 20s had developed into the style of biomorphic Modernism seems to have affected Read, who was so enamoured of Worringer's writings that he learned German to be able to read them in the original. Partly because he felt that abstraction was not useful enough socially, and partly because of his adherence to Worringer's schema, Read was ambivalent about the abstraction of his contemporaries. This ambivalence was expressed as a concurrent critical valorization and theoretical denigration of biomorphic Modernism. Thus, though Read had published a book on Surrealism by 1936, in 1934 he wrote dismissively of what was in effect biomorphic Modernism as an "enfant terrible" born of the "foster-mother" Surrealism. In 1937 he deflected
his argument from the aesthetic to the social plane, criticizing abstract art's apparent lack of social utility.

The claim -- of the abstract artist is that the forms he creates are of more than decorative significance in that they repeat in their appropriate materials and on their appropriate scale certain proportions and rhythms which are inherent in the structure of the universe, and which govern organic growth of the human body. Attuned to these rhythms and proportions, the abstract artist can create microcosms which reflect the macrocosm -- he can hold the world, if not in a grain of sand, then in a block of stone or a pattern of colours. He has no need of natural appearances -- of the accidental forms created in the stress of the world's evolution -- because he has access to the archetypal forms which underlie all the casual variations presented by the natural world. I do not doubt myself that the abstract artist is sincere in this claim, and that he does achieve ... what he attempts. The only point in doubt is the social relevance of this activity.\(^8\)

While this text demonstrates that ideas first evident in Kállai's "Bioromantik" in 1932 were being more widely expressed, it also reflects the political argument with the artists' positions.

b. Unit 1

Putting aside Read's ambivalence for a moment, we might note that his criticism included the first, and indeed until now the most cogent, summary written in English of what was in effect Bioromanticism. It reflected the ideas and aims of the Modernists who had emerged around Read, a circle of artists interested in the expression of their Organicism and their Vitalism, "the force that through the green fuse drives the flower," as Dylan Thomas expressed the élan vital in his poem of 1933-34.\(^\text{19}\) Formally inspired by the biomorphic Modernist work of Constantin Brancusi, Pablo Picasso, Alberto Giacometti, Joan Miró and Hans Arp, and frank concerning their desire to express natural forces and their interest in (abstracted) natural forms, members of Read's circle such as Barbara Hepworth, Henry Moore and Paul Nash, were producing work in a
biomorphic abstract style, which, along with Grigson, Read was the first to admire.40

That Read’s summary accords with the artist's views is easily verifiable. In Unit 1 Hepworth wrote that "[i]n the contemplation of nature we are perpetually renewed ... and rightly understood, it gives us the power to project into a plastic medium some universal or abstract vision of beauty."41 On another page Moore declared that "[b]ecause a work does not aim at reproducing natural appearances it is not, therefore an escape from life -- but may be a penetration into reality ... an expression of the significance of life."42 While Read was not specific concerning the artist's formal sources in his 1937 text, Moore specified natural objects such as pebbles, rocks, bones and shells as formal inspirations for his work, and he noted that "the telescope and microscope have enlarged the field from which the sculptor can enlarge his form-knowledge experience."43

The popularization of the naturamorphic analogy in the Unit 1 circle was fuelled by the appearance in 1929 and 1932 respectively, of English editions of Karl Blossfeldt’s collections of close-up nature photographs Kunstformen der Natur and Wundergarten der Natur,44 the exhibition of Blossfeldt’s photographs in London at the Zwemmer Galleries in 1932, and by the appearance in 1935 of W. Watson-Baker’s book of artistic microphotographs, World Beneath the Microscope. While the publication of Art Forms in Nature by Zwemmer in 1929 was too early to elicit a response from the people who came to make up the Unit 1 circle, the 1932 publication of Wundergarten der Natur, and Robert Wellington’s installation of Blossfeldt’s photographs from Wundergarten in direct juxtaposition with examples from the applied arts,45 stimulated R. H. Wilenski and then Paul Nash to speculate on the relations between contemporary art and natural forms.46

The captions in Watson-Baker’s World Beneath the Microscope were particularly pertinent, for example that under a
photograph of a sea urchin shell which, evidently referring to the work of Moore and Hepworth, pointed out that "the modern sculptor must envy the massiveness of form, the grandeur of contour, of this small shell." William Gaunt’s introduction to the book discussed the naturamorphic analogy within a biocentric framework:

"In all of this there is something abstract, something of the essential nature of things.... The artist feels what the scientist calculates. As serious writers have abandoned the superficial devices of the picaresque novel ... the visual artist is urged to exchange the delineation of outward appearance for a nearer examination of form. The symmetrical exemplars of text-books on design prove to be of the utmost banality when compared with the enormous repertoire of designs in nature, a dimensional book which discloses repertoire within repertoire, cosmos with cosmos. We turn over the page which illustrates obvious symmetries and regularities; we scent more vital stuff in a new series overleaf of designs that man has only faintly conceived, in whose prodigal scrawls the restless motion of primary life sketches an unprecedented art. The artist will not painfully copy this new world, but he will be the more an artist for seeing it...."

In his review, John Piper found it "amusing ... to notice the artists suggested by the photographs: Klee (anchors and plates of Synapta), Ernst (a great many times), Miró (sponge spicules), Giacometti (chemical crystals), and so on." Even though Blossfeldt’s photographs were taken with a close-up lens rather than a microscope, in the advertisement of that same year (1935) for the second printing of Blossfeldt’s Art Forms in Nature in Axis, the unidentified copywriter referred to "A series of excellent photographs of plant forms seen through the microscope, displaying the relationship between art and natural phenomena." Just as, writing of contemporary Paris, Man Ray remembered that "all abstract art appeared to me as fragments: enlargements of details in nature and art," in Axis in 1936 S. John Woods wrote that "[a]ll so-called abstract pictures are based in some degree on nature or ... on the artist’s selection of certain phenomena of nature."
Grigson emphasized the naturamorphic analogy in his 1944 monograph on his friend Henry Moore, producing the earliest critical text I know of in English to discuss biomorphic Modernist art systematically in conjunction with contemporary biology, Vitalism and the scientific image analogy:

Moore ... is interested in the rounded, solid shapes into which life builds itself. And when he came back from Italy [in 1925], Moore became a pilgrim ... to the Natural History Museum.... [H]e now saw life in its natural forms and framework, from the cells to the skeleton.... [E]arly peoples ... saw life in the form of large organisms, brute or man. We see it also in the plates and diagrams of a biological text-book. Rounded shapes by Moore may be related to a ... bone, or a hill .... But they might also relate to the curves of a human embryo ... or to a single-celled primitive organism. Revealed by anatomy or seen with a microscope, such things are included now in our visual knowledge. Art, or the forms of art, change with such knowledge. So when some critics ... talk ... of the distorted vision ... of contemporary art, they are ... showing the restriction of their own experience.... Biology must also be acknowledged....

By 1945 Read was also espousing a psychobiological explanation of the artists' biomorphic forms: "the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature".

As early as 1934 Nash and Grigson were calling for the production of nature-centred biomorphic Modernist art, i.e. Bioromanticism. To my knowledge, they were the only art professionals at the time to actively promote such art. While Nash held that "[a]part from the world of 'pure' invention free from association with recognisable objects, I have no doubt, that the infinite variations of nature may be resolved with an equally incalculable number of complete abstractions," Grigson wrote:

Abstract art at this time needs ... to be penetrated and possessed by a more varied affective and intellectual [sic] content. Only so can it answer to the ideological and emotional complexity of the needs of human beings with their enlarged knowledge of the
widened country of self. Certain artists have already realized this in their practice; abroad Picasso and Brancusi, Klee, Miró and Hélion; in England Wyndham Lewis and Henry Moore. Abstractions are of two kinds, geometric ... which leads to the inevitable death; and biomorphic. The biomorphic abstractions are the beginning of the next central phase in the progress of art.  

This is the kind of art, added Grigson in another article of 1935, "which in my belief [people] will most enjoy."  

It was possibly as a result of his political evolution, and his adherence to Worringer's schema, that, while he always knew of the Vitalist, i.e. biocentric, background to biomorphic Modernism, it was not until 1951 that Read conceptualized Vitalist biomorphic Modernism as a category of artistic production. Furthermore, it was only at the end of his career, in the 1964 A Concise History of Modern Sculpture, that he discussed it, albeit only with respect to sculpture.  

c. Grigson's "Biomorph"  

Though informed through Read of Worringer's binary system of artistic impulses, Grigson was clearly not satisfied with the problematic nature of Worringer's use of "organic" in relation to naturalistic and abstract art, and its inability to account for contemporary Modernism. Aware that Moore employed Worringer's term "organic" to refer to his abstract works, around 1934 Grigson proposed instead the adoption of the term "biomorphic" from an unnamed anthropologist who employed it in relation to the painted pebbles of the prehistoric Azilian culture:  

The designs on the coloured Azilian pebbles ... have been divided by one anthropologist into two classes, designs produced by the more or less obvious abstraction of natural forms (such as the human figure) and "biomorphic" shapes ... [which are] ... further from the originals.... "[B]iomorphic" ... is no bad term for the paintings of Miró, Hélion, Erni and others, to distinguish them from the modern geometric abstractions and from rigid surrealism.
In this passage and in his "Comment on England," Grigson grouped automatic Surrealism (Miro) and the biomorphic abstract members of Abstraction-Création (the French Jean Hélon and the Swiss Hans Erni) together -- along with related artists such as Picasso, Brancusi, Klee, Lewis and Moore -- to form a category of biomorphic Modernism, as distinguished from both geometric abstraction (represented by members of Abstraction-Création) and "rigid" -- by which Grigson evidently meant "oneiric" -- Surrealism. "Such pictures as those of Klee" writes Grigson that same year "are examples of the Bergsonian return to pure nature."

As Gladys Fabre has pointed out in her article "Art de Synthèse," Grigson's formulation is a variant of that which gave rise to the 1935 exhibition these antithese synthese, held at the Kunstmuseum in Lucerne, and curated by Hans Erni. This exhibition was part of a wider discourse of the time, one which attempted to overcome the apparent antinomy between "abstraction" and Surrealism. Erni himself was a young Swiss artist with biocentric views and an intense interest in microscopy and the natural sciences. Focusing on contemporary Parisian, Swiss and English art, and guided by the Organicism of Jean Hélon and the dialectical thinking of the Parisian critic Anatole Jakovski and the Swiss Marxist cultural philosopher Konrad Farner, Erni saw contemporary Modernism as the result of a dialectic. Thus, according to Erni, Cubism and Dadaism together gave rise to Purism, and contemporary art concret, or Art de Synthèse (most of which was biomorphic Modernist), was the synthesis of the thesis Abstraction-Création and its antithesis Surrealism.

All this recapitulated Kállai's argument put forward in a series of articles of the early 1930s, that biomorphic Modernist art expressive and/or reflective of our essential rootedness in "nature" ("Bioromantik"), and (mainly Constructivist art) expressive of a "rationalistic- materialistic-utilitarian" drive to build ("Technoromantik"), were artistic
embodiments of the essential Klagesian dialectic of Seele and Geist, a pair of polar opposites identifiable as "nature" and "construction" already in his Constructivist writing of the early 1920s. As he wrote in his 1932 article "Zurück zum Ornament," as parts of a single dialectic, "Eine internationale Ausstellung bewies doch, wie sehr Abstrakte und Surrealisten zusammengehören, auch wenn sie in gewissen Sinn feindlichen Brüdern gleichen." 

Though Grigsonts framing is tighter and his Vitalism more obvious, an undercurrent of biologistic nature-centrism (what I term "biocentrism") is also present in the Lucerne formulation: The Lucerne Museum’s director Paul Hilber asked Farner to assemble a bibliography for the catalogue of these antithese synthese, including a section on "Mathematics" which Farner also described as having to do with the "natural sciences." Mostly it contained titles to do with the contemporaneous Organicist concern for regularity and structure in nature. Though his writing reflects the more poetic sensibility of Paris Surrealism and of French writing in general, this biocentric undercurrent is also present in Jakovski’s texts of the time, including the exhibition essay for the catalogue. All these formulations, Read’s and Grigson’s as much as Källai’s, and Erni and Jakovski’s, viewed contemporary art as concerned with revealing deeper layers of reality through a formal language of biomorphic Modernism.

d. Haddon’s "Biomorph"

No doubt referring to Grigson’s book on the subject, The Painted Caves, Ian Jeffries has commented that "[l]ike his contemporaries [Grigson] was interested in antiquity, in flint axes and bronze-age barrows." Hence we can assume that he was familiar with the literature on prehistory. But the anthropologist from whom Grigson derived his use of the term "biomorphic" was not likely the English Darwinian zoologist-turned-anthropologist Alfred Cort Haddon, who in his 1895
cultural anthropological treatise *Evolution in Art* coined the term "biomorph," for Haddon does not discuss the Azilian culture, and he does not distinguish terminologically between more and less abstract naturalistic art. In this book Haddon wrote that "The biomorph is the representation of anything living[,] in contradistinction to the skeuomorph, which . . . is the representation of anything made ["such as a pattern based on weaving, wattling, binding, or timbering"], or the physico-morph which is the representation of an object or operation in the physical world." Employing Vitalist terminology, Haddon emphasized that "[t]he fact that there is life in the original of the biomorph appears in most cases to exert an influence on the biomorph itself, so that it comes to have what might almost be described as a borrowed vitality." Indeed, in his discussion of biomorphs Haddon devoted an entire section to the "Representation of Abstract Ideas of Life," in which he specified that "[e]ven such an abstract idea as the Principle of Life, or Vital Energy, has been indicated in [certain motifs of biomorphic] decorative art." Unlike Worringer, Haddon was not confined by a binary psychological taxonomy and so could include both naturalistic and "abstract" patterns in his category.

That the term "biomorph" was coined by a zoologist working on visual culture, to refer to a style of abstraction representing vital forces and natural processes, is of no small importance: this is precisely what I -- following the contemporary critics Kállai and Carola Giedion-Welcker, and the artists themselves -- argue is the dominant signification of the forms, the style of biomorphic Modernism. Vitalistic content was present in the very coinage of "biomorph," before its adoption by anglophone Modernists, they are embedded in it. Vitalist meanings, if we might read Haddon in a Kublerian sense, are innate to the "formal sequence" of biomorphism. Had Grigson taken "biomorph" directly from Haddon, he would have known this. As a follower of the arch-Vitalist Wyndham Lewis
however, Grigson would likely have used it in a vitalist sense irrespective of Haddon's intent.83

e. Barr's "Biomorph"

Given the predominantly formal usage of the terms "biomorphic" and "organic" today, it is not surprising that as epithets of an autonomous stylistic category of artistic production (biomorphic Modernism) they were popularized within the formalist critical paradigm of Modernist American aesthetics despite their Vitalist and naturromantisch origins, and Grigson's earlier Vitalist adaptation. This current usage, furthermore, derives from the institutionally most powerful line of formalism, that established by curator-scholars associated with the Museum of Modern Art in New York. With his Wölfflinian flow chart of Modern artistic tendencies and movements published in Cubism and Abstract Art in 1936, MOMA director Alfred Barr established a taxonomical system, a framing structure, which dominated the field of Modern Art for decades.84 (Fig. 1-1) In this teleological system he included the category "Non-Geometrical Abstract Art" along with "Geometrical Abstract Art" as the twin resultants of his artistic vectors.85 Barr's nomination of the former as the negative of the latter indicated the resultant to which he -- in accordance with Worringer -- accorded primacy at the time, the "first and more important current" of Geometric Abstract Art.86 This is how Barr defined Non-Geometric Abstract Art:

After running under ground [sic] for a few years [this current] reappears vigorously among the masters of abstract art associated with Surrealism. This tradition ... is intuitional and emotional rather than intellectual; organic or biomorphic rather than geometrical in its forms; curvilinear rather than rectilinear, decorative rather than structural, and romantic rather than classical in its exaltation of the mystical, the spontaneous and the irrational.87

Since he (or Beamont Newhall, his bibliographer) lists Axis but not Evolution in Art in the bibliography of Cubism and
Abstract Art, we must assume that Barr's usage of the term "biomorphic" to describe non-geometric abstraction derives from Grigson. Barr's conflation of "biomorphic" with "organic" betrays his ignorance of the finer points of Worringer and the problems surrounding the use of the term "organic" in conjunction with "abstraction." While Barr's recognition of "romantic," "mystical," "spontaneous" and "irrational" content in the style indicates his resistance to a totalizing formalist interpretation,\(^8\) his definition, like the rest of the book, does privilege form. Barr's understanding of the content derives not so much from Grigson, as from Worringer's Abstraktion und Einfühlung and its binary conception of the psychological impulses underlying art-making. Apparently ignorant of Haddon's Vitalist understanding of "biomorph," Barr must have been aware that Worringer discussed the content of "intuitive," "organic" art as Vitalistic and Pantheistic.\(^9\) Either Barr was untroubled by Worringer's opposition of the organic to the abstract, or he accepted the German's way out of this dilemma. In any case, his description of the organic as "mystical" and "irrational" had pejorative overtones and Vitalist content tended to be denigrated or repressed in the discourse that Barr established.

As a pioneering historian and keen observer of the contemporary art scene, however, Barr correctly recognized later in the book that "[a]t the risk of generalizing about the very recent past, it seems fairly clear that the geometric tradition in abstract art ... is in the decline.... The non-geometric biomorphic forms of Arp and Miró and Moore are definitely in the ascendant."\(^90\) In fact, within a few years he came to champion such art, organizing with James Johnson Sweeney retrospectives of Miró's and Klee's work in 1941.\(^92\) As Sandler has pointed out, these exhibitions had a strong effect on the emergent American "biomorphic" avant-garde, Abstract Expressionism,\(^92\) and thus made it possible for a critic such as Parker Tyler to emerge, who emphasized biocentric meanings and
the naturamorphic analogy in his reading of American biomorphic Modernism. In a 1945 critique of Sidney Janis’ Barrrian dualist conception of American Modernist art, Tyler constructed an understanding of biomorphic Modernism as insightful and complex as that of his European contemporaries:

"...abstractionism spontaneously developed its own variety of surrealism, wherein its analytical and geometrical forms ‘come alive,’ return to ‘nature’ by way of human fragmentation, life under the microscope, and the visceral -- in short, through what is known as biomorphism."93

Nevertheless, Barr’s prejudice against acknowledging Vitalist meanings in biomorphic Modernism was reproduced in his later work, and in that of most other critics, even in the writings of his critic Meyer Schapiro. In a 1937 critique of Cubism and Abstract Art and of abstraction in general, Schapiro received Barr’s de-emphasizing of content in abstraction as a true statement of the supposed lack of intention on the part of all abstract Modernists to signify with their works. This conflation of the truly formalist or "concrete" abstractionists with those who did wish to convey meaning blinded Schapiro to Vitalist content in biomorphic Modernism, encouraged him to believe that all abstract artists had rejected the "natural,"94 and set up a straw man that it was then easy for him to knock down. He then read the rise of biomorphic Modernism and Surrealism as a consequence of the current pessimism of Western society, forgetting that such work had been produced at least since the mid 20s:

During the [present] crisis the mechanical abstract styles have become secondary. They influence very few young artists, or they tend toward what Barr calls "biomorphic abstraction," of a violent or nerv- yous calligraphy, or with amoeboid forms, a lowgrade matter pulsing in an empty space. An anti-rational- ist style, Surrealism ... becomes predominant, and beside it arise new romantic styles....95

By positing a merely contextual, political significance to emergent biomorphic Modernism, Schapiro’s article, in dialec-
tical relation to Barr's book, further served to exclude from the dominant discourse any discussion of content in Modernism.

f. Organic/Biomorphic; Curvilinear/Crystalline

Though Barr used them easily and interchangeably, "organic" and "biomorphic" are not unproblematic terms. The use of "organic" goes back to the mid 18th century and is rooted in Nature Romanticism. The term was probably first applied to art in the early 19th century, in relation to architecture. Properly used, "organic" implies the genesis of the object it is applied to, as well as its structure, both senses of which refer to a biological metaphor, and imply a holism, that is the idea that the whole amounts to more than the sum of its parts. "Organicism," an intellectual tradition going back to the 18th century, intersects with biocentrism in the early 20th. Its relations to Vitalism have been controversial, and some, like the biological philosopher Hilde Hein, have argued that Vitalism and Organicism are, despite their apparent differences, identical. As Donna Haraway puts it, "Hilde Hein argues that Organicism must be considered a modern variant of vitalism and that the old categories of mechanism and vitalism are still very much relevant to the contemporary biological scene."

The *Oxford English Dictionary* defines "biomorph" in Haddon's anthropological sense as a "decorative form representing a living object," while *Webster's* defines "biomorphic" in a manner which suggests more its usage by the American Modernists as "resembling or suggesting the forms of living organisms." As we have seen with Barr's identification of the biomorphic/organic with curvilinearity in opposition to "geometric abstraction" and its rectilinearity, in common usage "biomorphic" and "organic" had by the 1930s taken on the connotation of curvilinear as opposed to rectilinear or orthogonal form. As demonstrated by Herbert Christian Merillat's text, this is the popular understanding of these terms,
despite the evident tensions:

Visible nature, by and large, favors curves. There are, to be sure, some natural angled shapes, especially in inorganic matter -- in certain geological formations, for example, and in mineral crystals. And, at a microscopic level, we find such angled forms as living diatoms and the structure of inorganic snowflakes. Generally ... when we see with unaided eyes a true straight line or an angular flat form or a solid with plane surfaces meeting at angles (a polyhedron), we can be fairly certain that humankind has been at work.101

Goldwater also defined the category in this formal sense:

The curve, whether of line or surface, is basic to [all these biomorphic sculptures]: it constitutes the sole, or the dominant, formal language employed. Besides, these forms, whether they define more or less stylized representations, or are altogether nonrepresentational, are seemingly more organic than geometric. Either they are obviously derived from the shapes of living forms, or, being abstract, they still have the tightness, the tension, the apparent pull from within, limiting extension, that brings to mind organic structure.102

This is an old prejudice. Not only did artistic styles based on plant and animal forms such as the Rococo and Art Nouveau feature curved forms, the early-19th-century German Naturphilosoph Lorenz Oken theorized that the ideal shape of living things, even at the most microscopic level, was the sphere: "The sphere was the most nearly ideal of the forms of transcendental morphology, and, according to that system of beliefs, its shape served to distinguish living nature from crystal growth."103 This view was confirmed in the best-known exhibition demonstrating the scientific image analogy, Kunst und Naturform, held in Basel in 1958. Writing in the book published on the basis of the exhibition, Georg Schmidt observed that the geometrical abstract paintings in the show tended to correspond to microscopic photographs of inorganic matter, and that the "tachist" abstract or "Non-Representational Painters" (i.e. mostly post-war biomorphic Modernist paintings) resembled the organic micrographs.104
And yet Ernst Haeckel, the most important popularizer of scientific illustrations among artists and their promoter as normative models of art production, had complicated this picture in two ways. First, in his crucial album *Kunstformen der Natur* of 1899-1904, he showed how exquisitely geometric life forms such as diatoms could be at the microscopic level, even if such geometry itself favoured linear geometry inscribed into globular configurations. For another, as a radical Monist who preached "the essential unity of organic and inorganic nature," he was concerned with the blurring of boundaries, the establishment of a continuum, between the "organic" and "inorganic," the "animate" and "inanimate," by demonstrating the commonalities of lower life forms with crystals, particularly structural and formal commonalities. "We cannot draw a sharp line of distinction between these two great divisions of nature, any more than we can recognise an absolute distinction between the animal and the vegetable kingdoms, or between the lower animals and man." Late in his career, as a Monist with decidedly Vitalist, indeed Pantheistic inclinations, he was concerned with explaining these similarities by positing animating "souls" both in organic and inorganic phenomena. As Holt points out, in his 1917 book *Kristallseele* Haeckel "concentrated on the 'interior qualities' of crystals and extended [his] 'chain of unity of sensation' to the inorganic world. [He] referred to 'atomic souls' in inorganic matter such as crystals. Crystals were, he wrote, similar to organic forms of life in that they experienced birth, growth, death, sensation and all 'other manifestations of life-forms.'" As Haraway puts it: "If one sees the world in atomistic terms ... the crystal is a smaller, simpler version of the organism in a nearly literal sense. If one sees the world in terms of hierarchically organized levels, (the organism becomes the primary metaphor), the crystal becomes an intermediate state of organization. There is no longer a continuum of forms all based on a corpuscular foundation, but
rather a discontinuous series of 'organisms.' If one accepted Haeckel's Monism (and as we shall see, his Monism or versions of it were espoused by other scientist-philosophers influential on Modernists such as Wilhelm Ostwald, Ernst Mach and Raoul Francé), the orthogonal, as opposed to curvilinear forms of crystals could be seen to be "biomorphic" as well. Monism called into question the curvilinear/orthogonal opposition associated with the organic/inorganic split. This must be borne in mind as one navigates the waters of biomorphic Modernism and the associated, often fluid positions of materialists and Vitalists along the Monist-Dualist continuum. A Monist Vitalist critic such as Kállai was unwilling to distinguish theoretically between curvilinear and orthogonal abstraction as Barr was, even if the examples Kállai cited when discussing Bio-rómantik were, by and large, "curvilinear." He preferred to conceive of this dichotomy as a creative dialectic. Lisa Phillips has written cogently of this problematic:

The legitimacy of the terms we use to describe this world needs to be continually reevaluated ... the term "organic" is most frequently associated with plants and animals in art, it typically denotes biotic, botanical, and biomorphic configurations as opposed to "geometric" ones. But, as we now know, living matter is composed of particles that can often be geometrically described.... There are also organic forms in the non-natural world: biological and geometric models fuse in machine forms and in organized systems such as information or electronic circuit theory, cybernetics and systems analysis. It is clear that what we now need is an expansive definition of organic, one that refutes both the notion of a stringent boundary between nature and culture and the archaic dichotomy between the organic and the geometric. Only then will we be able to follow the development of organic abstraction in America ... how each generation has responded to our changing understanding of the natural world.

With the emergence of fractal geometry in the late 1970s and 1980s, the last nail in the coffin of the idea that the "geometric" is opposed to the "biomorphic" (organic) has been
inserted. A paradigmatic "bioromantic" artist such as Arthur Dove, consequently, produced works which incorporated an integrated understanding of the two categories, work which as Sherrye Cohn puts it, are "expressive evocations of the geometric order which lies behind organic form."\textsuperscript{113}

g. MOMA: Form over Content

Barr's privileging of form over content did not go unnoticed in the Unit 1 circle, in which Read's \textit{geistesgeschichtlich}, iconographic and "Northern" approach was supported in opposition to Fry's francocentric formalism.\textsuperscript{114} The review in \textit{Axis of Cubism and Abstract Art} by J. M. Richards made it plain that -- unlike even the Marxist Schapiro -- the British Modernists were critical of a purely formal approach to understanding art-making and taxonomizing it: "Mr Barr has engaged himself in placing each artist in his right pigeon-hole but he is apt to give the impression that by doing so he has done all that is necessary to explain the artist's existence."\textsuperscript{115}

Herbert Read was noticeably absent from this debate.\textsuperscript{116} We have seen that though aware of the link between biomorphic Modernism and Vitalism, Read's commitment to Worringar's problematic writings seems to have prevented him from formulating this link into a category of artistic production until 1951, and from discussing it until 1964. This effectively left Barr's formalist framing of biomorphic Modernism unchallenged within the Modernist discourse. The rise to hegemony of post-war American formalism, and within it, of Barr and his organizational schema of Modernist art, further ensured that it was Barr's formal definition of "biomorphic" and "organic" abstraction that was canonized.

Barr's conflation of "biomorphic" and "organic" was reproduced in the MOMA's publications, spawning a plethora of terms referring to biomorphic Modernist art. Thus, Barr's negative nomination "Non-Geometric Abstract Art" of 1936 was rendered positively by Eliot F. Noyes for the "Organic Design
in Home Furnishings" competition of the MOMA in 1940-41, won by Eero Saarinen and Charles Eames. This term was in turn adopted by Robert Goldwater as "organic abstraction" for the 1949 MOMA exhibition and catalogue Modern Art in Your Life, and switched to "biomorphism" in his 1969 What is Modern Sculpture? In the early 50s, Barr's successor at the MOMA, Andrew Carnduff Ritchie, also employed the term "organic abstraction" in describing biomorphic Modernist work, but he introduced related categories, Worringerian oxymorons such as "Naturalistic Geometric" and "Expressionist Biomorphic," which demonstrated the multiplicity of categories and terms possible within the formalist paradigm as much as it did Ritchie's happy indifference to Worringer.

Barr recognized that many of the artists working in the biomorphic style in the 1920s were associated with the Surrealist movement, particularly with Surrealist production usually referred to as "automatic," and by 1945 Parker Tyler was writing of Matta as "a surrealist of the biomorphic school." In 1968 Barr's successor as Chief Curator of Painting and Sculpture at the MOMA, William Rubin, referred to "automatic" Surrealist art simply as "organic" or "biomorphic" Surrealism, but like Barr -- and unlike Tyler and Dorner -- he left matters at that: a vague, if accurate, comment on stylistic affinities.

However, as the writings of critics such as Kállai, Read, Grigson, Tyler and Dorner, the artists' own texts, and as the secondary literature on these painters and sculptors testifies, a biocentric intention to employ biomorphic forms as signifiers of natural forces and processes was central to many of the artists. But with few exceptions, this aspect of the work tended to be underplayed or ignored, and until the 1980s historians have done little more than invoke "automaticism" to explain the stylistic commonality of such art.

The use of a fully "automatic" method has, however, been called into question, and the organic, process-based
metaphor of artistic production latent in the artists' claim to "automatism" has more often than not been downplayed. As the literary critic Renato Poggioli noted in 1968, "[c]ertainly rarest of all exceptions is the case of an avant-garde artist or critic who recognizes the avant-garde's affiliation with romanticism as a central factor." Poggioli rightly cites Herbert Read and his 1936 article "Surrealism and the Romantic Principle" as such a rare exception. But, as he points out, Read proposed an essential rather than a historical connection between the two. Poggioli does not discuss the German art historian transplanted to America, Alexander Dorner's writings of he 1940s, in which he denoted the "abstract" or "automatic" Surrealists simply as as "Romantic Surrealists," distinguishing them from the "Retrogressive [i.e. 'verist'] Surrealists" who insisted upon retaining traditional perspectival space, which according to him denoted an outdated conception of "Being," rather than the curvilinear (read: "biomorphic") style derived from Romanticism, which functioned as a "hieroglyph" for an up-to-date world view of "Becoming." Dorner's schema, despite its publication in Wittenborn-Schultz's "Problems of Contemporary Art" series, however, did not enter the critical cannon. It was not until the early 1990s that, in the work of Christa Lichtenstern and Elizabeth Legge, and in a 1994 exhibition catalogue published by the Sprengel Museum in Hanover, the close relationship between the biomorphic Surrealist art of Hans Arp, André Masson and Max Ernst, and the intellectual heritage of German Nature Romanticism -- particularly Neo-Vitalism and the organicist topos -- were treated rather than merely noted. It should also be said that it is only by force that some artists often categorized as "Surrealist" fit into that category.
h. Kállai and Bioromantik

Grigson, Barr, and those involved with the 1935 Lucerne exhibition were not the only ones to frame this art early on. They were preceded by Walter Benjamin and Ernő Kállai, paralleled by the Swiss critic Carola Giedion-Welcker, and followed by the German transplant to America, Alexander Dorner. Following Walter Benjamin's brilliant, almost offhand observations of 1928 made in his review of Karl Blossfeldt's photographs, Kállai was the first critic to systematically theorize what was in effect biomorphic Modernist art as a category. As mentioned above, Kállai's framing of biomorphic Modernism was rooted in the thinking of the biocentric philosopher Ludwig Klages, who saw the world as evincing a "struggle" between intellect and soul, i.e. Seele and Geist, an awareness of our rootedness in "nature" on the one hand, and what Kállai termed the "profane trinity of rationalism-materialism-utilitarianism," on the other. Kállai constructed what he saw as the valuable, Modernist art of his day as a dialectical pair; a nature-aware or nature-depicting art he termed Bioromantik, and a Constructivist Technoromantik which expressed the "technoid" and "constructive drives" in us, a pairing discernable already in his writings of the early 1920s.

Like Grigson's, Kállai's views were based in a biocentric worldview and were formulated with an awareness of the naturalomorphic, particularly scientific image analogy, which, as I will show in Chapters Three and Four, was pioneered by Kandinsky, and then by Lazar El Lissitzky and Moholy-Nagy within the biocentric Constructivist discourse of the mid 1920s. Kállai's first realization of the scientific image analogy took place in 1929, within an exposition whose juxtapositions of all kinds of photographic imagery, artistic and non-artistic, were determined by Moholy-Nagy according to the precepts of his "New Vision," a pioneering effort at visual education which -- even if unconsciously -- underlies Barbara Stafford's attempts today at developing a "pictology," a visual rather than a
While the polar structure was there from the start, and he had been developing these ideas since at least 1926, Kállai published "Bioromantik," their most cogent articulation, in the trilingual Modernist Bratislava journal Forum in 1932. In this article he proposed that there existed among contemporary artists a trend he termed Bioromantik, related to but superseding the 19th century Romantic and later Expressionist traditions. While translatable as "Bioromanticism," Kállai would have resisted a possible implication of this, the only feasible English rendering, that Bioromantik constituted a self-conscious "movement":

Bioromantik should not mark the christening of a new "ism" ... we are concerned here simply with the explication of the situation wherein stylistically very different phenomena of modern art are bound by a deeper unity.

He characterized this trend as consisting of art whose forms, where abstract, are reminiscent of or simplifications of organic nature: "die Kunst der geistigen Wesenschau braucht dem Figuralen keineswegs aus dem Weg zu gehen, um zu ihren Zeichen und Bildern zu gelangen. Und sind es keine Figuren, die auf den Bildern von Hans Arp ... geistern, so sind es doch Figurationen, die auf Gestaltmotive tierischer und pflanzlicher Organismen zurückgehen." He also characterized this art as reflecting aspects of nature not normally visible such as the microscopic, the cosmic, and the undersea. Parallel to the Surrealists and their concern for the marvellous and the bizarre, Kállai remarked on the effect that the view to another world had on the artists: "Die Schranken unseres Bewusstseins grenzen nirgends dichter und erschreckender an das Jenseits als beim Anblick des Mikrokosmos. Es liegt ein Schock in diesem Anblick, den man mit der gleichen Unmittelbarkeit nur noch vom Rätsel des Makrokosmos, der Zeugung und des Todes empfängt." Kállai noted that such art often echoed forms seen in scientific imagery. He saw such work as
picturing or unconsciously reflecting biocentric Lebensphilosophisch, Neo-Vitalist, Monist and neo-Pantheistic concepts such as a pervasive life force; the unity of spirit and matter; the decentering of the human species; the Goethean idea of Urform; what, after Hans Prinzhorn, the palaeontologist Edgar Dacqué and Carl Gustav Jung, Kállai termed the "demonic" forces of nature; and the "new," i.e. post-Darwinian, neo-Lamarckian, ecological biology. Thus, while emphasizing its visualization of the "demonic" in nature, Kállai was also eager to point out the ways in which the biocentrism underlying Bioromantic art was supported by the latest results of science, from genetics and Prinzhornian psychology to Dacquéan palaeontology.137

In delimiting Bioromantik, Kállai's approach -- like Grigson's, Read's and Erni's -- was antithetical to Barr’s bounding principle for biomorphic Modernism. He remarked on the "eigenartigen Formzeichen der Bioromantik," but rather than these formal affinities, Kállai focused on the thematic commonalities of the artworks, on the biocentrism of the iconography or of his readings of the abstract forms, and on their origins in Nature Romanticism and what he and others termed the "new biology."138

As we have noted, this thematic/genetic delineation of Bioromanticism, and his own biocentrism, resisted the identification of organicism with curvilinearity, allowing in principle -- as in these antithese synthese -- for the inclusion of, for example, crystalline geometric abstraction within the confines of his category if he saw such work as reflecting deep natural structures and forces. "Es wäre verkehrt, wollte man den geistigen Drang der Lebensergründung in unserer Kunst nur unter bestimmten stilistischen Voraussetzungen gelten lassen."139 Yet even though Kállai remarked on the wide stylistic range of the art, in practice all of the artists and their works which Kállai cited in "Bioromantik"140 and most of these cited in other relevant texts were characterized by a
biomorphic abstract style or biomorphic imagery within a Modernist aesthetic discourse. In effect these works described the style of "non-geometric abstraction" as delineated by Barr. It was this biomorphic, curvilinear understanding of Bioromantika which came into popular usage in Kállai's Budapest circle in the late 1940s, an understanding not challenged by Kállai himself. In practice, Constructivism was accommodated by Bioromantik's dialectical Other, what he termed "Technoromantik."

Kállai's achievement was remarkable. Not only was he the first to systematically frame biomorphic Modernism, he was -- along with Kandinsky, El Lissitzky, Karel Teige, Benjamin and Moholy-Nagy -- an early Modernist formulator of the naturamorphic analogy, a topos then recapitulated by critics such as Grigson, Read, György Kepes, Leo Steinberg, Oto Bihalji-Merin, Georg Schmidt, Georg Schenk and René Huyghe. Though like Read, he tended to privilege an essentialist "psychobiological" explanation for the phenomenon of biomorphic Modernism, in "Bioromantik" Kállai suggested that biomorphic Modernist artists were drawn to scientific imagery, suggesting its direct influence:

Das Bewusstsein um die irrationalen Verstrickungen des ichs mit dem Keimwesen und -Strukturen der Natur fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind für die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei.

This anticipates Brian O'Doherty's call for research into this subject by 40 years. Kállai recognized the importance of biocentric ideologies in the genesis of such work; he did not make the separation between painting and sculpture in this connection; he pointed out the links with the "new biology," he took the importance of both art and scientific photography into consideration; and as early as 1932 he coined the term Bioromantik to refer to the tendency. In short, he recognized a complex cultural pattern while in the thick of its develop-
ment, he defined it, and he named it. His writing is the starting point for my work.

i. Giedion-Welcker's "Organic Elementarism"

Married to the Organicist Modernist historian Siegfried Giedion, and a friend of Arp, Klee, Moholy-Nagy and other prominent Modernists, Carola Giedion-Welcker is an under-appreciated critic and historian who came from an intellectual background similar to Kállai's. She was -- along with Kállai and Grigson -- the first to systematically discuss the concern with nature and organicism of sculptors such as Brancusi, Arp and Moore, and painters such as Ernst, Klee and Kandinsky. In 1934 she wrote of a "return to the primal phenomena of life," of an "organic elementarism" in contemporary sculpture:

Modern plastic art wants to reconstitute the primal qualities, it wants to go back to the elementary sources in order to form generally valid symbols of time, the world and nature from out the simple viewpoint. The composition of volume and movement, the relations of mass and material within an elementary organic or stereometric world of bodies are the fundamental points of departure.

As early as 1937, Giedion-Welcker published a monograph on Modernist sculpture, Modern Plastic Art, which was the first of its kind in English. The book was published in a revised edition as Contemporary Sculpture in 1955, the twelfth volume in Robert Motherwell's "Documents of Modern Art" series, and so entered the American discourse as an alternative to the formalist view of sculpture.

Giedion-Welcker saw modern art much as Kállai did, as a mirror of geistig developments of contemporary culture. She employed the term "Organic Elementarism" to describe, in effect, biomorphic Modernism. She stressed in her writing the development of some Modernist sculpture "in the direction of man's union with all creaturely life," and as a "recollection of a mysterious participation of man with nature and the
She also wrote of the "symbiosis of biological growth and technological construction" in modern art and design, an art "which encloses nature and civilization in pure forms of energy, [and which] mirrors our dynamic conception of the world, whether its shapes incorporate the basic principles of growth in nature, or express in constructions the mind of man again on the march into the future."  

In Surrealism she saw "a continuously active process of metamorphosis.... All biological and psychical frontiers are blurred: men and beasts, animate and inanimate objects, converge and coalesce to proclaim the sovereign domination of transience."  

Giedion-Welcker did not synthesize these thoughts into a conceptual framing of a nature-centric trend in Modernist art as Kállai had done by 1930. Unlike her, however, Kállai -- despite Max Bill's help -- was unsuccessful in his attempt to incorporate his critical perspective into the -- by then dominant -- American discourse. Had he done so, or had Giedion-Welcker developed a category as Kállai had done and included it in her book, the European thematic framing of biomorphic Modernism might have competed with Barr's formal one.

j. Dorner's "Expressive Curve"

Another European who published in America after the war, Alexander Dorner focused in his writings on what Giedion-Welcker referred to as the "sovereign domination of transience" in his 1947 theoretical account of Modernist art, which he "illustrated" with a study of the biomorphic Modernist artist Herbert Bayer.

This whole Western drive toward the Absolute, toward a check on temporal change must be seen as a provisional deliverance from the anxieties of a magical universe, from a fear of an uncontrollable world rife with energetically changing objects. By realizing this we can also realize why the modern transition to a wholly energized world has been inevit-
able. Yet it would be quite wrong to speak here of a mere relapse into magical notions. The vital force of the universe consists in its complete irreversibility, and life never tolerates a relapse. The modern road leads across the rigid stretch of three-dimensional reality toward a stronger and more profound unity, toward a growth open to autonomous change. With this Bergsonian neo-vitalistic perspective in mind, it comes as no surprise that as director of the Landesmuseum in Hannover it was Dorner who in 1926 commissioned the biocentric Constructivist Lazar El Lisstizky to design a gallery for abstract art, and then in 1930 requested from Moholy-Nagy plans for a "Raum der Gegenwart," a permanent gallery demonstrating the "New Vision." While El Lissitzky's project was realized in 1927, Moholy's was not due to the Nazi rise to power in 1933.

Unlike Kállai and Giedion-Welcker, however, for Dorner, form was crucial. Indeed he framed his discussion of modern art (particularly Biomorphic Surrealism) in terms of a tradition of the "free curve" in art extending back to the Romantic age. (Figs. 1-2 and 1-3) As we have seen, he saw the "free curve" as a "hieroglyph" for a dynamic worldview of "Becoming," as opposed to the more traditional view of a set state of "Being."

As 'expressive line' [the free curve] began more and more to dissolve traditional spatial form with its overlapping contours. This may be said of all stages of Romantic evolution, of Fuseli ... to Kandinsky and the Romantic Surrealists. The Romantic expressive line left behind the old spatial contour and developed into a new autonomous form, which now hovered strangely within the spatial frame. The picture began to acquire a new and disquieting mobility. Each Romantic picture is a movement leading from perspective reality to the new reality of an immobilized formal urge. Yet neither [the Romantic artists nor the Impressionists] were able to push that liberating advance toward a changeable world concept far enough.... They prepared the milieu out of whose tensions grew the new movements which abandoned the remnants of the absolute static cause and pushed forward into the greater depth of a
self-changing universe. The pioneers of this thrust are the abstract artists and their offspring, the modern realists.\textsuperscript{164}

Dorner recapitulated Kállai's arguments about a new "realism"\textsuperscript{165} when he saw this development as leading towards an art which was "realistic" though it was "abstract" (i.e. non-mimetic) because it reflected reality as it was now understood. However, by affording equal weight to questions of form and meaning, Dorner demonstrated that a balance could be had between the more hermeneutical European approach (as seen in Kállai and Giedion-Welcker) and Barr's formalism.

k. Contextualism and its Limits

Kállai's, Giedion-Welcker's and Dorner's contextualism is necessary to understanding the circumstances of the production of artworks and their relations to the culture as a whole. From Burckhardt through Dvornik, Strzygowski, and Panofsky, to Gombrich and Crary, art historians have held that visual culture is not to be understood without reference to the intellectual and social contexts of its production and reception, and that it is multifarious -- none of its discourses can be satisfactorily understood in isolation from the others.\textsuperscript{166}

"[T]he history of ideas flows freely through the membranes that compartmentalize the various disciplines comprising a culture," as Barbara Novak put it in Nature and Culture.\textsuperscript{167}

The iconography of an artwork, the themes the artist wished to communicate, and the ideologies which informed its production continue to constitute bases for historical interpretation.

As Kubler has pointed out, however, an exclusively iconographic/contextual approach has its costs: "the price has been high, for while studies of meaning received all our attention, another definition of art, as a system of formal relations, therefore suffered neglect."\textsuperscript{168} Even a critical, cross-disciplinary and contextual iconology cannot attempt a sufficient account of why artworks look as they do. Jean Molino has
written of this in his introduction to Focillon’s book: "Rather than seeing ideas as giving rise to forms, we must recognize that they only color them, that they surround them without ever creating them." ¹⁶⁹

Nor can iconology offer interpretations of the visual and formal meanings and knowledge conveyed by artists, for it tends to leave out of the equation the autonomous logic of material and visual production, what Henri Focillon termed the "life of forms in art." Formalism is indispensable to understanding and codifying the "language of vision."¹⁷⁰ formal affinities between works are to be seen as having significance, and so the development of a critical language of visuality deriving from the formalist tradition is to be valued. It is in recognition of this value that I take seriously Barr’s formally-defined category, while it is formalism’s neglect of this self-same category that makes space for my work.

In practice, as did Dorner, many art historians have combined formalist, thematic and contextual methodologies into their writing.¹⁷¹ "We are discovering little by little all over again that what a thing means is not more important than what it is; that expression and form are equivalent challenges to the historian; and that to neglect either meaning or being, either essence or existence, deforms our comprehension of both," writes Dorner’s contemporary Kubler.¹⁷² Kubler’s teacher Focillon has given poetic expression to this complexity and to its dangers:

Whenever we attempt to interpret a work of art, we are at once confronted with the problems that are as perplexing as they are contradictory. A work of art is an attempt to express something that is unique .... But it is likewise an integral part of a system of highly complex relationships ... flowing together within it the energies of many civilizations may be plainly discerned. And a work of art is ... both matter and mind, both form and content.... A work of art rises proudly above any interpretations we may see fit to give it; and although it serves to illustrate history, man and the world itself, it goes further than this.... From the above it is easy to
see how luxuriant is the wilderness of criticism that may spring up beside a work of art: flowers of interpretation that do not adorn, but completely conceal.

1. From the Dialectic to the Frame

We have seen that Barr, Goldwater and Rubin emphasized the forms but could not repress the iconography of the art they referred to as biomorphic and organic. We have also seen that though Kállai tended to approach the subject thematically, the examples he gave of Bioromantik -- a category for which he resisted stylistic definition -- in effect described Barr's, Rubin's and Goldwater's category. What is true of Kállai is true also of others such as Grigson, Giedion-Welcker and, as we shall see, Philip Ritterbush, Charlotte Douglas, Jennifer Mundy and Gladys Fabre. We will see in the literature review that -- with some oversimplification, and the notable exception of Dorner -- historians and critics have been approaching the equivalent phenomenon from these two broadly-defined methodological angles. Rather than thinking in terms of pure formalism, or of mere iconology or Kunstgeschichte als Geistesgeschichte, I shall, in framing this art, also employ that commonly-used synthetic methodology which combines these.

But how does one begin? How does one enter the dialectic of "form and content"? Historical "phenomena" are not simply "things in themselves" out there waiting to be named and discovered. The past is a vast, amorphous mass, our memory (or forgetting) of the "quantum soup" of material reality. It is constantly reframed and reinterpreted; it is in constant need of reframing and reinterpretation. It is, in fact, constantly being constructed mentally, if not actually constituted in an ontological sense, as some followers of "psychobiology" or "psychovitalism" discussed in Chapter Three held. In order to write history, conceptual frameworks, including taxonomical schemes, must be employed to structure the past, even though they inevitably involve reduction and distortion. Deciding on
a frame to employ in conceptualizing the phenomena one notices is a long and complicated process. It is like being near-sighted, and seeing something hazily in the distance, but not quite being able to make it out. During this work of what amounts to seeing rather than merely looking, one must constantly be willing to learn new facts and entirely new fields of study; to be, like a patient in an optometrist's chair, fitted with a succession of different lenses, in an attempt to find one, or a combination, which offers the clearest view of these initially hazy patterns. Historiographic innovation often involves the formulation of new frames and taxonomies, the determination of new optometric prescriptions so to speak, which make aspects of the past previously obscure or invisible, clear or visible. Depending on your epistemological orientation, it is either the "fit" of any new frame to the "actual" past, or its "usefulness" to the agendas, stated or hidden, of the historian and his culture, which determine judgements of the frame's success.

Implicit in the above discussion is my feeling for Nietzsche's "profound aversion to reposing once and for all in any one total view of the world," a view which would legitimize the single "correct" frame or interpretation. As Jon Snyder writes

In the era of philosophical nihilism nothing can stand outside the realm of universal equivalence or lay claim to 'authenticity'; for every aspect of the world -- even Being itself -- is forever subject to further revaluation or, to put it another way, to the interpretive process through which the value that has previously been assigned to something is exchanged for another equivalent value ... This experience, which may be called postmodern ... may be broadly defined as the infinite interpretability of reality.

Applied to history writing, Mark Roskill has reformulated this insight as "there can be no avenue to truth, or ultimate key to meaning, apart from the history of successive interpretations made from particular positions." Such positions are,
of course, a reflection of the cultural practices of a particular place and time. However, a recognition of history and interpretation as culturally contingent conceptual constructs does not preclude their ability to potentially shine more or indeed less light on the phenomena they attempt to mirror or explain. But there are other pressures besides cultural or ideological ones which come into play in the writing of history. Among these is the practical, aesthetic and pedagogical one of working the sheer volume and complexity of historical phenomena into some suitably coherent form. Simple frameworks enable ease of comprehension, while not-so-simple ones can better model the complexity of "reality." The trick is to find an optimal balance between complexity and ease of comprehension. Although history necessarily involves the construction or adoption of frames, the aptitude of a given frame to make visible the past and enrich our understanding of it remains one important measure of its success. Again, the demands of fidelity to that past are part of the equation. Finally, as with glasses, one must be able to discard a conceptual frame if our vision has altered. As Kubler writes of his "formal sequences": "In the long run, the conception of a sequence may serve as a scaffolding which it may be convenient to discard later on, after it has given access to previously invisible portions of the historical edifice." What I am arguing for is a position which acknowledges that conceptual frameworks are culturally contingent, that they fulfil historically specific needs in ways that the historian does not always realize, that they must take into account the competing requirements of complexity and ease of comprehension, and that they are necessarily provisional. But my epistemology is founded on the (no doubt naive) Husserlian belief that such frameworks do help us to see what is "actually" there.

The formulation of a frame and its application to the past, are my principal assignments here: I see the construction of an art historical category encompassing both stylistic
and thematic/historical concerns -- the marriage of biomorphic Modernism with Bioromanticism, as it were, as my goal. In other words, I see my aim as the establishment of a thematically-informed biomorphic Modernism or, conversely, a stylistically-informed Bioromanticism. Jack Burnham warns that "[b]y nature art historians are pattern-creating creatures, and patterns abound in art history; but like so many broad conceptions, they begin to show serious flaws when applied to specific cases." However, I note that Burnham himself acted as a "pattern-creating" historian, that such activity is necessary. I am aware of the dangers involved with the establishment of art historical categories, dangers such as the obfuscation of intentions and effects and -- to paraphrase Kálai -- the addition of yet another label to the available catalogue. Nevertheless, I feel that the lack of such a category has hindered our understanding of Modernist art -- that, in Hauser's terms, it is possible to define a nature-centric biomorphic style of interwar art within which "the artistic coherence of the works concerned is greater than their divergence from each other." This lacuna in the canonical taxonomy of trends has in effect "orphaned" major figures such as Brancusi, Klee, Moore, Hepworth, Arp and the late Kandinsky, and has led to the neglect or denial of the expression of nature-centric ideas in 20th-century Modernist art. Accurate art historical labels are crucial not only to incorporating art objects into the mainstream of art historical discourse, to making them visible, but also to fully understanding them. I would maintain that the "canonization" of such a category would result in net gains to the discipline.

m. Movement, Trend or Style?

As we have seen, Kálai avoided the implication that Bioromantik was an art movement. Renato Poggioli has pointed out that "all artistic and cultural manifestations, from romanticism on, regularly tend to define and designate them-
selves as movements." Why then this resistance to conceiving of Bioromantik as an "ism," i.e. as a "movement" in art? The reason is plain: Poggioli refers to self-designation, that is self-awareness, an element -- as Kállai would have known best -- clearly lacking here. "Movement" implies a self-aware group of artists who shared personal or professional associations and friendships, a "style" of art, a set of aesthetic, political, or other agendas or goals, and some kind of contemporary designation, which was either self-chosen or appended, but eventually accepted -- even if only implicitly. By this definition, the category "movement" does include, as Poggioli asserts, most of the canonical Modernist artistic groups from the Romantics onwards such as the Realists, Impressionists, the Nabis, the Symbolists, Fauves, Cubists, Futurists, Dadaists, Expressionists, etc. Bioromantik does not belong on this list because it constituted neither a single coherent group bound by personal or professional affiliations (though of course there were bonds of friendship between many of them, and there were groupings such as the Unit 1 circle), nor did it have a commonly accepted epithet at the time. Others who have addressed this question agree. Goldwater, as we have seen, referred to it as a tendency, while Burnham writes:

All these ... sculptors have made strongly vitalistic statements concerning their methods and intentions. However vitalism as an [artistic] movement or a cohesive expression of belief never crystallized.... As a concrete expression of the natural environment, vitalistic sculpture contains certain common features. It copies nature through example and metaphor, not primarily through mimeticism. Whatever symbolism vitalism employs is related to the growth properties of materials, those at least which can be made visible. Vitalism generates an intuition that life is not literally, but plastically, present in a sculpted object.... As an idea, vitalism had no boundaries; it remained a personal declaration rather than a formal aesthetic.... As a contagious influence [beginning with Rodin] the vitalistic mystique spread among sculptors almost religiously. As with all dogmas, its propagation depended upon the fact that it went unanalyzed, and
to a great extent, undetected.\textsuperscript{183} Bioromanticism resembles more what Poggioli refers to as a "current" or "tendency," or what we have designated as a "trend," all of these fluvial and vectorial metaphors:

["Current"] seems especially to allude to vital forces, intuitive and unconscious elements, tendencies rather than groups. As a historical term used, so to speak, \textit{a posteriori}, it underlines phenomena of cultural history which seem to share characteristics of natural history. Thus its validity is limited to generalized and unstable orientations, cultural situations more in potential than in execution, to tendencies in a fluid or raw state ... it indicates environmental factors only translatable with difficulty into terms of historical consciousness and theoretical awareness.\textsuperscript{184}

Such a time-based view of history naturally lends itself to the construction of narrative structures. As argued by Hayden White, Ricoeur and others,\textsuperscript{185} narrative historical writing is both valuable and appropriate as a means of communication:

It is the success of narrative in revealing the meaning, coherence, or significance of events that attests to the legitimacy of its practice in historiography. And it is the success of historiography in narrativizing sets of historical events that attests to the "realism" of narrative itself.\textsuperscript{186}

While the material of Bioromanticism is too complex to fit into a single narrative structure, I have written some of the chapters in a narrativized mode. Where there are divergences in the narrative important enough to warrant inclusion, I employ the tried-and-true device of extended endnotes as suggestions of alternative courses the narrative might have taken, or as synchronic extensions of the text. In reverting to this way of structuring the text -- for the bloody purging of discursive foot and endnotes has been the editorial fashion in recent years -- I acknowledge and anticipate with pleasure the advent of hypertext as a dominant textual form.\textsuperscript{187}

As a term used by me \textit{a posteriori}, Bioromanticism resembles, furthermore, Walter Friedländer's, Max Dvorák's and Arnold Hauser's designation of Renaissance art of the 16th
century after about 1520 as "Mannerism." In other words, it is a historiographic construct, though in this case it is a construct adapted from one first proposed by a contemporary critic, and this lends it a higher degree of legitimacy.

Kubler has written of the difficulty of discerning trends in the art of an age of which we ourselves are a part: "Unless he is an annalist or a chronicler, the historian communicates a pattern which was invisible to his subjects when they lived it, and unknown to his contemporaries before he detected it." While Kállai was among the rare critics to be able to discern a contemporary trend which was not a self-aware movement, my own position is privileged. Hindsight allows me a more complete application of the frame to individual cases. Also, the time that has passed allows for greater clarity:

The wide range of systematic ages among different classes at the same moment always makes our own present seem like a complicated and confusing mosaic, which resolves into clear, simple shapes only long after it has receded into the historical past. Our ideas about Middle Minoan time are clearer than our ideas about Europe between the World Wars....

The hindsight our present-day perspective allows us tends to fuse the examples of art Kállai cites into a greater stylistic unity than he would have allowed. The correction of Kállai's view that Bioromantik did not describe a stylistic unity allows us to reduce our goal to the mapping out of a pattern of association between biocentrism (including psychobiological views), biomorphic Modernism, and the naturamorphic analogy. In doing this, like Hauser, we emphasize the common characteristics of a static structure of Bioromantik, of Bioromantik as a language, or a system, rather than its evolutionary development. Bioromanticism becomes, in the complex sense Schapiro defines it, a style.
This suggests that it is not sufficient to apply fluvial metaphors alone to this historiographic construct. The writing of a narrative is not enough. It becomes useful to introduce Ferdinand de Saussure's distinction between discussing historical phenomena diachronically (chronologically, sequentially) and synchronically (thematically, simultaneously). A synchronic analysis conceives of Bioromanticism not as a river, but as a system, or a complex pattern; a static or dynamic structure; an oceanic ecosystem, if you will. Both modes of analysis are necessary to the writing of well-rounded history. Evoking Kubler's oceanic metaphor of the Introduction, I hope to engage in both vertical synchronic studies of oceanic sectors and the ecosystems within them and horizontal diachronic investigations of oceanic currents which can best be related through the narrative form.

3. Literature Review

a. "The repression of Neo-Romance has a history"\(^{192}\)

Given that it was the formalist American line of art history which constituted biomorphic Modernism as a category, it is curious that -- as far as I am able to ascertain -- only one critical study has ever been written on the subject by an art historian operating within that tradition, a 1973 dissertation by Robert Metzger which focused on American art.\(^{193}\) While it was this line which constituted the category, it was also American formalism which effectively limited critical inquiry into it. Though, as trained historians, Barr, Goldwater and Rubin were not as totalizing in their formalism as the critic Clement Greenberg was,\(^{194}\) formalism naturally privileged the surface of the art object, marginalizing and even ignoring iconography. This led to partial, indeed misrepresentations of the production of artists interested in more than form and facture in their work, or in the aspects of
artistic intent beyond the stylistic. After conducting a survey of contemporary American abstract artists in 1958, Whitney Museum of American Art director John Baur found that "most of our abstract painting and sculpture pays small fealty to the concepts of those pure abstractionists, who hold that the work of art should be a completely meaningful object in itself, of solely esthetic significance, hermetically sealed against all other associations." Mark C. Taylor agrees:

Painting that is essentially about painting seems to leave little room for religious and spiritual concerns. Having defined the terms of debate for many critics, Greenberg effectively obscures the self-confessed spiritual preoccupations of the very artists whose work he analyzes.

One might think that instead of studies of meaning, formal analyses of biomorphic Modernism would have been conducted by art historians, but this was not the case. I have come across no in-depth formalist historical studies of the category of biomorphic Modernism, nor even of its related "movements" or groupings such as Surrealism and Abstraction-Création, neither synchronic ones analyzing the system of biomorphic form, nor diachronic Kublerian studies of its "formal sequence." Even formalist criticism, which might have verbally amplified the sensuous curvaciousness of the style is sparse; too often it is mere description. While Barr's category of "Geometric Abstraction" was unhistorically conflated with "Constructivism" in much of the literature, and hence was -- misleadingly -- treated as a "movement," no such geography-defying conflation was possible in the case of biomorphic or organic Modernism with Surrealism, Abstraction-Création or Unit 1. The fact that it was not a "historic" phenomenon in the sense that other organized movements were, precluded its treatment by empirical historians. Meanwhile formalism's impoverished representation of its non-formal meanings rendered it either banal or incomprehensible, further discouraging historical investigation of it. Thus, while Metzger did
undertake a systematic study in his thesis of biomorphic Modernism as defined by Barr, he avoided a thorough study of either content or context.

One might add to the list of causes for this neglect an antipathy on the part of historians towards the style itself, one which has only been reversed with the advent of neo-Modernist design fashion in the 1990s. Christof Vitali noted the decline in power of these forms: "Den biomorphen Gestalten aus den zwanziger und dreissiger Jahren eignet noch die Kraft der Symbolisierung. Erst in den fünfziger Jahren werden diese weich fliessenden Organformen zur Schablone kleinbürgerlicher Dekorationswünsche entleert." Design historian Lesley Jackson accounted for this by writing that "The New Look [i.e. biomorphic Modernist design] became a victim of its own success [by the second quarter of the 1950s]. Because it was so visually distinctive, it rapidly became the target for unscrupulous plagiarists who re-worked the superficial characteristics of its style, and regurgitated them in a bastardized form." By 1964 Max Kozloff wrote of the stylistic shift then underway: "the once pervasive and boring totemistic or insectile clichés are waning in favor of a muscular and physically or chromatically adventurous kind of statement." Moore, Arp, Hepworth, Miró and others were so successful by the 50s, their work was so pervasive, that theirs became one of the "official" styles of Modernism. Younger critics and historians wished to avoid dealing with their work and its origins. Jack Burnham pointed out in his 1968 book Beyond Modern Sculpture that:

there was something absurd about walking into a group show and being confronted with whole nests of giant bronze and welded steel bugs, a fusion of Walt Disney and Kafka via some apprenticeship course in welding. The biomorphic-mineral influence reached a peak during the early 1960s, and with this plethora came the reductio ad absurdum of the vitalistic idiom ... the biomorphic mannerist tendency.... The result of this proliferation of vitalism is a semi-official academicism as deeply entrenched as that of
Gérome or Falguière.\textsuperscript{202}

Just as art historians were still avoiding 19th-century academicism in the sixties, they by and large avoided the "bug and blob" academicism of the recent past. But this biomorphism-fatigue does not account for the specific failure of art historians to link biocentrism with biomorphic Modernism in their historical writing. We shall see that it took a historian of science, Philip Ritterbush, and a Structuralist artist and art critic, Jack Burnham, to make the connection.

It has been suggested that it was the private nature of artists' Vitalist beliefs which prevented them from being discussed. We have seen in the case of Herbert Read that it was not until the end of his career, in the 1964 A \textit{Concise History of Modern Sculpture}, that he discussed Vitalism as a trend in art. It is Burnham who first queried this:

If Bergson proposed neo-vitalism as a philosophical doctrine at the beginning of this century, then why did it take nearly half a century for a major critic to identify vitalism as a central doctrine of modern sculpture? Actually the reason is fairly apparent. The vitalist sculptor thought of his vitalistic beliefs as a personal stimulus ... rather than a public philosophy that could be formulated into doctrine for a manifesto. There were literally scores of \textit{isms} in vogue during the period from 1910 to 1940, and nearly every vitalistic sculptor was connected to a different set of them.... It took some time for the public and critics alike to realize that not human or natural beauty in the old sense, but the raw ... motive force of nature lay behind a vitalist sculptor's creative desires.\textsuperscript{203}

While Burnham's reasoning reveals in part why artists did not organize themselves into a biomorphic Modernist movement, his account does not explain the critical/historical near-vacuum.

In addition to causes already suggested, one must invoke the post-war hostility or indifference -- including Burnham's own mechanistic hostility -- towards biocentric thought.\textsuperscript{204}

Part of a little-studied current of 20th-century neo-Romanticism, biocentrism (treated in Chapter Two) was in fact a powerful intellectual element within Modernism, and has had a
profound effect on that culture, from Expressionism, through Surrealism and British "Neo-Romantic" art, to Abstract Expressionism, Neo-Expressionism and Eco-Art. Goldwater and Rosenblum recognize the connection of this neo-Romanticism to biomorphic Modernism, but they do not treat it. The only art writer who does, Jack Burnham, does so in the context of what is in effect a mechanistic/Structuralist anti-Vitalist polemic and an obituary of the style. This underlines the fact that the biocentric currents which informed biomorphic Modernist art were -- after the rise of molecular biology in the 1940s and of genetics in the early 1950s, but before their revival within the context of the environmental and "New Paradigm" movements in the 1970s -- seen as being outmoded at best.\textsuperscript{205} As early as 1951 Ernest Nagel wrote "vitalism ... is now a dead issue in the philosophy of biology."\textsuperscript{206} By 1967, when Burnham noted that "[f]or the present, the forces of vitalism in science have been slowed down considerably, if not entirely abated,"\textsuperscript{207} he was stating a view which had been popular wisdom for two decades, and still is among the majority of scientists.\textsuperscript{208} Neo-Romanticism, and biocentrism in particular (as well as its environmentalist equivalent, Anna Bramwell's "Ecologism"), was tainted by its espousal by elements within the National Socialist and British Fascist movements.\textsuperscript{209} In either case they were to be denied, ignored, deemphasized, repressed, much as the occult or "spiritual" interests of the Symbolists and early abstractionists Kandinsky, Mondrian, Malevich and Kupka were and to some extent still are.\textsuperscript{210}  

Characteristic is Mark Roskill's erudite intellectual history of Weimar Germany, which, though it focuses on Klee and Kandinsky, almost completely omits discussion of Vitalism or Monism despite the pervasive influence of Haeckelian Monism and Neo-Vitalism in that society and on them.\textsuperscript{211} In fact, Modernism has typically been seen to have been divorced from concerns with nature.\textsuperscript{212} Stephen Mansbach represents this view, denying any connection between a concern with nature and
utopian Modernism:

For utopian artists of the early decades of this century, abstract art was perceived as the most effective means to "breed to a new world" free from the accretions of the past.... it was believed necessary to abjure nature, for nature was perceived by all as the bane of creative existence.213

In her catalogue essay on Environmental Art since the 1960s Barbara Matilsky does the same by implication, denying that there was an element of nature-centrism in Modernism:

Environmental art [is] important not only because it offer[s] a new way of creating art and thinking about it, but also because it call[s] attention to nature. Not since the nineteenth century have so many artists interpreted the natural world with such intensity. Unlike earlier painters who depicted specific landscape features, environmental artists visualize the forces, processes, and phenomena of nature: organic growth, light, water, crystals and other elements.214

In fact, the third sentence I have quoted could serve as a stylistic encapsulation of precisely that biomorphic Modernism whose existence she ignores.

Even today, in the late 1990s, few surveys of art mention the biomorphic style as being the attribute of a group of artists rather than of individuals such as Miró, Arp, Brancusi, Dove, or other artists labelled "Neo-Romantic" during the interwar period.215 If they do, they make little attempt to explain, to interpret, or to link these phenomena. Like Barr, they at best remark upon these connections, perhaps suggest concerns with nature, and leave the matter at that.216 It is not so surprising, then, that the very presence of a supposedly accepted term such as "biomorphic abstraction" within the artistic discourse is far more tenuous than that of "geometric abstraction."217 And this tenuousness is the case despite the category's delimitation by Barr and his followers.

As is well known, though Panofskian iconology was the dominant mode of pre-19th-century art historical studies after
the Second World War, this methodology was not being applied to Modernist art in the 1950s. Indeed, there was very little art historical scholarship being done in the Modern field; Roskill cites Barr's 1951 book on Matisse as "the first really substantial monograph devoted to a 20th-century artist." Art criticism, meanwhile, was dominated by formalism.

b. Antiformalism

There were, however, a few critics and curators such as Sheldon Cheney, Meyer Schapiro, Leo Steinberg, and John Baur who were arguing with the formalist orthodoxy in New York before the 60s. In his 1934 book Expressionism in Art, Cheney included a whole chapter entitled "Abstraction and Mysticism," in which he described a Vitalist/organicist/"spiritual" view of art as prevalent among many Modernists. "There is a unity of all that is, life undivided flowing from a single principle or source, of which man can feel but not explain the nature."

We have seen that in "Nature of Abstract Art" Schapiro was the first in America to criticize Barr, his championing of abstract art, and abstract art itself, for a lack of awareness of its social rootedness, even if by taking Barr's version of abstraction for criticism, and by focusing on the political dimension of the work, Schapiro helped establish a discourse which ignored the intended content of abstraction. In "Style," Schapiro argued for the heterogeneity of meanings possible within a single style and the inability of a single style to account for all the production of a given era.

Steinberg, in "The Eye is a Part of the Mind," not only discussed the analogy between Modernism and scientific imagery, he also attempted to deal with Schapiro's omission in 'Nature of Abstract Art.' He did this by arguing that "the formalist aesthetic, designed to champion the new abstract trend, was largely based on a misunderstanding and an underestimation of the art it was made to defend," that is,
that "modern art has not ... abandoned the imitation of nature ...; in its most powerful expressions, representation is still an essential condition."222

Drawing on Steinberg’s line of reasoning and referring directly to Schapiro, John Baur argued for a similar view in his exhibition "Nature in Abstraction," which he organized at the Whitney Museum in 1958. As we have seen, Baur conducted a survey of contemporary American abstract artists and found that most were not formalists. He concluded, rather, that "our tendency, more marked than ever today, has been towards kinds of abstraction which draw on observed reality to create, variously, a conscious imagery, an unconscious imagery, or, at least, a kind of organic and "natural" teleology of form."223 In his selection of works for the exhibition, Baur emphasized nature as the theme, content and metaphor in American abstract art of the time, without pegging these concerns to a single style or indeed even once invoking the terms "biomorphic" or "organic."

i. Europe

Not surprisingly, after the war it was in German-speaking Europe that an awareness of Naturromantik in Modern art was maintained most strongly, and that it was reflected in art historical research to the greatest extent. This was the case in -- among others -- the work of Giedion-Welcker, the German art historians Werner Haftmann and Alexander Dorner (by then in the United States), the Serb artist and aesthetician active in Germany Oto Bihalji-Merin and the Austrian art historian Werner Hofmann, who became particularly well-known for his application of geistesgeschichtlich approaches to the study of 20th century art.

As we have seen, as early as 1947 Dorner published his Bergsonian Vitalist volume The Way Beyond Art. In it he provided a brief overview of art history in which he discussed Klee, Kandinsky and the "biomorphic" or as he terms them
"Romantic" Surrealists such as Stanley Hayter and Masson as emphasizing Becoming over Being in their work. (He opposes the Romantic Surrealists to the Freudian "Retrogressive Surrealists," Dali in particular.) He also interpreted Bayer's art of the 1940s as a Vitalist art representing the dynamism of nature. Published as the third volume in the "Problems of Contemporary Art" series and dedicated to John Dewey, the book was far better distributed in North America than it would have been had it been published in Germany.

In an article published in 1953 -- exactly the same year that M. H. Abrams published his history of Organicism in literature -- and in a book published four years later, Hofmann wrote of the organic metaphor in Modernist painting and sculpture, about those artists who saw their works as being creations analogous to those in nature. In his 1954 monograph on Klee, Haftmann devoted a chapter to Klee's conception of nature and the relationship of this conception to his art, as had Giedion-Welcker in her monograph on the artist published two years previous. Giedion-Welcker had also emphasized the relationship to Neo-Vitalist ideologies as well as occultism of Kandinsky's aesthetics as early as 1951. In 1958, to celebrate the bicentenary of the Swiss chemical firm J.R. Geigy, Geigy employee Gottfried Honegger, Basle Kunsthalle curator Arnold Rüdlinger, and art historian Robert Schenk organized an exhibition on the scientific image analogy at the Basle Kunsthalle. Two years later, Schenk and Georg Schmidt published a book on the subject, Kunst und Naturform. As mentioned already, they noted that geometric abstract works tended to have formal similarities with microscopic inorganic (or inanimate) nature, and biomorphic abstract works with organic (i.e. animate) nature. Rather than looking for historical reasons for the formal parallels between Modernist art and scientific photography, these authors proposed the psychobiological or Jungian explanation of a common deep structure shared by nature and artists working its way into
the Zeitgeist.

The remarkable Oto Bihalji-Merin, a participant in the Berlin avant-garde scene of the 1920s and a one-time Communist, discussed all of Modernism in Jungian terms as the expression of deeply-intuited forces of nature, and along with Huyghe, Schenk and Schmidt, he is one of the few art historians to discuss the naturamorphic analogy.230

Unfamiliar with or resistant to Barr’s formal framing of Modernist art, these Europeans, though sensitive to the Neo-Romantic concern with nature of Modernist biomorphic art, did not conceptualize the phenomenon as a trend.231

ii. A Pregnant Historical Moment

The revival of interest in a geistesgeschichtlich approach to the study of Modernist art in North America during the 60s was partly attributable to two German art historians. Otto Stelzer of Hamburg University published his remarkable book Die Vorgeschichte der abstrakten Kunst in 1964, in which he sketched out a plan for research into the intellectual origins of abstraction that included everyone from Goethe to Bergson.232 Werner Hofmann, founding director of the Museum des 20. Jahrhunderts in Vienna, taught at Berkeley in 1964 and published Turning Points in Twentieth Century Art in America in 1969, the year he became director of the Hamburg Kunsthalle. This book, written as a critique of Greenberg’s article "The Crisis of the Easel Picture," employed his anti-totalizing historiographical technique of identifying and working with "productive contradictions."233 Hofmann was, along with Stelzer, one of the first to emphasize and discuss the links between Bergson’s Neo-Vitalist conception of creative evolution and biomorphic forms in Art Nouveau, for example in the work of Van de Velde:234 "Bergson seems not merely to justify the biomorphic ideals of Art Nouveau, but to throw light on its material stratifications."235 In a Jungian mode, Hofmann discusses the impulse of some Modernist sculp-
tors as a mythic one concerned with the creative and destruc-
tive aspects of nature:

\[
\text{Dami tritt sein Schaffen in die mythische Sphäre ein, neue Inhalte bedrängen ihn: die grossen, einfachen \ Schöpfungstatsachen der Welt, Fruchtbarkeit, Bedrohung, Lebensgier, Zerfall und Wiedergeburt. Durch hundert Ahnungen geht er hindurch, gelenkt von dem Entschluss, an der Genesis der Gestalt das Ereignis der Weltsetzung noch einmal zu versuchen.}^{236}
\]

As in the case of his fellow Europeans, he sees such impulses as so pervasive among Modernists that, though this question arises most concretely in his discussions of Brancusi, Arp and Moore, he does not discuss biomorphic Modernism as a stylistic group. His use of Focillon’s conception of formal morphology acting across media, meanwhile, is a rare application of the Frenchman’s formalist theory to Modernist art historical practice.$^{237}$

In 1965, the first article devoted to Biomorphism in Modernist art appeared in a special issue of *Artforum* devoted to the "New York School." Developing Barr’s taxonomical idea, Lawrence Alloway’s prescient "Biomorphism in the Forties" raised several crucial themes including the inability of the dominant artistic taxonomy to account for biomorphic Modernists; the heritage of the Art Nouveau; the attempt to "Shanghai" biomorphic Modernists into the Surrealist movement; and the importance, historical and conceptual, of microscopy and organic themes and motifs.$^{238}$ While Alloway’s work treated the New York School and so focused on the Jungian intellectual background of that art rather than the biocentrism which lies behind Jung himself, it was important in suggesting a wider historical context and a functional, multivalent category independent of the conventional taxonomy.

By 1967 Goldwater gave expression to his evident impatience with the reduction inherent in the teleological formalist "master narrative." Building on his early work on "Primitivism," and in effect recapitulating Herbert Read’s struggles with this problematic during the 30s,$^{239}$ he offered
a critique of this narrative in his often-overlooked essay Space and Dream. In this text -- parallel with Leopold Ettlinger at the Courtauld Institute, the Swedish-Finnish art historian Sixten Ringbom, Robert Herbert, Robert Rosenblum and his student Robert Welsh\footnote{\textsuperscript{240}} -- Goldwater opposed the Greenbergian version of 20th-century art history, that non-Surrealist Modernist art is to be read in exclusively formal/material terms. He suggested instead that a thematic approach to understanding Modernism based on what artists said or wrote was also useful.\footnote{\textsuperscript{241}} He concluded that a kind of neo-Romanticism was the impulse behind a significant proportion of Modernist art production. It is worth quoting Goldwater at length to get a sense of the construction of his argument in opposition to reductive, teleological formalism:

\begin{quote}
A number of fundamental concerns appear with surprising frequency in the writings of artists during the years from 1920 to 1940.... Space, movement, dream, constellation, and the cosmic.... Such references seem at first glance to have little to do with the visually self-reliant syntax of modern art ... they are more appropriate to the romantic painting of an earlier century.... They suggest landscape and sky, lonely coasts and clouds, the smallness of man and the infinity of nature.... Surrealism, as a school, intervened and interrupted the analytic development from Cubism to geometrical abstraction, and played a role in calling upon other than conscious sources in the creation of art, and in reintroducing ambiguous and "literary" meanings. But Surrealism was not alone in this.... Such impulses were much more widely spread, more general, and largely independent of Surrealism. They are to be found not only in representational art, but in various kinds of abstraction too, and in Germany, Switzerland and Russia as well as in France. Less analyzed, therefore perhaps less laboured and so also perhaps less obvious, they are nevertheless fundamental to a wide variety of painting and sculpture in this period.\footnote{\textsuperscript{242}}
\end{quote}

After having prepared the reader for a treatment of neo-Romanticism in Modernist art, however, Goldwater sets up yet another binary structure to classify these impulses -- an interest in space as a metaphysical reality, and a concern
with dreams -- a structure which like Worringer's and Barr's, falls short of a satisfactory account of the nature-focus he himself identifies. Furthermore, though he elsewhere discusses biomorphism or "organic" abstraction as a stylistic tendency within Modernism, and though many of his examples are biomorphic, he avoids the treatment of biomorphism as style.

Working parallel to Goldwater was Robert Rosenblum. Based on the seminal article by Klaus Lankheit of 1951, Rosenblum's 1961 article "The Abstract Sublime" began developing the thesis that

> there is an important, alternate reading of the history of modern art which might well supplement the orthodox one that has as its almost exclusive locus Paris.... My own reading is based not on formal values alone -- if such things can really exist in a vacuum -- but rather on the impact of certain problems of modern cultural history, and most particularly the religious dilemmas posed in the Romantic movement, upon the combination of subject, feeling, and structure shared by a long tradition of artists working mainly in Northern Europe and the United States.  

Rosenblum presented his thesis in coherent form for the first time in a series of lectures at Oxford and at New York University in 1972, publishing the talks in 1975 as Modern Painting and the Northern Romantic Tradition. When treating interwar Modernism Rosenblum repeatedly remarks on the prevalence of "organic" style in association with neo-Romantic iconography. But he does not develop this line of thinking, and because by virtue of his thesis he is committed to excluding artists working in France, he would in any case have been compelled to omit the work of figures such as Miró from the equation.

The German-Canadian art historian August Wiedmann explored the "Romantic roots in modern art" in a book written before Rosenblum's appeared, but published after it. Though he does not cite Hofmann, Wiedmann followed in the Austrian's footsteps by characterizing much Modernist art
production as organicist.246 His book, admirable for its clarity and simplicity of argument, is as important as Rosenblum’s in establishing the continuity between Romanticism and early-20th-century Modernism. Greatly refining the conceptual bases of Rosenblum’s thesis, the American theologian and deconstructionist cultural historian Mark C. Taylor accords a central position to Romantic theology, what he calls "theoesthetics," in the genetic line of Modernist art:

The theoesthetic formulated in post-Kantian theology and philosophy implicitly informs seemingly diverse artistic practices developed throughout this century ... the goal of theoesthetics is union with the Absolute or the Real, which underlies or dwells within every person and all phenomena. Since this Absolute is universal, many artists insist that it can be reached only through the activity of abstraction in which particularity and individuality are either negated or suppressed.247 ... [T]he theoesthetic developed in Jena during the last decade of the eighteenth century forms the very foundation of modern and modernist postmodern artistic and architectural practices that extend far beyond the borders of Germany.248

iii. Outsiders

Often it is those positioned outside the mainstream of a discipline who are able to break established patterns of thought. The only comprehensive, thematically-informed historical treatments of biomorphic Modernism I am aware of before the early 80s are two remarkable works by non-art historians, both of which appeared in 1968: science historian Philip Ritterbush’s exhibition and monograph The Art of Organic Forms, and sculptor Jack Burnham’s polemical and historical book Beyond Modern Sculpture. Burnham is himself aware of the advantages of being an outsider: "I am sure that my lack of success with the tools of art scholarship is in part responsible for the present book."249

Chapter Five of Ritterbush’s book is concerned with biomorphic Modernism and the organic metaphor. Building on his
own research and on the art literature of the 1950s, Ritter-bush makes an important contribution to art history as well as to the history of biology. Drily noting the paucity of art historical literature on this subject,\textsuperscript{250} he bases his usage of the term "biomorphism" on Barr and Rubin, and his work on publications such as the organicist interdisciplinary antholo-
gies edited by György Kepes and Lancelot Law Whyte,\textsuperscript{251}
Leo Steinberg's "The Eye is a Part of the Mind," Schmidt and Schenk's \textit{Kunst und Naturform}. and John Baur's \textit{Nature in Abs-
traction}. Ritterbush addresses the problematic of the natura-
morphic analogy within the context of the history of the idea of "organic form," that is,

the system of beliefs originating with F. Schlegel, Schelling, and Coleridge, that form in living beings is more complex than form in nonliving nature and that the form of living organisms or their remains is a property of the whole, while in nonliving entities form results from the disposition of the parts of which they are composed.\textsuperscript{252}

Ritterbush employs an interdisciplinary approach based in the history of ideas often lacking in art historical studies up to that time despite Strzygowski's and other's efforts. Thus, he embeds a discussion of the work of artists such as Redon, Klee, Ernst, Miró, Kandinsky, Masson, Tanguy and Arp, into a general discussion of organic form, including treatments of scientific illustrators such as Ernst Haeckel and Stéphane Leduc, and the morphologist D'Arcy Wentworth Thompson. Writing with the authority of an historian of science, Ritterbush proposes the theory that it was from the realm of aesthetics -- as defined by Goethe and other Romantics -- that the new science of biology assumed the idea of organic form in the early 19th century, an idea which was crucial to the develop-
ment of that discipline. "The progress of biology in the 19th century resulted largely from the pursuit of a program of investigation whereby the esthetic presuppositions of the idea of organic form were shown to be applicable to the scientific study of organisms."\textsuperscript{253} Thus, when organic forms were adopted
by Art Nouveau designers and biomorphic abstract artists from biological illustrations, it was a restoration, a return of the idea of organic form rather than a simple borrowing of it. As Donna Haraway notes, "the essential relationship between biology and art [demonstrated by Ritterbush] should not surprise anyone.... [It is] rooted in the problem of form and the primacy of vision." As we shall see, the relationship between the formal and ideological expressions of these disciplines underly my work in profound ways.

Though he does not cite much direct evidence for the appropriation of scientific images by Modernist artists, Ritterbush asks important questions, and begins a systematic treatment of the questions raised by the naturamorphic analogy. Some years later art historian Vivian Endicott Barnett demonstrated this process in the case of Kandinsky's Parisian works, which Ritterbush was among the first to cite in this connection.

Rene Huyghes 1971 book Formes et Forces was written while Huyghe was a visiting Kress Foundation fellow at the National Gallery in Washington in 1967. Aware of the Basle exhibition "Kunst und Naturform," and in contact with Philip Ritterbush at the time Ritterbush was organizing his exhibition, Huyghe treated all forms, natural and cultural, as expressions of the same forces which animate the universe. Invoking Jung, Huyghe wrote that "La forme est un vaste univers clos qui englobe tout ce que nous pouvons percevoir hors de nous et rêver en nous, et au-delà duquel nous ne pouvons aller." With the exception of Huyghe, Ritterbush’s work has been largely ignored by mainstream art historians.

In Beyond Modern Sculpture Burnham identified biomorphic Modernism in sculpture and pinpointed Neo-Vitalist philosophy and Organicism as its animating ideologies:

Early in the present century the process of reification began to draw the sculptor away from an exhausted naturalism and toward an analytical awareness of biological life supported by vitalism. Thus, in a chapter entitled
"The Biotic Sources of Modern Sculpture," vitalism is introduced both as a scientific doctrine and a sculpture aesthetic. It is shown that vitalism, as a source of artistic reification, lasted as long as it remained tenable as a scientific philosophy.\footnote{258}

Coming across this chapter two years after I began work on this dissertation -- after having struggled with what I assumed to be an eccentric interest in the relationship between Vitalism and biomorphic Modernism -- was an important milestone in the development of a conceptual frame for my work. To refer to biomorphic Modernist sculpture, Burnham employed Herbert Read’s term "vitalist sculpture," which, as we have seen, Read finally adapted from Henry Moore in the early 50s. Though he disagrees with their aesthetics, Burnham based this chapter on Read and Giedion-Welcker’s Vitalist-inspired outlines of Modernist sculpture:

Vitalism, based as it is on nonphysical substances and states of life, is a metaphysical doctrine concerned with the irreducible effects and manifestations of living things. It was the great discovery of twentieth-century sculpture that these did not have to be appreciated through strict representationalism. Visual biological metaphors exist on many levels besides the obvious total configuration of an animal or human.\footnote{259}

As we have seen, Burnham commented on the failure of biomorphic Modernism to coalesce into a coherent, self-conscious movement.\footnote{260}

Burnham’s interest in the Vitalist impetus behind some Modernist sculpture was motivated by his own mechanist/Structuralist aesthetic program, what he referred to as "Cyborg Art": "Nearing the end of an age which sought vitality in latent visual metaphor, the élan vital will be looked upon as the old prime mover, while the Greek kybernetes ... becomes the expression of a new and even more effective prime mover."\footnote{261} He saw "vitalist sculpture" and its program of incorporating "vital energies" into inert matter as the static, conceptual precursor, of a kinetic, Cybernetic Art of the future. Clearly, Vitalist Sculpture fit neatly into his
own program. Burnham attempted nevertheless to account for the failure of art historians to recognize the Vitalist content in Modernism:

Following Rodin, other sculptors, both representational and abstract in their work, adopted the vitalistic attitude. Curiously, it was one of the few ideas in modern sculpture that sculptors often mentioned when explaining their work process and attitudes toward materials. Yet the idea took a long time to penetrate the minds of critics who had to write about modern sculpture. Perhaps the personal, almost religious, fervor of the vital impetus made it incomprehensible to the non-artist. In this instance the critic had to confront both a literary or overtly stylistic influence, and a biological relationship between the artist and his materials. Not until the 1950s did any critic [i.e. Herbert Read] really begin to look at vitalism as a separate and specific philosophy for the creation of sculpture.

Burnham's critique of contemporary art history goes deeper than he expressed in the above passage, however. Informed by the writings of Karl Marx and Thomas Kuhn, his book constitutes what he calls a "teleological materialist" critique of Anglo-American art historical practice which promotes the reincorporation of Semperian technological determinism into art history, and skilfully melds this with the practice of Kunstgeschichte als Geistesgeschichte:

Since the 1920s two generations of art historians have been studiously taught to shun the crass manifestations of the technical milieu while probing the intentions of the modern artist.... The tools of scholarly criticism -- stylistics, iconographical analysis, historical context, and formal analysis in the last fifty years -- remain as trusted now as ever. Yet they explain with diminishing clarity what has happened after 1800, and almost nothing of what has happened in sculpture in the last sixty years.

The fact that this book has been overlooked by historians of art such as Goldwater, Rubin, Rosenblum and Hofmann, is probably due to its being seen as unorthodox historiographically and, even worse, as a polemical tract by a non-art his-
torian promoting the development of a certain type of art. But Burnham's overview of the history of the Modernist "idealist" sculpture he opposes is the most systematic and thorough application of the history of ideas to the history of art at the time. It deserves attention for that reason alone.

Modes of scientific idealism have consistently stimulated the development of non-representational sculpture: thus the so-called biomorphic idiom relied on vitalism; Constructivism found its impetus in the evanescences of modern structural engineering, mathematics and physics; Surrealist sculpture vested its validity in Freudian interpretations of the subconscious mind; while the object sculpture of today seeks transcendence through the seeming rationality of materialism colored with phenomenological considerations.266

In this paragraph, Burnham outlined a program for much art historical activity as it actually unfolded over the next two decades. There is little doubt that it was his command of the history of ideas and his espousal of a set of prejudices completely different from those dominant in the discipline which resulted in this achievement.

Burnham's text is important because it is the first which, at one and the same time, conceptualizes "Vitalist Sculpture" as a stylistic trend in Modernism and provides a detailed discussion of the history of Vitalist philosophies and criticism in relation to Modernism, and of the expression of Vitalist ideas through biomorphic Modernist sculpture. Its limitations from the point of view of this project are that Burnham (since he was writing on sculpture) does not make the relevant connections between this sculptural style and Modernist painting or photography, and that -- while he discusses the organic metaphor -- he does not treat the naturamorphic analogy.267 Still, his and Ritterbush's achievement are academically solid, and -- since Ritterbush wrote mostly of painting -- they are complementary. One would have expected them to stimulate art historical research on biomorphic Modernism, given the renascence of geistesgeschichtlich art
historical approaches. With the start of the 70s the time seemed ripe for the application of Goldwater's, Hofmann's, and particularly Ritterbush's and Burnham's ideas on biomorphism in Modernism to the production of a more incisive art historical treatment of biomorphic Modernism. This opportunity was not taken, however. Or rather, the one art historian I know of who tried to take advantage of this opportunity produced disappointing results.

iv. Kunstgeschichte als Geistesgeschichte

In his 1973 dissertation "Biomorphism in American Painting," Robert Metzger adapted aspects of the historical structure which Alloway had constructed in his articles, and which Ritterbush had developed in The Art of Organic Forms. While Ritterbush evidently alerted him to the Goethean, naturromantisch background of organic forms, and to the interest which some artists had in microscopy, Metzger uncritically accepted Barr's formal definition of biomorphic Modernism and his designation of Kandinsky as the canonical "biomorphic" painter. Without justifying his acceptance of them, Metzger treated Barr's decisions as the apodeictic standards by which all other uses of the term "biomorphic" and other practitioners of the style were to be judged. Even though, following its etymology, Metzger saw the origins of biomorphic forms in nature, he did not engage in a detailed discussion of the nature-centric content of this art, nor did he follow Burnham's cue and engage in an examination of the Vitalist (or, in broader terms, biocentric) context of its production. The importance of Metzger's work as the first strictly art historical treatment of biomorphic Modernism is diminished by his uncritical, uncontextual approach.

Following the exhaustion in the 1960s of totalizing formalist methodology, and the widespread adoption of Modernist art as a subject for art historical study in the 1960s, the 1970s and early 1980s saw a wholesale renewal of Kunstge-
schichte also Geistesgeschichte and of the application of the iconological method to the study of Modernism. After 1969 these viewpoints began appearing in profusion. Some of the earliest instances are Sixten Ringbom's book on the occult and abstract painting in 1970; Robert Welsh's article on Mondrian and Theosophy and Linda Dalrymple Henderson's on Cubism and the "Fourth Dimension" in 1971; Rose-Carol Washton-Long's article on Kandinsky and Carel Blotkamp's exhibition catalogue on the origins of abstraction in the Netherlands in 1972; Charlotte Douglas' article on Malevich and Kruchenykh in 1975 and, following his series of lectures in 1972, Rosenblum's Modern Painting and the Northern Romantic Tradition in 1975. By 1973, plans were inaugurated to organize an exhibition on the esoteric origins of abstraction at the Los Angeles County Museum. In an exhibition organized at the MOMA itself in 1976 -- signalling the end of formalist hegemony -- the parallels between the nature-centrism of American 19th-century landscape painting and Abstract Expressionism were detailed by John Wilmerding in his essay "Fire and Ice in American Art."

Typically, many of these writers had multi-disciplinary backgrounds. John Bowlt, who -- after Camilla Gray -- renewed the art historical examination of Russian avant-garde art, is a literary historian. His student Charlotte Douglas initially studied Russian avant-garde literature and the history of the American occult, while Washton-Long first majored in Russian history, and received her B.A. in intellectual history.

An important forum for the publication of some of this material early on, and a long-time venue for articles on nature, science, art and Organicism, was The Structurist, edited by Eli Bornstein at the University of Saskatchewan in Saskatoon. In special issues on "Light and Colour" in 1974 and on "Space/Time" in 1975, Bornstein included articles and translations by Bowlt and Douglas on the Russian avant-garde,
by Henderson on ideas of the "Fourth Dimension" in Russia, by George Beck on Bergson and Cubism, by the artist Alan Gussow on emergent Eco-Art, and by Bornstein on ecological aesthetics.274

Two crucial publications of 1983 were Henderson's book The Fourth Dimension and Non-Euclidean Geometry in Modern Art, a model of interdisciplinary studies, and the exhibition Kosmische Bilder in der Kunst des 20. Jahrhunderts held at the Kunsthalle in Baden. Siegmars Holsten's essay surveyed the interest both in the cosmos and the microcosmos of Modernist artists. His survey of the microcosmic interests of artists such as Klee, Baumeister, Miró, Tanguy, Masson and Ernst forms an important precedent for my own work.275 This trend culminated in 1986, after four conferences on the subject during the early 1980s, with the publication of the exhibition catalogue The Spiritual in Art: Abstract Painting 1890-1985. Edited by Judi Freeman and Maurice Tuchman of the Los Angeles County Museum of Art, this catalogue featured contributions by many of the major scholars of the neo-geistgeschichtlich trend: Blotkamp, Bowlt, Douglas, Henderson, Washton-Long, Ringbom and Robert Welsh, among others.276

v. Biomorphic Modernism

While this neo-geistgeschichtlich art historical current validated the kind of historiography which led Burnham to connect Modernism and Vitalism, and Ritterbush to link Modernism and scientific imagery, as a style biomorphic Modernism continued after 1969 to be unpopular, hampering research on it. Work was, however, initiated on individual artists such as Arp, Dove, Ernst, Kandinsky, and Klee, and Douglas and Bowlt were actively researching the Russian "Organicists" of Petersburg. In his 1977 article "Paul Klee and the Inner Truth to Nature," Sixten Ringbom hinted at the biologic sources of early-20th-century Modernist art.277 It was in her 1978 work on the formal language of Hans Arp's sculpture, for example,
that Stephanie Poley located the origins of Arp's biomorphic abstraction within the wider context of the art of Kandinsky, Tanguy, Brancusi, Matisse, Rodin, Moore and Miró, constructing in effect a formal survey of biomorphic Modernism. But apart from Metzger's dissertation and Herbert Christian Merillat's amateur book on sculpture, little if anything was written on biomorphic Modernism as a tendency during that decade.

A major shift occurred with the publication in 1983 of Charlotte Douglas' article on Russian Organicism, "Evolution and the Biological Metaphor in Modern Russian Art." With this article Douglas constructed for Russian art a model of the cultural pattern I am investigating:

[M]any of the Russian avant-garde do not fit into the Cubist-Constructivist line of development as it is commonly understood ... [Filonov, Matlushin, Kulbin, Burliuk etc.] have singly or collectively been called "Russian Expressionists" or the "Alternative Tradition." For various periods between about 1910 and the early 1930s, they shared an anti-Cubist stance based in part on ... an organic aesthetics that was established in art ... by the dissemination and popularization of Darwin’s theory of evolution and its subsequent neovitalist formulations. This is to my knowledge the first conceptualization of the bioromantic cultural pattern by an art historian.

The following year a remarkable exhibition was held at the Scottish National Gallery in Edinburgh entitled Creation: Modern Art and Nature, which included Robert Rosenblum's article on Romantic views of nature in Modernist art and Jennifer Mundy's important "Form and Creation: The Impact of the Biological Sciences on Modern Art," the first general treatment of this subject since Ritterbush's book of 1968. Mundy's article is particularly significant, for independent of Ritterbush and Douglas, and focusing her attention on Parisian art, she recognized the importance of microscopic photography, scientific film and organicist ideology to the shift in aesthetics which occurred during the interwar years.
Moreover she was the first scholar to suggest the relevance of this shift to current discourses on anthropocentrism, environmental degradation and genetics.283

After this, a series of studies appeared in the United States, Britain, Germany and France of direct relevance to the bioromantic cultural pattern:

In 1984 Verdi’s book on Klee and Nature was published, which led in 1990 to an exhibition on Klee’s relationship with the natural held at the Saarland Museum in Saarbrücken.284

In 1985 Sherrye Cohn’s 1982 dissertation on Arthur Dove appeared in book form as Arthur Dove: Nature as Symbol, a first-rate study which has not received the attention it deserves.285 Cohn’s dissertation and monograph are crucial to my approach to the study of biomorphic Modernism, as she discusses Dove’s biomorphic Modernist oeuvre for the first time in its proper contexts of Nature Romanticism, photography and biological science, and -- taking into account the work of Ritterbush and others -- she includes a thorough discussion of organic form and the organic analogy. Though, according to the fashion of the time, she over-emphasizes Theosophy at the expense of fin-de-siècle biologicist nature-centrism ("biocentrism") as a source for Dove’s thinking, her 1985 monograph is the first publication to properly discuss the Romantic and organicist background to the work of a paradigmatic biomorphic Modernist, in effect placing his work into the "bioromantic" pattern.

Also in 1985 Vivian Endicott Barnett published an article both key and exemplary in which she documented what several authors before her had suggested, that the sources of Kandinsky’s Parisian abstract paintings lay in scientific imagery. Barnett’s work is significant not only because she points to specific sources for Kandinsky’s paintings in his personal library, but because -- despite the dearth of documentary evidence -- she arrives at what I feel to be the right conclusion concerning Ernst Haeckel’s importance in the genesis
of this imagery.\textsuperscript{286} That same year, Jeffrey Weiss' article on Kandinsky's biomorphic art extended into a prescient summary of biomorphic Modernism and its connection with scientific imagery. A promised article on the subject has -- as far as I can tell -- not materialized, however.\textsuperscript{287} In her dissertation completed the following year, Evelin Priebe -- building on hints by Giedion-Welcker -- discussed Kandinsky's work in the context of contemporary Neo-Vitalist ideology, particularly Bergson and Klages, discussing in detail for the first time Kandinsky's debt to Bergson.\textsuperscript{288} Harriet Watt's article "Arp, Kandinsky, and the Legacy of Jakob Böhme," in The Spiritual in Art catalogue of 1986, contributed to our understanding of the \textit{naturromantisch} background of biomorphic Modernist works by those artists.\textsuperscript{289}

The mid-80s also saw the publication of a series of studies of Arp's relation to nature and biomorphism. Thus, Rolf Wedewer published his article on Arp's Monist conception of nature in 1985; Janet Lindsay discussed that topic within the context of a discussion of Arp's sculpture in an article of 1984; and in a book and article based on her 1987 dissertation, both published in 1990, Margherita Andreotti discussed Arp's biomorphic sculpture in the context of contemporary biomorphic Modernism.\textsuperscript{290}

In a 1987 essay Thomas Brandt analyzed the shift in formal strategies from geometric forms to curvilinear ones in the oeuvres of some painters after about 1930, citing a return to nature and the irrational among reasons for this shift.\textsuperscript{291}

The Linda Henderson student Janice Schall's dissertation "Rhythm and Art in Germany, 1900-1930" was completed in 1989, and though I encountered it only halfway through my own research, it has been an important source for my work. Through her equation of rhythm with the vital principle,\textsuperscript{292} Schall has traversed much territory to do with biocentrism: "rhythm was associated with three fundamental principles: order, unity, and the life impulse itself."\textsuperscript{293} While I have focused
my work on the concept, however, Schall has examined the principal trope of the vital force’s manifestation. Her research on Klages, Haeckel, and the Wandervogel movement is pioneering within the realm of Anglo-American art history. Though her dissertation was thematically rather than stylistically based, and though she begins her discussion earlier than I do, she has noted biomorphic stylistic affinities among artists interested in the unifying principle of nature: "Despite stylistic differences, all of these artists believed in the unifying force of nature’s rhythms. Their paintings, drawings, and prints reflect this belief formally.... There is a prevalent but not exclusive use of curvilinear rhythms."294 Schall’s work forms the basis for the study of "Bioromanticism" in Germany.

Though she had first raised the biomorphic abstraction/nature problematic of Parisian interwar abstract painting in her 1978 exhibition catalogue on Abstraction-Création, Gladys Fabre developed this notion in her "Art de Synthèse," published in 1990.295 In this crucial article, based on the critical writings of Geoffrey Grigson and Anatole Jakovski, as well as on the conception by Hans Erni for the 1935 exhibition these antithese synthese held at the Kunstmuseum in Lucerne, she formulates a model of 1930s Paris-centred Modernism which shows commonalities with Kállai’s formulation of the Bioromantic cultural pattern. According to this view, Parisian, Swiss and English interwar art is seen as struggling with the opposition between the artistic tendencies represented by the Paris groupings Abstraction-Création and Surrealism and their formative impulses: antinomies such as appearance/reality, abstraction/representation, microcosm/macrocosm and spirit/nature. Following the title these antithese synthese, she terms the biomorphic art which is the synthesis of these antinomies, Art de Synthèse. Fabre was the first French historian to sketch out the interest which interwar French artists and publishers had in scientific, especially microscopic,
photographs and films.\textsuperscript{296} Because she focuses on Paris, biocentric ideologies do not play a major part in her formulation of the problem, and she deals neither with German, Eastern European and North American production, nor with Kállai's writings. However, "Art de Synthèse" is the first attempt by an art historian to conceptualize this cultural pattern on both the theoretical and international planes.

Since 1983, building on the tradition established by John Baur at the Whitney Museum, a series of exhibitions treating American biomorphic abstract painting was organized, reflecting the revival of the style in the United States during that time. One of the most historical of these, Lisa Phillips' exhibition "Vital Signs," held at the Whitney Museum in 1988, was conceived by Tom Armstrong, Baur's successor as director of the Whitney, as an extension, a "reinterpretation" of Baur's project of three decades back.\textsuperscript{297} By incorporating Baur's awareness of the importance of natural themes to American Modernism, Burnham's cultural history, and a critical usage of the formalist stylistic category of "organic abstraction" into her approach, Phillips' work paralleled the complex approach Douglas and Fabre were taking at the time, and which I take in this dissertation. Her introductory essay touches on everything from the importance of imagery imported from the discourses of science to the crucial role played by Vitalism: it is a model of the cogent expression of a vast theme. The exhibition "Natural Forms and Forces" was also based on Burnham's conceptualization.\textsuperscript{298}

In 1990-92 Christa Lichtenstern published an account of the influence of Goethe's theories of metamorphosis on art since the 18th century, including biomorphic Modernism.\textsuperscript{299} Most importantly from the point of view of biomorphic Modernism, in the second, 1992 volume of Metamorphose in der Kunst des 19. und 20. Jahrhunderts, Lichtenstern not only discusses the conceptual origins of much biomorphic Modernist art in Goethe's Romantic idea of natural metamorphosis but, in a sec-
tion entitled "Biomorpher Formenwandel," elaborates Brandt's discourse, and specifically discusses the formal origins of biomorphism in the art of Arp, Picasso and Moore. In her entry on "Biomorphism" for the Dictionary of Art, following common practice, she attributes the modern usage of the term within the artistic context to Barr rather than to Grigson. However, she concludes that though "biomorphism never resulted in a style as such, it remained an important tendency through the 1940s in unifying otherwise diverse stylistic innovations." Though I suspect she meant to employ the word "movement" rather than "style" in this sentence, this is one of the strongest statements made on biomorphic Modernism since the 1970s.

The relevant literature on Moholy-Nagy, his New Vision, and on the biocentric Constructivist discourse, is treated in Chapters Three, Four and Five. Given Ernő Kállai's importance to my work, and the way that Chapter Five is structured, it is more important to engage here in a review of the literature on him. Possibly because of his nationality and his absence from the post-war scene, until recently West German historiography has not been as kind to Kállai as his importance to the art criticism of the Weimar Republic warrants. Because he was not a Communist, moreover, neither East German nor Hungarian art history dealt with him during the 50s and 60s, not even at the time of his death in 1954.

With the relaxation of limitations imposed on art historical subject matter in Hungary, and with the acquisition of the lion's share of Kállai's papers by the art historical Archive of the Hungarian Academy of Sciences in the early 1960s, interest has been rekindled in Kállai, one of the most significant of Hungarian art critics. Thus in 1963 an article appeared on letters from the Kállai Nachlass with connections to the Bauhaus, in a special Bauhaus issue of the Archive's yearbook; in 1965 Lajos Kassák published a short remembrance of the critic; and in 1967 a gravestone was dedicated to
Kállai. It is noteworthy that the first public presentation of a text on Kállai -- in August 1974 -- was by an historian of medicine, and that it focused on Bioromantik and the naturamorphic analogy. It was in January of the following year that the Hungarian Artists' Association held its memorial evening to mark the twentieth anniversary of Kállai's death, with talks by three pioneers of Kállai studies, Éva Körner, Júlia Szabó and Éva Forgács.

By August of 1975 Szabó, then curator of the Archive where Kállai's papers were, published the first art historical article devoted to Kállai, and soon after Éva Forgács's first article appeared on Kállai, followed in 1981 by an anthology of Kállai's writings, and other writings by her since. This was followed by three exhibitions related to Kállai: one memorializing him in 1982, a show of works from his collection in 1984, and another in his honour at the Budapest Kunsthalle in 1986. Gábor Pataki began working on Kállai in the early 80s in the context of his research into Kállai's influence on the post-World-War-II Hungarian avant-garde. As a concomitant of this focus Pataki concentrated his research efforts on Kállai's Bioromantik conception.

In English, Forgács published an article on Kállai in the New Hungarian Quarterly in 1976, while my article and translation of part of his last treatment of Bioromantik, A természet rejtett arca [The Hidden Face of Nature], appeared in 1984. It was the first to focus attention on Bioromantik.

In German, Tanya Frank's anthology of some of Kállai's German writings appeared in 1986, along with a study of his work in the German context, while Hubertus Gassner examined Kállai's theory of Constructivism in his exhibition catalogue Wechselwirkungen of the same year, placing Kállai's writings into their international context for the first time. A conference organized jointly by the Hungarian Academy of Sciences and the Budapest Goethe-Institut in October of 1991 commemorated the one hundredth anniversary of Kállai's birth;
all active Kállai scholars participated, including two who had begun writing their doctoral dissertations on Kállai the previous year. Gassner mounted a session on Kállai at a conference held in Kassel in 1992, some of the papers of which were published in an anthology that same year. While the first generation of Kállai scholars (Szabó, Körner, Forgács, Frank, Gassner) tended to privilege Kállai's concern with International Constructivism in their research and writing -- and some, like Frank and Bromig, working from a Marxist standpoint, saw his post-Constructivist writing as a kind of reactionary tendency of disillusionment -- most members of the second generation (Botar, Pataki, Wucher) also valorized his conception of Bioromantik.

c. Photographic and Design History

i. "Poetics of Bourgeois Wonder"

Developments directly relevant to my project began in the field of photographic history and aesthetics towards the end of the 1970s. In 1978 the Irish-American physician and art critic Brian O'Doherty's preface to the volume of Lewis R. Wolberg's art micrographs appeared. Based on Ritterbush's The Art of Organic Forms, O'Doherty's brilliant essay placed art micrography and the fascination with the microscopic into its proper context of nature Romanticism, Haeckelian Monism, Organicism, and Modernist aesthetics. O'Doherty writes of the poetics of bourgeois wonder. This wonder is habitually inseparable from the microscopic. It is composed of a somewhat routine sense of miracle, informed by delectation and a quasi-religious sense of a higher order revealed by the microscopic.

He also takes on the task of writing an aesthetics of microscopic photography and its relations to Modernist painting, what he refers to as the "fallacy of correspondences." O'Doherty rejects the Jungian, psychobiological explanation for the naturamorphic analogy as "idealist," and therefore untenable.
Invoking a Neo-Semperian technical-determinist argument instead, he points out the possibility that the scientific image analogy, "instead of being a remarkable invention, is in fact inevitable. Not because of cosmic magnitudes, but simply because of the problems of inventing form on a surface." Just in case there is an historical accounting for the phenomenon after all, however, he calls for old-fashioned art historical research:

Is it too obvious to suggest that artists, who are notoriously intelligent and searching, might, at the beginning of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? Deeply immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young, abounded in such illustrations. An examination of artists' journals and libraries from this point of view is indicated.

As with Ritterbush and Burnham, it was the outsider, the doctor-critic O'Doherty, who asked the crucial question.

ii. Germany

The work most relevant to the subject of this dissertation was carried out by German photographic historians, however. In 1979 Jan-Christoph Horak and Ute Eskildsen assembled a volume on the "Film und Foto" exhibition held in Stuttgart in 1929. In her essay Eskildsen traced the history of photographic exhibitions in Weimar Germany. It was the German Marxist literary historian Gert Mattenklott, who, in a remarkable essay on the metalwork instructor and amateur photographer Karl Blossfeldt, asked the important questions and sketched out a plan of research into the relations between close-up nature photography, scientific photography, biocentric ideologies and biomorphic Modernism. Mattenklott traced the aesthetics of Blossfeldt's photographs -- originally taken as patterns for his students at the turn-of-the-century -- back to Semper's biological materialism, and linked it to
Haeckel's contemporary Monist aestheticization of scientific imagery, to the organicist Jugendstil aesthetics of August Endell and Henry van de Velde, to photographic pattern books of nature, and to nature photography. All this, he shows, prepared the way for the Weimar German aestheticization of scientific and close-up nature photography, the subject I treat in Chapters Three and Four.¹¹⁷ Eskildsen and Mattenklott helped initiate a renewed appreciation of Weimar German Neue Sachlichkeit photography.

Based on Mattenklott and Robert Schmutzler's prescient research of the early 60s, Haeckel's and his disciple Wilhelm Bolsche's influence on fin de siècle aesthetics and applied art was seen in a positive light in Siegfried Wichmann's 1984 book Jugendstil Art Nouveau,¹¹⁸ and in a negative one in Christoph Kockerbeck's 1986 Marxist interdisciplinary study Ernst Haeckels "Kunstformen der Natur" und ihr Einfluss auf die deutsche bildende Kunst der Jahrhundertwende.¹¹⁹

Mattenklott's work inspired an elaboration of his line of research by photographic historian Thomas Kröger in 1990, which in turn elicited a critique by Christian Bromig.¹²⁰ Much as I began to do several months before the appearance of Kröger's article, Kröger, using Kállai as his starting point and focusing on Germany, attempted to describe a broad cultural pattern of biomorphic tendencies in art between the wars and to analyze the nature-centric ideologies underlying that pattern. Also as I have, Kröger integrated biomorphic Modernism into a discussion of photography, a tendency latent in Kállai's writing, but not worked out in detail:

Der in den dreissiger Jahren bei vielen Künstlern verbreitete Hang, eine auf biomorphe Ur- und nicht-stilisierten Naturformen gegründete Kunstsprache zu entwickeln, ist nicht nur bei vielen Malern dieser Zeit (u.a. Jean Arp, Willi Baumeister, Max Ernst, Wassily Kandinsky, André Masson, Paul Klee), sondern auch im Werk so unterschiedlich arbeitender Fotografen wie Blossfeldt, Renger-Patzsch, Fuhrmann ... anzutreffen.¹²¹
Kröger accepted the interdisciplinary nature of this work, and just as Ritterbush, Burnham, Douglas and Fabre had done (though without knowing of their publications), he began to sketch out a complex model of the interacting phenomena involved. Kröger's article was important to me at the time in providing leads in the German literature. What was most exciting about Kröger's article was that, like me, he also pinpointed Kálai as the one whose theorizing was central to approaching biomorphic Modernism.

Bromig finds fault with several aspects of Kröger's article: the ahistoricity of Kröger's decision to discuss phenomena over a thirty-year time span, his failure to place what he discusses into its social and political contexts, and his alleged misunderstanding of Kálai's intentions foremost among them. Bromig offers his own Marxist-psychoanalytical explanation for the phenomenon, suggesting, like Tanya Frank before him, that Bioromantik was a kind of sublimation of political opposition to the Rightward shift in Germany:

Sie privatisierten oder besser: psychologisierten die heraufziehende Katastrophe, gegen die sie anders, etwa durch politische Parteinahme und Opposition, nichts mehr auszurichten vermochten.... Mit dieser quasi-existentialistischen "Ikonographie" des Innen- und Urlebens der Natur, die das Rätselhafte und Nichtdarstellbare zur Darstellung zwingt, glaubten jene Künstler der Kompromittierung ihres Schaffens durch die offizielle Kunstdoktrin und ihrem Vasallen, dem gesunden Volksempfinden, entgehen zu können.\textsuperscript{122}

Though I agree with Bromig that it is important to discuss cultural phenomena in their wider contexts, the problem with his explanation is that it does not account for the similar cultural patterns (not described by Kröger) arising contemporaneously or slightly later in Britain, France, the United States and other countries with very different political circumstances at the time. Nor does it account for the origin of the pattern in the mid-twenties, before the Nazi menace became acute, and -- as Bromig himself notes -- for its con-
tinuance after the war. This is not to say, of course, that there is not a political dimension to Bioromantik. There surely is, and Kállai was aware of it. But in addition to the rise of the Right in the early 30s, the origins of Bioromantik are also linked to anti-modernity in general, to the turn-of-the-century Reformbewegung, to biocentric Anarchism and, most importantly, to the rise of an ecological consciousness. The forms of biomorphic Modernist art, furthermore, cannot be completely accounted for through historical or psychological, i.e. contextual, conditions alone. Formal sources such as scientific imaging must be invoked as well. As I hope to show in Chapter Two, the cherished Left-Right binary political schema is less than adequate in accounting for this complex phenomenon. While Bromig is correct to criticize Kröger for his failure to even invoke the political context of biomorphic Modernism, the context of Bioromantik was, as I see it, also very much more complicated than Bromig allows.

An illustration of the inadequacy of purely political/psychological accounts of biomorphic Modernist style is provided by Romy Golan’s chapter "A crisis of confidence from machinism to the organic" in her book Modernity and Nostalgia. In this chapter she attempts to show how Léger’s and Le Corbusier’s biomorphic Modernist (what she terms "organic") painting after the mid-20s was part of a general retrenchment from machine-age aesthetics emblematic of the privileging of modernity, towards what was in effect an anti-modernist trend towards the organic and the rural. While I think that her’s is one of the best analyses of the political dimension of inter-war French art, she makes no attempt to explain the specifically modernist biomorphism of Léger’s painting as opposed to the agrarian landscapes by formally conservative painters such as Robert Lotiron, Roland Oudot and Gérard Cochet, with which she compares, and indeed groups, Léger’s and Le Corbusier’s work. Part of the problem is that she does not try to define her usage of "organic," another is that she does not see it as
troublesome that Léger’s and Le Corbusier’s work does not in the least resemble the style of the conservative rural scenes with which she compares them. Finally, she does not problematize the actual political affiliations of Léger (a Socialist), or Le Corbusier (a typical representative of "third-way" interwar politics), which do not fit her binary political schema of Left/Right, progressive/reactionary, modernist/anti-modernist.126

The shortcomings of Golan’s analysis became most apparent in the way she treats E.A. Séguy’s 1931 call made in Arts et Décoration for applied artists to turn to microscopic imagery for inspiration. Apart from her failure to locate Séguy’s text within its proper context of the contemporary discourse on microscopy and nature, it does not seem to trouble her that Séguy’s recommendation that artistic usage be made of microscopic images of both wood and metal as "organic" inspirations, does not fit the discourse of ébénistes vs. machinistes, which she structurally locates within the antimodernist vs. modernist, "organic" vs. machine-age, retrenchment vs. progress, Right vs. Left antimony she constructs for interwar France.127 Her perceptive conclusion, that by comparing these micrographs "Séguy manages, by stressing the organic texture of both, to reclaim metal and glass under the taxonomy of nature," does not accord with the overall structure of her argument and is not comprehensible within that context.128

The most extensive publication to date dealing with the association between Neo-Vitalism and biomorphic Modernism is the 1994 exhibition catalogue Elan Vital oder das Auge des Eros, published in conjunction with an exhibition of the same title, curated by Hubertus Gassner.129 Because of the proximity of the theme of this exhibition to my own work, it is important to include some remarks on the histories of this and my own project. Building on an interest in Kállai’s conception of Bioromantik going back to 1979,130 and after consultations with among others, Gassner himself, this dissertation was
undertaken in November of 1990. I discussed my ideas linking biocentric ideologies, biomorphic Modernism, Modernist close-up nature photography, and scientific photography with Gassner in Kassel in the summer of 1992, and in October of that same year in Budapest at the Kállai Centenary Conference. On 24 February 1993, I gave a lecture on the subject, sketching out the elements of the cultural pattern, and Kállai’s role as the first to describe it. That fall Gassner undertook this exhibition project with Christoph Vitali at the Haus der Kunst in Munich. Forced on short notice to fill in the revived institution’s inaugural exhibition slot vacated through the sudden cancellation of another project, the exhibition opened and the catalogue appeared by the following May. I was informed of it by staff at the Stiftung Hans Arp und Sophie Taueber-Arp e.V. at Rolandseck near Bonn shortly before it opened in May 1994.

The catalogue includes articles by Mattenklott on Vitalism in early-20th-century culture and by Wolfgang Kersten on Klee, a translation of Barnett’s 1985 article on biological imagery in Kandinsky’s Paris-period art, in addition to contributions by Gassner himself. A particularly welcome aspect of this catalogue is the publication (in German translation) of the Paris journal Documents, and the discussion of Georges Bataille’s and Carl Einstein’s writings of the early 30s in this context by Denis Hollier and Klaus Kiefer, a project begun by Mattenklott in his article on Blossfeldt of 1981 and by Rosalind Krauss in her contemporary writings on Surrealism. Given the short period of time at his disposal, Gassner appropriately chose to focus on four key artists in the show, Kandinsky, Klee, Arp, Miró and Calder, all of whom were either working in Paris, or whose work was mainly being shown there by the 30s. While he relates their production to Neo-Vitalist ideologies -- and Bergson in particular -- Gassner, who knows Kállai’s work well, does not discuss Kállai in this connection. Though he focuses his discussion on Paris,
Gassner tends to privilege the German literature (Mattenklott, Lichtenstern, Kröger, Bromig), not taking into account the work of Gladys Fabre (who wrote on just this subject in 1990), or the related works by Ritterbush, Burnham and Charlotte Douglas. Apart from his treatment of Bataille’s discussion of Blossfeldt, Gassner does not relate the biomorphic Modernist art to contemporary photographic developments, nor to scientific photography in any detail.

d. Literary Studies and the History of Science

[T]he historiography of vitalism has been paradoxical: bursting with narrow scholarship on the one hand (all sorts of studies of individual figures and works), matched by silence about its hold on culture on the other. (G. S. Rousseau 1992)\(^{335}\)

With a few exceptions, such as the work of Burnham, Priebe and Kockerbeck, what has been largely missing from art historical studies is a treatment of the biocentric tradition. It is to the history of science and ideas, and to literary criticism, that we must turn to find material on the cultural impact of Neo-Vitalism and Organicism, to realize how important this subject has become over the past twenty years or so as a subject of research.

We have looked at the work of German literary historian Gert Mattenklott in the field of photographic history. Two other works of German literary history have appeared which establish the importance of Vitalism and Monism to early Modernist literature in specific, and to culture in general. In 1971 Gunter Martens -- independently of Jack Burnham -- published a crucial study which established the central role of Neo-Vitalist ideologies in the development of literary Expressionism.\(^{336}\) More than twenty years later, in 1993, Monika Fick published a study which did for "psycho-physical Monism" (Leib-Seele-Einheit as Hans Prinzhorn referred to it) what Martens had done for Vitalism: demonstrate its significance to the Modernist cultural phenomenon. While Fick touches
on the arts (Redon and Kandinsky), she does not deal with them in detail, dwelling instead on the more general thesis that the Monist idea of "spiritualized matter" or "materialized spirit" -- i.e. the unity of soul and body, of matter and spirit -- are key, ideas of early Modernist culture.

Ritterbush's importance to the history of biology has already been touched upon. His proposition of an essentially visual metaphor as being crucial to the development of modern biology was influential on other studies in the history of science, such as Donna Jeanne Haraway's *Crystals, Fabrics, and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology*. Haraway extends Ritterbush's basic insight: "At different critical points in the history of biology, the allegiance to concepts of organic form, borrowed heavily from poets and artists, guided the scientists' resolution of theoretical and empirical matters."

The interest of Anglo-American literary historians in Organicism was given its original impetus by M. H. Abrams' 1953 book *The Mirror and the Lamp*. Since that time, and especially since the 1980s, there has developed a large literature on the Organicism of the Romantic poets, particularly Coleridge, and the Vitalism of late 19th-century writers. In 1972, George S. Rousseau of the English Department of UCLA published a crucial anthology entitled *Organic Form: The Life of an Idea*, which began to investigate the link between Organicism and Modernism as well. Rousseau's work derives from the intellectual circle around Marjorie Hope Nicolson, founder of the Literature and Science section of the Modern Languages Association, who was influenced by Arthur Lovejoy's seminal *geistesgeschichtlich* monograph of 1950, *The Great Chain of Being*. Rousseau, one of Nicolson's students, has compiled an interdisciplinary bibliography on organic form up to 1970. This anthology includes an essay by Ritterbush which deals more directly than the 1968 catalogue with the history of the idea of organic form amongst philosophers and biologists.
Rousseau's anthology and Haraway's influence initiated a revival of interest in Organicism among cultural historians by the 1980s. A whole series of dissertations began appearing on the subject from about 1986 onwards, in the fields of literature, history and music. These dissertations dealt primarily with the 18th and 19th centuries.\textsuperscript{342}

Rousseau's project in producing this anthology was extended by Frederick Burwick fourteen years later, in his anthology \textit{Approaches to Organic Form},\textsuperscript{343} which cast its net even wider in the field of cultural studies than Rousseau had done. Most importantly with respect to this study, in his article "'Such as the Life is, Such is the Form': Organicism Among the Moderns," Paul Douglass outlines the crucial role Organicism played in the development of Modernism. Burwick's student at UCLA, Douglass, had written his dissertation on Bergson.\textsuperscript{344} In it he notes not only the work of Abrams, Carlos Baker, and others in establishing the direct links between Modernism and Romanticism,\textsuperscript{345} but also the paucity of literature on Organicism in Modernist literature from Coleridge's time to that of T. S. Eliot\textsuperscript{346} and the denial of this heritage among the Moderns: "But though the Modernist aesthetics remain profoundly Coleridgean, and therefore quintessentially organicist, Modernist writers deny this heritage by breaking vehemently with Romantic pride, with Romantic faith in the innocence of expression."\textsuperscript{347} Indeed, Douglass sees in Organicism a basis for critiquing Deconstruction as a practice that does not find meaning in literature precisely because it does not view literary products as organic wholes.\textsuperscript{348}

In 1992 Douglass teamed up with Burwick to edit the next in this series of publications in literary studies, \textit{The Crisis in Modernism: Bergson and the Vitalist Controversy}.\textsuperscript{349} Here, the emphasis shifted from Organicism to Vitalism, and the volume offered a dazzling array of articles on the subject, from the Enlightenment, through Mikhail Bakhtin (commented
upon by George Rousseau), to Gilles Deleuze.

e. Post-Modernism and the Organic

Michel Foucault has said that this century might perhaps one day come to be known as ‘Deleuzian’.... And if we are willing to grant Deleuze even a fraction of the significance Foucault would give him -- if, that is to say, Deleuze’s contribution to post-structuralism is constitutive -- then we must confront the fact that post-structuralism offers us a sort of ‘Bergson redux.’ Certainly Bergson has furnished Deleuze with some crucial tools for his project of ‘decentering,’ ‘multiplicity,’ and ‘tension’.... In Bergsonism ... Deleuze has taken up the cudgels for a time-worn cause: namely, the vitalist approach to philosophy.\(^{30}\) Bergson has become fresh material again, and the fact that he cannot be trapped in a narrow definition of naive vitalism makes the vitalist aspects of his philosophy all the more stimulating.\(^{31}\)

Even if Paul Douglass’ text does not seem startling to some readers, it does give one food for thought. Indeed, there is something plausible about the notion that Deleuzian "decentering" is a variant of biocentric anti-anthropocentrism, even if the end-use of this concept was vastly different among biocentrics such as Ludwig Klages and Raoul Francé. Certainly, the until-recently-repressed lifelong fascination that Walter Benjamin had for Klages and his philosophy is a further indication of such seemingly impossible links. In his Bergsonian neo-vitalist/Pragmatist conception of art, Alexander Dorner finds it evident that "the artist’s personality is no longer compounded of an eternal spiritual matter.... Therefore it is only natural that individual personality should have lost its value as ultimate, immutable and self-sufficient being.... The traditional autonomy of the individual ... strikes us today as obsolete, indeed as dangerous."\(^{32}\)

With this in mind, it seems less strange that an institution as central to the Post Modernist project as Zone Books of New York has over the past decade published in translation or new editions Gilles Deleuze’s Bergsonisme, Henri Focillon’s
Bergsonian and materialist-Organicist The Life of Forms in Art, and the holist neurologist Kurt Goldstein's The Organism. Two of the editors-in-chief of Zone, the art historians Jonathan Crary and Sanford Kwinter, have also produced the central anthology of this Post Modernist neo-Organicism: Incorporations.

That Deconstruction includes Lebensphilosophie in its intellectual heritage, though it has been the radical, epistemologically critical Nietzsche and Heidegger that have been appropriated. Gianni Vattimo goes as far as to write that "it could legitimately be argued that philosophical post-modernity is born with Nietzsche's work..." between 1874 and 1882, i.e. during the rise of modernity in general.

If all this sounds bizarre given the attack that Deconstructionists such as Paul de Man have conducted against "idealist" or "essentialist" philosophies, and against Organicism in particular, Richard Shustermann, in an analysis of this attack, has shown the fundamental identity of the central Saussurean/Derridean concept of différance and the core Organicist conception of "organic unity." In her article "Eco-Subjects," Verena Conley has traced the environmentalisms inherent in the writings of David Harvey, Paul Virilio and Félix Guattari, emphasizing that by 1988 Virilio held that after Chernobyl "The only struggle worth fighting for is a truly ecological struggle." But whether such a project is legitimized by Post-Modernism or not, it is time to examine the biocentric impulse to Modernism.
ENDNOTES


4. Schiff, Cézanne and the End of Impressionism, xiv.

5. Udo Kultermann, The History of Art History (Abaris Press, 1993), 177. On Barr's reading of Fry, Bell and Barnes, and his turn to formalism, see Irving Sandler's Introduction in Defining Modern Art. Selected Writings of Alfred H. Barr, Jr.. Irving Sandler, ed. (New York: Abrams, 1986), 11. I have added the Wolfflin student Siegfried Giedion to this list.


9. Ibid., 25.


16. Ibid., 462.


19. As mentioned in the introduction, Dorner discusses the curved line as a "hieroglyph" of Becoming, of the new dynamic view of the world which came to the fore during the Romantic era. He includes artists such as Kandinsky, Klee, the abstract
(or as he calls them) "Romantic" Surrealists, Expressionists, the Art Nouveau, Munch, Klimt, Beardsley, Whistler, Gauguin, van Gogh, Böcklin, the Pre-Raphaelites, the Nazarenes, Runge, Friedrich, Blake, Flaxman and Fuseli in this category. Dorner, *The Way Beyond 'Art': The Work of Herbert Bayer* (New York: Wittenborn, Schultz, 1947), 90.

20. Huyghe, *Formes et Forces*, 251-56, 316-26. The well-informed amateur and dealer Malcolm Haslam, in his book *In the Nouveau Style*, discusses this curvilinear style from Blake to the Post-Modern, focusing on design (but including discussions of both biomorphic Modernist art and scientific and close-up nature photography), and defining it in terms of the Art Nouveau (Boston: Bullfinch Press, 1989), esp. Chapter Five.


22. Though he does not mention Biomorphic Modernism in this context, James Elkins points out the formal relations of fractal geometry to such a sequence, particularly its Rococo variant. See Elkins, "The Drunken Conversation of Chaos and Painting," *M/E/A/N/I/N/G* 12 (1992): 57-8.


27. On Read’s neo-Lamarckian (i.e. teleological) biologicist
nature-centrism (in effect, biocentrism), see George Woodcock,
_Herbert Read: The Stream and the Source_ (London: Faber and
Faber, 1972), 18: "There are many threads that unite Read’s
books in ways that are neither linear nor circular, and at the
centre of every knot one finds the fact that his philosophy --
aesthetic or libertarian... -- sets its roots always in
biological reality, in the ‘natural conditions of existence by
means of which, as Read once remarked, a man 'can give an
answer to most of the problems of life.'" On page 27 Woodcock
writes that Read’s concept of Anarchism was "...virtually
identical with that of Kropotkin," the theorist of biologicist
Anarchism. For example, Woodcock quotes Read as writing that
the "free society’s" "ideal condition is ‘the same as the
ideal condition of any living body -- a state of dynamic
tension'; it must allow itself to be ‘stirred into the vibra-
tion and emanation of organic growth’." (p. 248) Read’s teleo-
logical and neo-Lamarckian views on evolution were indebted to
Bergson. On this debt, and on his valorization of Bergon’s as
"the only metaphysics that is based on biological science,"
see page 222 of Woodcock.

28. Unit 1: _The Modern Movement in English Architecture,
Painting and Sculpture_ was an anthology edited by Herbert Read
(London: Cassell & Co., 1934). On Read’s centrality to the
London avant-garde of the time Geoffrey Grigson writes: "If
there was a London centre of the new ‘modernism’, a centre of
that centre was certainly the Mall Studio off Parkhill Road in
which Herbert Read and his new, Edinburgh wife lived..." in
Grigson, _Recollections: Mainly of Writers and Artists_ (London:
Chatto & Windus and the Hogarth Press, 1984), 56. See also
Woodcock, _The Stream and the Source_, 25-6. _Axis_ was the jour-
nal -- edited by Myfanwy Evans -- of this London Modernist
circle from 1935 to 1937. On the circle, see Christa Lichten-
sten, "Henry Moore and surrealism," _The Burlington Magazine_,
122, no. 944 (November 1981): 646.

29. David Thistlewood, _Herbert Read: Formlessness and Form: An
Introduction to his Aesthetics_ (London: Routledge & Kegan
Paul, 1984), x.

30. Evident in his writings, this view is reinforced by This-
tlewood, _Herbert Read_, xi, 41-5. For an early statement of
Read’s Worringerianism, see Read, _The Anatomy of Art_ (New
York: Dodd, Mead & Co., 1932), 50-54.

31. This is the way his dedication in his _The Philosophy of
Modern Art_ is phrased. (London: Faber and Faber, 1952), 7.
Concerning Worringer’s influence on English Modernism --
mainly through T. E. Hulme and Read -- see Geoffrey C. W.
Waite, "Worringer’s Abstraction and Empathy: Remarks on Its
Reception and on the Rhetoric of Its Criticism," in Neil H.


35. Worringar's account of the organic as related to empathy was based on a misunderstanding of Lipps, his source. See Waite, "Worringar's Abstraction and Empathy...," 24ff.

36. Traces of an awareness of this difficulty are apparent in Read's book *Art and Society* (London and Toronto: William Heinemann, 1937) for example, where after employing the terms "geometric" and "organic" he feels compelled to include an explanatory endnote: "So far as possible I propose to use geometric and organic, abstract and representational, as contrasted or antithetical terms" (pp. 24, 33, note 14).

37. After admitting only of "Cubism" (abstracted Modernist representational art) and "Abstraction," which -- following Worringar -- he defines in geometrical terms alone, Read writes: "It may be objected that a type of modern art exists which has no relation with natural forms or objects, but which is nevertheless not an affair of geometry... It is represented by certain phases of Picasso, by Arp, Miró and Max Ernst. But for this type of art we have the accommodating term super-realism [Surrealism]... I mean no disrespect to [Surrealism], but obviously a type of art which claims to break down the barriers between the conscious and the unconscious, which uses both conscious and unconscious symbolism, can be made the foster-mother of many enfants terribles." Herbert Read, "Our Terminology," *Axis 1* (January 1935): 8. On Read's attitude towards Surrealism during this period, see Thistlewood, *Herbert Read*, 78-79. On Read and Roland Penrose as the "leaders" of the English Surrealist group in the late '30s, see Dawn Ades, *Dada and Surrealism Reviewed* exh. cat. (London: Arts Council of Great Britain, 1978), 350. See also p. 348 on Read's complicated, ambivalent attitude towards Surrealism.
38. Read, *Art and Society*, 259-60. Note that, like Kállai, in principle Read included geometric abstraction among the artists he is referring to here.


41. Hepworth, statement in Read, ed., *Unit 1*, 20.

42. Ibid., 30.


Kunstformen der Natur, the 1929 English edition of which was complete. The popularity of the publications is indicated by a second printing of the 1929 Art Forms in Nature in 1935. (See the advertisement in Axis no. 4 [1935], unpag.)

45. Reported by Nash in "Photography and Modern Art," 23. This is a very early example of the naturamorphic analogy being presented in an exhibition format, and is concurrent with Kállai's plans for such an exhibition at the Leipzig museum. (On that, see below.) However, because the juxtaposition by Wellington at Zwemmwerl's was -- following Blossfeldt's own intention of providing models for applied artists -- of close-up photographs and items of furniture, one cannot regard it as having the same importance as Kállai's plans of 1932 and their realization in 1947 to present scientific photographs in conjunction with actual items of Modernist art. In a sense Wellington's installation is a circular projection of Blossfeldt's original intentions with respect to his photographs.


50. The writer may have been the editor, Myfanwy Evans. Axis, no. 4 (1935): unpag.


54. Grigson, "Comment on England," *Axis* no. 1 (January 1935): 8-19. Since the text appeared in January of 1935, it might be assumed that Grigson wrote it in 1934. Ernő Kállai and Carola Giedion-Welcker, by valorizing such production in their criticism of 1932 and 1934 respectively, were in effect promoting its production within the German-speaking part of Europe, though they did not do so explicitly. On them, see below.

55. Another term proposed in this circle for biomorphic abstraction was "Subjective Abstract Form." See: J. and M. Thwaite, "Surrealism and Abstraction -- the search for subjective form," *Axis* no. 6 (1936), 22-23.


58. He did this in relation to sculpture in a text on Moore in *The Philosophy of Modern Art*, 202, 207. Thistlewood follows this development in detail in *Herbert Read*, Chapter Four. Burnham's account of it in *Beyond Modern Sculpture* (pp. 71-74) is shorter, and necessarily more superficial, but it was the first time anyone had attempted it.


61. Moore was untroubled by the details of Worringer's text. See his statement in *Unit 1*, 29: "Asymmetry is connected also with the desire for the organic (which I have) rather than the geometric. Organic forms though they may be symmetrical in their main disposition, in their reaction to environment, growth and gravity, lose their perfect symmetry."
62. This term seems first to have been employed in published form in "Comment on England," which, since it appeared in the January 1935 issue of Axis, was probably written late in 1934. He explained its use and origin fully in his concurrent "Painting and Sculpture Today," published at some point in 1935.


64. Ibid., 81.

65. Grigson, "Comment on England." A similar categorization was promoted by Myfanwy Evans in his article "Order! Order!," in which he saw Picasso, Arp, Giacometti, Moore, Hélion, Hans Hartung, John Piper, and a few others as belonging to neither the Surrealist nor the purely Abstract categories, but forming a tendency on their own. Axis no. 6 (1936): 8.


68. Signs of this discourse are to be found throughout Europe in the mid 30s. See, e.g., the articles by Myfanwy Evans, S. John Woods, J. and M. Thwaites and John Piper in Axis no. 6 (1936). Kállai already anticipated it in his "Zurück zum Ornament" (Forum, 1932: 226).

69. Erni had an interest in microscopy going back to his childhood, and was one of the few Modernist artists to produce art micrography, in cooperation with the biologist Ernst Boesiger and with Adolf Portmann at the Hydrobiological Institute in Lucerne. On this see John Matheson, Hans Erni: Drawings and Public Commissions (Frauenfeld: Edition Scheidegger im Verlag Huber, n.d. [1979]), 12; Walter Rüegg, Hans Erni. 1 Paintings ed. Ernst Scheidegger (Munich: Edition Erpf Bern, n.d. [1979]), 87 (for a reproduction of one of his first micrographs -- alas undated) and Boesiger’s "Erni’s Beziehungen zu den Naturwissenschaften," in Jean-Christophe Ammann, ed., Zeitgenossen sehen Hans Erni (Lucerne: Kunstkreis Luzern, 1972), 70-75. Of Erni’s "humanistic" biocentrism Boesiger writes: "Von Evolutionsprinzip her verstehe ich Ernis Werk am besten: vom Interesse für Natur und Menschen, beide nicht der Natur entgegen-gestellt, da sie Teile der Natur sind." (p. 91) On Erni’s anti-anthropomorphism, and his valorization of Nietzsche’s Vitalism see also Rüegg, Hans Erni, 73, 75. Erni’s biocentric interest in the natural sciences lasted for most of his career, even if his interest in producing biomorphic abstraction did not. After the late 30s he developed a representational muralistic style which culminated in his illustrations for an encyclopedia of science in 1959. He often expressed biocentric themes in his representational works. See, e.g., his tempera paintings Bios (1941) and Man’s Place
in Nature (1959), in Rüegg, Hans Erni, 115, 184. The title *Bios* suggests that Erni had read Raoul Francé’s two volume manifesto of biocentrism *Bios: Die Gesetze der Welt*. On Francé, see Chapter Three.


71. The artists are Arp, Braque, Calder, de Chirico, Derain, Ernst, Erni, Fernandez, Giacometti, Gonzalez, Gris, Hélion, Kandinsky, Klee, Léger, Miró, Mondrian, Nicholson, Ozenfant, Paalen, Picasso,

72. First proposed by János Brendel in his article "Der deutsche Einfluss von Scheerbart und Wilhelm Ostwald auf die ungarische Konstruktivistentheorie" (in Hubertus Gassner, ed., *Wechselwirkungen: Ungarischer Avantgarde in der Weimarer Republik* (Marburg: Jonas, 1986), 177), this dialectic in Kállai’s theory of Constructivism was explicated by Monika Wucher in her "Attribute des Konstruktivismus: Die Ordnungsversuche des Ernő Kállai," and was extended to his writings on Bioromantik by Gábor Pataki, "Technoromantik" (both in Hubertus Gassner, Karlheinz Kopanski and Karin Stengel, eds., *Die Konstruktion der Utopie: Ästhetische Avantgarde und politische Utopie in den 20er Jahren* (Marburg and Kassel: documenta Archiv and Jonas Verlag, 1992), 190-6 and 203-07, resp.)

73. Kállai, "Zurück zum Ornament." The fuller text: Es gibt noch Zeichen dieser ungebrochenen schöpferischen Tatkraft. In Paris ist eine internationale Vereinigung "Abstraction-Création" zustande gekommen... Die Künstler, die im Zusammenhang mit der

On Bioromantik, see below. On Kállai and Klages, see Chapter Five.

74. See Farner’s cited letter to Erni of 22 January 1935.

75. "Mathematik," these antithese synthese, 28.

76. See Jakovski, "Inscriptions under Pictures," especially the sentences on Brancusi, Arp and Miró, e.g.: "The unending embrace, is that not the dream of Miró’s and Arp’s creation?" (p. 16)


78. Alfred Cort Haddon, Evolution in Art: As Illustrated by the Life-histories of Designs (1895) (London: Walter Scott, 1902). Published in Havelock Ellis’ "Contemporary Science" series. From 1881 to 1893, though he was English, Haddon held the chair in zoology at the Royal College of Science in Dublin, Ireland. Later he moved to Cambridge, England where he contributed to the founding of the "Cambridge School" of anthropology, a school of which he was considered the "leader." Biographical details on Haddon are from George W. Stocking, Jr., After Tylor. British Social Anthropology 1888-1951 (London: Athlone, 1996), 98-115. On Ellis and Haddon, see Stocking, 107. On Haddon and the Cambridge School see Stocking, 115-6. Given that he was originally trained as an evolutionary zoologist, it is not surprising that Haddon adapted the Darwinian method of analysis to his adopted second field
of anthropology, by attempting to trace the morphological
evolution of categories of material culture. On this, see
Stocking, 105-6.

79. Herbert Christian Merillat points out this origin of
"biomorph" in Modern Sculpture: New and Old Masters (New York:
Dodd, Mead & Co., 1974), 31. Though Merillat does not cite a
source, it might have been Webster’s New Collegiate Diction-
ary, Ninth Edition, (Springfield, MA.: Miriam Webster, 1983),
which, though it does not give a bibliographical reference, cites 1895 as the year of the earliest usage of "biomorph,"
the year Evolution in Art appeared.

80. Haddon, Evolution in Art, 126-27. The quotation in par-
entheses is from a passage on page 127.

81. Ibid., 127. Haddon was a protégé of the English Darwinian
zoologist Thomas Huxley, and through Huxley as well as his own
zoological studies, he would have known the work of Ernst
Haeckel very well. He was also a student and friend of the
Scottish organicist city theorist Patrick Geddes. See Stock-
ing, After Tylor, 99, 107. On Geddes and Hannes Meyer, see
Chapter 5.

82. Ibid., 128.

83. Grigson was one of the major promoters, theorists, practi-
tioners and critics of British Neo-Romanticism, both literary
and artistic. A Vitalist himself, he promoted the Vitalist
artists Wyndham Lewis and Henry Moore among his contemporar-
ies. He also published extensively on British Romantic art and
literature (Blake, Coleridge, Palmer, Constable, Turner) and
on nature (English wildflowers). See Grigson, Recollections,
and Jeffrey, "Neo-Romanticism Against Itself." On Grigson as
a "disciple" of Lewis, see King, The Last Modern, 123.

84. Mark Roskill, The Interpretation of Pictures (Amherst: The
University of Massachusetts Press, 1989), 83. First published
in 1915, Wölfflin’s Principles of Art History appeared in
English by 1932. See "Preface to the Sixth Edition," Princip-
les of Art History (New York: Dover, n.d. [c. 1950]), vii,
footnote 1.

85. Alfred H. Barr, Jr., Cubism and Abstract Art (New York:
MOMA, 1936), jacket. For an intelligent critique of the geo-
metric/organic bifurcation of pattern, i.e. art-making (e.g.
in the work of Worringer and Hauser), see Burnham, Beyond
Modern Sculpture, 69. Concerning Wölfflin’s reliance on formal
qualities and binary oppositions, see Kultermann, The History
of Art History, 178.


88. On this resistance, see Sandler, "Introduction," 12-13. Sandler's attempt to recast Barr as an anti-formalist is exaggerated, and reflects more Sandler's eagerness to defend Barr from "accusation" of formalism (a byproduct of the anti-formalist 80s when Barr was, like Greenberg, scapegoated), rather than of Barr's actual thinking. Though a formalist by orientation, Barr did not hold a Greenbergian reductivist view of this creed, but incorporated his formalism into a wider view of critical and historical value.

89. For a reading of Worringer as opposed to Vitalism, see Michael W. Jennings, "Against Expressionism: Materialism and Social Theory in Worringer's Abstraction and Empathy," in Donahue, ed., *Invisible Cathedrals*, 99. I do not think this to be the only possible reading of Worringer's attitudes.


94. "In renouncing or drastically distorting natural shapes the abstract painter makes a judgement of the external world. He says that such and such aspects of experience are alien to art and to the higher realities of form; he disqualifies them for art... [M]odern... painters... seek freedom outside of nature and society and consciously negate the formal aspects of perception... that enter into the practical relations of man in nature." Schapiro, "Nature of Abstract Art" (1937) in Schapiro, *Modern Art: 19th and 20th Centuries. Selected Papers* (New York: George Braziller, 1982), 198.

95. Schapiro, "Nature of Abstract Art," 211.

97. Carline van Eck suspects that "organisch" was first used in relation to architecture by Alois Hirt (1759-1839). Carline van Eck, Organicism in Nineteenth-Century Architecture: An Inquiry Into its Theoretical and Philosophical Background (Amsterdam: Architectura and Natura Press, 1994), 144.


99. Donna Haraway, Crystals, Fabrics and Fields: Metaphors of Organicism in Twentieth-Century Developmental Biology (New Haven: Yale University Press, 1976), 193. See Haraway’s discussion of the relations between organicism and vitalism on pp. 22-24, 33:34, in which she argues that there are significant differences between organicism and vitalism: "...although both vitalists and organicists share a devotion to the idea of wholeness and a rejection of mechanistic physics and chemistry as adequate to the solution of biological problems, they diverge on a very critical issue. Organicists declare that it will be possible to state positive, unambiguous, empirically grounded laws for all aspects of the behavior of organisms. Form and organization are not mysteries, but challenges." (p. 197) I discuss this issue in Chapter Two.

100. Concise Oxford English Dictionary. (Oxford: Clarendon Press, 1964) and Webster’s Ninth New Collegiate Dictionary (Springfield Mass.: Miriam Webster, 1983). Note that "biomorph" does not appear in the 1959 edition of the Shorter Oxford English Dictionary (1933-59), and so it seems to have been added only in the early 60s.


102. Robert Goldwater, What is Modern Sculpture? exh. cat. (New York: MOMA, 1969), 56. It is characteristic that the term "biomorphism" is invoked more often for sculpture than painting, but Goldwater’s text and others similar to it can be applied just as well to painting, the graphic arts and indeed photography.


107. Ibid.


111. The virus, geometric, indeed "crystalline" in form, and controversial as to whether it is "alive" or inanimate, would have suited Haeckel's purposes even better. On the "crystalline" in Modernism, see Regine Prange, *Das Kristalline als Kunstsymbol: Bruno Taut und Paul Klee. Zur reflexion des Abstrakten in Kunst und Kunsttheorie der Moderne* (Hildesheim: Georg Olms Verlag, 1991). We can see how complicated and confused things become with Worringer's identification of the crystalline with the "abstract," and the problematic nature of organic abstraction in his schema.


116. His work was nevertheless well-known in New York. For example, he was quoted prominently by Elodie Courter Osborne in the introductory text to *Teaching Portfolio Number Two*: 

Texture and Pattern (New York: Museum of Modern Art, n.d. [1948-49]), a publication which encouraged the naturamorphic analogy in the applied arts by including leaves with natural patterns printed on them, much the way Haeckel had encouraged such usage in his turn of the century Kunstformen der Natur.


118. Robert Goldwater establishes "Abstract Organic Form" and "Organically Stylized Form" as sections of his exhibition on the influence of Modernist art on contemporary design in his exhibition catalogue Modern Art in Your Life (New York: MOMA, 1949), 26-33. (See also the schematic representation of the layout of the exhibition on page 44 in the 1953 edition of the catalogue.)

119. Goldwater, What is Modern Sculpture?, 56.

120. Andrew Carnduff Ritchie, Abstract Painting and Sculpture in America (New York: MOMA, 1951), 66-68, 92-101, 125-47. In addition, Ritchie includes the work of biomorphic Modernists such as Calder and O'Keeffe in yet other categories, and he incorporates a discussion of Brancusi's work, and of its formal affinities with that of Arp and Moore, in a section he entitles "The Object Purified: Brancusi and Organic Abstraction." (pp. 21-25) in his Sculpture of the Twentieth Century (New York: MOMA, 1952).


123. Metzger, "Biomorphism in American Art." For example, while Metzger writes, "The abstract Surrealists used biomorphism as a tool to uncover the primordial biological roots that link mankind more directly to irrational nature than to a technological civilization" (p. 93), he does not expand on this idea.

124. See Christopher Green's discussion of Miró, Masson and Ernst in Cubism and Its Enemies (New Haven: Yale University Press, 1987). In it, Miró appears as the most faithfully automatic of the group (pp. 267-71).


I do not mean to imply that the Romantic heritage was never mentioned. Marcel Jean cites Breton's "First Manifesto of Surrealism" as constituting a bridge between the psychologies of Freud and Romanticism. Indeed Surrealism was seen in France during the 30s as a manifestation of Germanic Romanticism. Rather, it was specifically the heritage of Naturromantik which was downplayed, particularly in the post-war formalist critical literature. See Marcel Jean and Árpád Mezei, The History of Surrealist Painting Translated by Simon Watson Taylor. (New York: Grove Press, 1960), 118. Joan Miró is a special case: though he was clearly fascinated by nature, this fascination was not born and nourished within a context of Naturromantik. Thanks to Elizabeth Legge for tips on this topic.


132. See Stafford, Body Criticism.

133. Ernst Kállai, "Bioromantik," Forum (1932): 271-74. The article reappeared in a slightly altered version without the illustrations in the Berlin journal Sozialistische Monatshefte, in January of 1933 (vol. 75, no. 1: 46-50), just before it was shut down by the Nazis. Forum was published in Slovak, German and Hungarian, the three languages of the Slovak capital Bratislava (also: Pozsony or Pressburg), located near Vienna. He had been developing these ideas in articles such as "Das Bauen und die Kunst," Der Kunstkünstler 1 (April 1929): 16; "Vision und Formgesetz," Blätter der Galerie Ferdinand Möller no. 8 (September 1930): 2-4; "Rhythmus in Bildern," Die Weltbühne 26 no. 41 (7 October 1930): 55; "Kunst und Wirklichkeit," "Kunst und Technik," Sozialistische Monatshefte 37 no. 11 (November 1931): 1099-100; "Zurück zum Ornament," Sozialistische Monatshefte 38 no. 7 (July 1932): 613; "Zeichen und Bilder," Die Weltbühne no. 38 (June 1932): 444-5 and in a different version in Forum (1933): 122-3 and 150-51. On the development of Kállai’s conception of "Bioromantik," see Chapter Five.


140. The Ukrainian Alexander Archipenko, the Alsatian Hans/ Jean Arp, the Romanian Constantin Brancusi, the Czech František Foltyn, the Lithuanian Jew Lipschitz, the Catalan Joan Miró, the English Henry Moore, the Swiss Kurt Seligmann, the French G. H. Roux and the Germans Fraddo Bartoluzzi, Otto Coester, Max Ernst, Richard Haizmann, Paul Klee, Fritz Kuhr,


142. This has been the consensus of my interviews with members of Kállai's Budapest circle, and is still the way the term is understood and employed among the cognoscenti in Hungary.

143. On this topos, see the Introduction and Chapters Three, Four and Five. I will write a full history of it elsewhere. As Forgács writes, "with the designation of Bioromantik, Kállai delimited a tendency within Surrealism, the highlighting of which is justified, and which without this highlighting would remain unnamed." Forgács, "Bevezető," 26.

144. Kállai, "Bioromantic" Forum: 273. As Forgács writes, "with the designation of Bioromantik, Kállai delimited a tendency within Surrealism, the highlighting of which is justified, and which without this highlighting would remain unnamed."

145. On O'Doherty, see below.


147. "At present it is difficult for anyone to imagine the state of three-dimensional art just prior to the Second World War. It was certainly not what books published in the past ten years would have us believe. When Carola Giedion-Welcker's Contemporary Sculpture first appeared in 1937, her thesis was definitely a minority opinion. However the text and photographs for this book were an incredibly valid and accurate estimation of significant twentieth-century sculpture as we see it today." Burnham, Beyond Modern Sculpture, 168-69.


153. "Organische Elementarismus" is a term she uses to describe Arp and Brancusi in her 1934 article "Neue Wege der heutigen Plastik."

154. In the first quotation (p. xxvii) she is writing of Brancusi. The second quotation is about "Organic Elementarism" (i.e. biomorphic Modernism) in general, about Giacometti, Lipschitz, Moore and Hepworth. Giedion-Welcker, *Contemporary Sculpture*, xxix.

155. Ibid., xxix-xxx.


159. Ibid., 35.

160. Dorner likened it to the analogous "Pragmatist" philosophy of William James and John Dewey he encountered after his emigration to America in the late 1930s. Like Moholy-Nagy, it was Dewey's philosophy which Dorner felt the closest affinity to after his transfer to the United States. Indeed, Dorner dedicated *The Way Beyond Art* to Dewey. See pp. 18-19.

endnote 1 (p. 50) for a review of the literature on this room.


163. Ibid., 90.

164. Ibid., 96. The exact relations between Dorner's term "Modern Realists" and biomorphic Modernism is a subject for further reasearch.

165. See Kállai, "Kunst und Wirklichkeit," etc.

166. In 1913 Strzygowski outlined the program of research for the Vienna Institute in a manner surprisingly close to what we would now term "cultural studies": "1. Starting with the art of Europe, the institute should study the art of Asia and, in principle, that of the whole world. 2. It should study the visual arts within the context of cultural history. 3. It should find a systematic balance between historical materials, peripheral fields, and general cultural research." See Kultermann, The History of Art History, 163. A well-known article on this subject is Gombrich's "Reflections on a Hobby-Horse or the Roots of Artistic Form" in Lancelot Law Whyte, Aspects of Form (London: Percy Lund Humphries, 1951), 209-228. Thanks to Gerta Moray for pointing this article out to me.


170. For a high Modernist attempt to explore the possibility of a visual syntax, see Kepes, Language of Vision. As a reformist Modernist, Kepes had high expectations of the promotion of an awareness of such a language: "The language of vision, optical communication, is one of the strongest potential means both to reunite man and his knowledge and to reform man into an integrated being... Visual language must be readjusted, however, to meet its historical challenge of educating man to a contemporary standard, and of helping him to think in terms of form." (p. 13) Critics such as Jonathan Crary and Barbara Stafford might be expected to at least
acknowledge this tradition of visuality within Modernism that they are so keen on promoting. Neither Crary in *Techniques of the Observer* nor Stafford in *Body Criticism* list Kepes' books in their bibliographies.


178. For a discussion/critique of "deconstruction" which I sympathize with, see George Steiner, *Real Presences: Is there anything in what we say?* (London: Faber and Faber, 1989), 128-34. Thanks to Gerold Plotnick for pointing this book out to me, for discussing the content of this paragraph and for suggesting wording changes.


180. I accept the biologically- and psychologically-based idea that there is no unified "subject." Thus, it is a complicated and difficult matter to impute intentionality. This does not mean that there is no intentionality. Nor does it imply that the range of possible intentions is limitless, rendering their divination impossible. It implies, rather, that intentions may be multiple and even contradictory within one "subject." The writing of history, like people themselves, is complicated.


186. White, *The Content of the Form*, 54.


188. On the historical construction of styles, see Chapter One of Hauser’s *Mannerism*.

189. Kubler, *The Shape of Time*.

190. Ibid., 117.


192. David Mellor, Editor’s Preface, *A Paradise Lost: The Neo-Romantic Imagination in Britain, 1935-55* exh. cat. (London: Barbican Art Gallery, 1987), 9. So deeply ingrained is the binary opposition of Formalism = abstraction vs. Neo-Romanticism = figuration, that this catalogue does not include the "non-figurative" work of those artists such as Moore, Hepworth and Nash who had begun the call for a return to nature in British art.

193. While Metzger focused on American art in his dissertation, he also treated European biomorphic Modernism as a source for its American equivalent. Metzger, "Biomorphism in American Painting," Chapter One. For a discussion of Metzger’s dissertation, see below. This surprising lack of interest is mirrored in the field of architectural history: According to Caroline van Eck, the books of Zevi and Collins, the only historical works on organicism in architecture, were polemical Modernist tracts. The one exception is Philip Steadman, whose writing is more diachronically than synchronically focused, not so much on history as on system. On Steadman see Chapter Three. Van Eck, *Organicism*, 35-36.

194. Greenberg effectively avoided discussion of biomorphic Modernist artists or, when he did deal with them, strictly limited his treatment to formal issues. See, for example, his discourse on Brancusi in his essay "The New Sculpture" (1948-1958) in: Clement Greenberg, *Art and Culture. Critical Essays* (Boston: Beacon Press, 1961), 141-42. As he wrote in "Towards a Newer Laocoon" (1940), "The purely plastic or abstract qualities of the work of art are the only ones that count."

195. This point was made by Leo Steinberg in his 1953 article "The Eye is a Part of the Mind," *Partisan Review* 20, no. 2 (1953).


198. See, e.g., Metzger's descriptions of Dove's paintings in Chapter Two of "Biomorphism in American Art."


203. Ibid., 79-80.


205. This change in valuation was part of a larger "paradigm shift" in the life sciences which occurred, according to Donna Haraway "between the First World War and the present," during which time "biology has been transformed from a science centred on the organism, understood in functionalist terms, to a science studying automated technological devices, understood in terms of cybernetic systems. Organic form ... gave way to systems theory...." *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 44-5, 58-9. This shift is exactly mirrored in Burnham's text.

Bergson and the Vitalist Controversy (Cambridge: Cambridge University Press, 1992), 7. Burwick and Douglass note, however, that "Nagel himself was not really burying the subject. In fact, by advocating 'organismic biology,' he had joined the proponents of a renovated vitalism" (p. 7).

207. Burnham, Beyond Modern Sculpture, 63. For a discussion of the discrediting of Neo-Vitalism in the biological sciences within the discourse of art history, see Burnham, pp. 56-65.

208. See the passage quoted from the Graduate Group in Biophysics at the University of California, San Francisco of 1991 in George Rousseau, "Traditions of Enlightenment Vitalism" in Burwick and Douglass, eds., The Crisis in Modernism, 15-16. Vitalism or its variants survive, of course, even among scientists. The ultimately Vitalist nature of organismics and systems thinking suggested by some is one means by which Vitalist views may persist today. C.f. also "New Paradigm" thinking and "Quantum Mysticism." Consult, e.g., Dirk Dunbar, The Balance of Nature's Polarieties in New-Paradigm Theory (New York: Peter Lang, 1994) and Patrick Grim, ed., Philosophy of Science and the Occult. Second edition. (Albany: State University of New York Press, 1990), Section IV, "Quantum Mysticism."


In the summer of 1992, during discussions with Hubertus Gassner in which I sketched out for him the approach to the subject I had been developing over the past year and a half, Gassner tried to dissuade me from linking biomorphic Modernism with biocentrism, warning me that biocentrism was dangerous territory to enter because of its Nazi associations. This warning was repeated by other German colleagues I consulted on the matter, so I endeavored to inform myself as thoroughly as possible on the subject. As is evident from Gassner's own treatment of the subject not three years later in the exhibition Elan Vital (an exhibition displayed in what was originally a showcase of Nazi art, no less), this does not constitute a reason to avoid the historical treatment of the subject.

There is a fundamental logical error in treating biocentrism, neo-Romanticism, Vitalism, etc. as "Nazi." It resides in the assumption that because the National Socialists appropriated a belief, that belief or its source was itself inherently Nazi. Following this line of reasoning, everything from homosexual rights, animal rights, environmentalism, organic farming and vegetarianism (all espoused by Hitler and his associates Rohm, Hess, Darré and others at one point or another), to the ideals of full employment, universal health care and a comprehensive network of freeways, would be suspect in the same way that occult "Aryan" supremacy, genocidal racism, murderous homophobia, forced mass eugenics, forced euthanasia
and imperialistic, militaristic Lebensraum doctrine are.

210. In this respect, biomorphic Modernism has suffered a fate parallel with "spiritual" abstraction, as summarized by Maurice Tuchman in his "Hidden Meanings in Abstract Art," the introduction to his and Judi Freeman's exhibition catalogue The Spiritual in Art: Abstract Painting 1890-1985 (New York: Abbeville Press and Los Angeles County Museum of Art, 1985), 18. For a recent example of this repression, see Charles Harrison's "Abstraction," in Harrison, Francis Frascina and Gill Perry, Primitivism, Cubism, Abstraction: The Early Twentieth Century (New Haven and London: Yale University Press, 1993).

211. See, e.g., Patrick Werkner, Austrian Expressionism: The Formative Years. Translated by Nicholas T. Parsons. (Palo Alto, CA: SPSS, 1993), 251-52. I discuss how literary historians have demonstrated the central role played by biocentric ideologies such as Neo-Vitalism and Monism on Modernist culture below.

212. C.f. Charles Harrison and Paul Wood's anthology Art in Theory, which in 1189 pages, eight sections, twenty-five subsections and 309 textual selections, could not find the space for a single text which addresses the nature problematic.

213. Stephen Mansbach, "Attitudes Towards Nature in Some Early Twentieth Century Art," The Structurist no. 23/24 (1983-84), 87. Mansbach is of course correct with respect to many Utopian Modernists. It is a totalizing reading of this view that I am pointing out as being incorrect.


215. People seem to have forgotten that as prominent a critic as James Thrall Soby saw the art of his time, both the painting he termed "Neo-Romantic" and Surrealism, as an "entirely romantic movement." Soby, After Picasso (New York: Dodd, Mead & Co., 1935), 6.

216. While George Heard Hamilton is remarkable for discussing concerns with nature and even Vitalism when individually treating artists such as Brancusi, Arp, Masson and Miró, he does not recognize biomorphic Modernism as a category in Painting in Europe: 1880-1940 (Harmondsworth: Penguin, 1967). In Origins of Modern Sculpture: Pioneers and Premises (New York: Braziller, 1974), Albert E. Elsen mentions Vitalism and Bergson in connection with Brancusi, but does not discuss biomorphism as a style. Sam Hunter and John Jacobus, in their widely used survey, base their discussion of biomorphic abs-
traction, all one sentence of it, on Barr: "The subjective Gauguin emphasized emotional content, decorative or 'synthetic' methods, arabesque lines, and flat color masses to create an art that became the basis of the free forms of 20th-century biomorphic abstraction: the art of Vasily Kandinsky and automatic Surrealism." Apart from mentions of biomorphism in connection with Americans such as Arthur Dove, Georgia O'Keeffe, and the Abstract Expressionists, that is the extent of their treatment. Hunter and Jacobus, *Modern Art: Painting, Sculpture and Architecture*. Third Edition. (New York: Prentice Hall and Harry N. Abrams, 1992), 9. In *Abstract Art* (London: Thames and Hudson, 1990), Anna Moszynska treats biomorphic Modernist art, but in almost exclusively formal terms and not as a separate category. In his 1991 survey *Art Since Mid-Century: 1945 to the Present* (Englewood Cliffs, N.J.: Prentice Hall, 1991), 95, Daniel Wheeler treats biomorphic sculpture in a section on post-war sculpture without referring to it as a style. Still, he does manage to employ the terms "biomorphic," "vitalist," and "pantheistic" in a single paragraph on Brancusi, Hepworth, Moore and the American sculptor Raoul Hague. The way he writes about it, one would think that there was a body of secondary literature to back up these terse statements. The subject of biomorphic Modernism is not broached in the relevant volumes of the London Open University series. See Briony Fer, David Batchelor and Paul Wood, *Realism, Rationalism, Surrealism: Art Between the Wars* (New Haven and London: Yale University Press and The Open University, 1993) and Harrison, Frascina and Perry, *Primitivism, Cubism, Abstraction*. "Biomorphism" is cited in Laurie Schneider Adams' *A History of Western Art* (Madison, Wisconsin: Brown and Benchmark, 1994) as the opposite to "geometric" in her discussion of formal approaches to art. Apart from brief mentions of biomorphism in connection with two or three artists, however, she does not discuss biomorphic Modernism in her survey. The terms "biomorphic" and "organic" do not appear in either the glossary or index of Marilyn Stokstad's *Art History* survey. (Upper Saddle River, N.J.: Prentice-Hall, 1996).


218. Roskill, *The Interpretation of Pictures*, 82. Robert Welsh has related that the very study of twentieth century art was rare at Princeton in the 1950s.

219. For a good resumé of this phenomenon, see Tuchman, "Hidden Meanings in Abstract Art," 17-19.


222. Schapiro, "Style."


226. Ibid., 153-5.


231. Barr-style binariness was adopted by a few continental critics, such as Alfred Neumeyer, who in his The Search for Meaning in Modern Art writes: "Since 1910 the sculpture of shapes... has taken two main directions: one is an art of geometric forms related to Cubism, the other, a morphological art which, in analogy to nature itself, produces an endless variety of beings. It is the morphological sculpture that


235. Hofmann, Turning Points, 229. The publication of Hofmann’s book in 1969 was surely important to the critique of Greenbergian formalism in the United States, and seems to have laid some of the groundwork for the art history of the 1970s informed by the history of ideas. Robert Welsh sees this as a general rather than specific influence. (Interview, 25.1.96)


238. Alloway, "The Biomorphic Forties," 18-22. Alloway’s interest is not surprising given his participation in the "Independent Group" associated with the London ICA during the early 50s. This group organized the exhibition "Aspects of Form" in 1951, one of the most important manifestations of the naturamorphic analogy.

239. For a summary, see Thistlewood, Herbert Read, 78-9.

240. Welsh, who experienced the lack of academic attention to Modernism during his student days in the 50s, wished to apply Panofsky’s iconology to his study of the early work of Piet Mondrian. Sixten Ringbom was educated at the Warburg Institute in London, and was engaged in a parallel project with respect to Kandinsky. See L. D. Ettlinger, Kandinsky’s ‘At Rest’ (London: Oxford University Press, 1961); Ringbom, ’‘Art in the Epoch of the Great Spiritual’: Occult Elements in the Early Theory of Abstract Painting,” Journal of the Warburg and Courtauld Institutes 29 (1966): 386-418. Mention should also be made of Kenneth Lindsay and Peter Selz, who opened up American art historical research on German Expressionism and who employed geistesgeschichtlich approaches early on: See, e.g. Lindsay, "An Examination of the Fundamental Theories of Wassily Kandinsky" (Ph.D. dissertation, University of Wisconsin, Madison, 1951) and Selz, "The Aesthetic Theories of Wassily Kandinsky and their Relationship to the Origin of Non-Objective Painting," Art Bulletin 39 (June 1957): 127-36. An instructive literature review in this connection is provided by

241. It is difficult to reconcile the almost contemporaneous production of Space and Dream and What is Modern Sculpture? One can only surmise that the latter was meant for a wide audience, and was therefore rendered with a simple and unproblematical approach, which in 1969, at the Museum of Modern Art, meant a formalist one. In Space and Dream, meanwhile, as a book published in conjunction with an exhibition at the private M. Knoedler Gallery of New York based on a theme first explored by curators Gert van Osten and Horst Keller in an exhibition at the public Wallraf-Richartz-Museum in Cologne, Goldwater was free to explore issues raised by a theme not originally his own.


244. See Robert Rosenblum, Modern Painting and the Northern Romantic Tradition, chapter 6. E.g.: "[In a work by Klee] the fluid, irregular web of lines conveys the image of a vital organism that is withering and flaking before our eyes. It is a visual metaphor that realizes Klee's wish to make a cosmos of forms which is so similar to the Creation that only the slightest breath in needed to transform religious feeling, religion into fact, and it is a visual metaphor that also translates Friedrich and Runge's scrutiny of the palpitant God-given life of trees and flowers into the more overtly symbolic language of twentieth-century organic abstraction." (p. 152)


247. Taylor, Disfiguring, 52.

248. Ibid., 291.

249. Burnham, Beyond Modern Sculpture, ix.


253. Ibid.

254. Haraway, Crystals, Fabrics and Fields, 40, 42.

255. Ritterbush included Kandinsky's Capricious Forms of 1937, a paradigmatic painting in this biomorphic series, in his exhibition (p. 101). Note than Hans Konrad Roethel also pointed out specific sources in scientific images for a Kandinsky works in his Kandinsky (Munich: Prestel, 1982), 160ff.

256. René Huyghe, Formes et Forces, 7-8. On Ritterbush, see also 129. See especially the section "L'art moderne découvre la microréalité," 328-36.

257. Ibid., 336.


259. Ibid., 94.

260. Ibid., 81.

261. Ibid., 16.

262. Ibid., 71.

263. Ibid., ix.

264. Ibid., viii.

265. Ibid., ix.
266. Ibid., 8.

267. Neither Kállai's publications nor Kunst und Naturform seem to have been available to him. The Art of Organic Forms appeared around the same time as Beyond Modern Sculpture. See also Krauss' incisive (and implicitly admiring) critique in Passages in Modern Sculpture, 209-12.

268. See for example his critique of Ritchie's terminology on page 84, and his discussion of Arthur Dove's art in terms of Kandinsky's style. Metzger, "Biomorphism in American Painting," Chapter Two, esp. p. 87.


276. Tuchman and Freeman, eds., The Spiritual in Art: Abstract Painting 1890-1985. The other authors are Flip Bools, Charles C. Eldredge, Robert Galbreath, W. Jackson Rushing and Harriet Watts.


279. In his book Modern Sculpture: The New Old Masters (New York: Dodd, Mead & Co., 1974), Herbert Christian Merillat includes a chapter entitled "Curves of Nature," in which he discusses the biomorphic abstract sculpture of Brancusi, Arp and Moore. While he discusses this work in terms of nature-
centredness and an interest in natural forms such as "shells, bones and pebbles" (p. 39), his discussion is unsystematic, anecdotal, and fails to connect the artists with any coherent philosophical discourse.


283. Jennifer Mundy, "Form and Creation: The Impact of the Biological Sciences on Modern Art," in Ibid., 23. Jennifer Mundy completed a dissertation entitled "Biomorphism" at the Courtauld Institute of Art in London in 1987. Mundy has, to my knowledge, not published any part of this work and despite data-base searches for relevant dissertations I undertook during the early 1990s, I only learned of it from a reference in Romy Golan's Modernity and Nostalgia: Art and Politics in France Between the Wars (New Haven: Yale University Press, 1995), 181 and I gained access to it after my own dissertation was substantially completed. Thus, I have not incorporated its results into my own, which, despite overlaps in research results (e.g. my re-discovery in this chapter of Grigson's importation of Haddon's term "biomorph" into the Modernist discourse), represent approaches sufficiently different to render the two theses complementary rather than repetetive.


293. Schall, "Rhythm and Art," 100.

294. Ibid., 369.


299. Lichtenstern, Metamorphose in der Kunst des 19. und 20. Jahrhunderts. It is unfortunate that Lichtenstern does not seem to know of Ritterbush's work, which -- more than twenty years before her own publication -- touches on so many themes common to her concerns.

300. Lichtenstern, Metamorphose: Vom Mythos zum Prozessdenken, 166-193.


309. These two scholars are Monika Wucher of the University of Hamburg and myself. I presented a paper on "Kállai and the Natural Sciences in Weimar Germany."


312. The only exception to this tendency has been Bromig, who agrees in this respect with the cited members of the previous generation.
313. Ibid., xiv.
314. Ibid., xix.
315. Ibid.
319. Christoph Kockerbeck, Ernst Haeckels 'Kunstformen der Natur' und ihr Einfluss auf die deutsche bildende Kunst der Jahrhundertwende: Studie zum Verhältnis von Kunst und Naturwissenschaften im Wilhelminischen Zeitalter (Frankfurt/Main: Peter Lang, 1986). Kockerbeck, however, does not seem to have been aware of Mattenklott’s writing on Blossfeldt.
320. Thomas Kröger, "'...gleichsam biologische Urzeichen...' Die Erfindung biomorpher Natur in Malerei und Fotografie der dreissiger Jahre." Kritische Berichte 18, no. 4 (April 1990): 73-87; Bromig, "Biomorphismus oder Anthropomorphismus?".
323. Ibid., note 37.
324. See Kállai’s anticipation of attacks on Bioromantik and his critical support of it from both the Communists and the National Socialists in "Zurück zum Ornament," 226.
325. Golan, Modernity and Nostalgia, Chapter Three.
326. See for example, her uncritical and undefined usage of the term "progressive" on page 77 in relation to Le Corbusier: "By joining Plans, Le Corbusier continued to side with the most progressive faction among the planistes. See also her discussion of what is in effect French biocentric thought (Neo-Lamarckism, "positive" Eugenics, etc.) on pages 97-98. It is to her credit that even though she has not set up a framework adequate to handle biocentric phenomena such as Le Corbu-
sier and the Planistes, and she recognizes the interconnections with contemporary Fascist thought, she resists labeling them as "Fascist." I wish to note here that despite my critique of aspects of her book (which I find to be both original and fascinating), it must be emphasized, that she is among the few authors on artistic antimodernism to warn against overly simplistic political analyses. "There is no straight line from Verdun to Vichy," she notes on page xi.


328. Golan, Modernity and Nostalgia, 92.


330. I was introduced to Kállai's writings by various Budapest art historians during a year on an exchange scholarship there in 1979-80. These historians included Júlia Szabó, Katalin Keserű and later Éva Forgács. It was László Beke, however, who first emphasized to me the importance of Kállai's Bioromantik conception. See my article "Ernő Kállai and the Hidden Face of Nature," written in 1983.


334. This may have been in deference to mine and Wucher's works in progress. Vitali mentions Kállai in his introduction, p. 11.


338. Ibid., 40.


342. Some of these are Sarah M. R. Ramsey, "Revolution, Reciliation, and Transition: Organic Philosophy in Late Eighteenth- and Early Nineteenth-Century France" (The University of Texas at Dallas, 1986); Thomas W. Strawman's "The New Myth of Organicism: Recreation of Self and Society in Eighteenth-Century Philosophy and Aesthetic Theory" (University of Washington, 1987); Robert S. Davis, "The Organic Way to Experience: A Theory and Study of Organic Form in Nineteenth-Century British Novels" (Miami University, 1988); Kyungwon Shin, "The English Origins of Wordsworth's Organicism" (University of Minnesota, 1989), Laura Walls Dassow, "Seeing New Worlds: The Consilience of Emersonian Wholes and Humboldtian Science in Henry David Thoreau" (Indiana University, 1993). While most of these studies are solid examples of scholarship, there have been earnest failures as well, notably Betty Jean Craige's Laying the Ladder Down: The Emergence of Cultural Holism (Amherst Mass.: The University of Massachusetts Press, 1992).


346. Douglass, "Organicism Among the Moderns," 253. Douglass' comment on literary studies seems to mirror the situation in art history: "For a variety of reasons, we do not presently pay much attention to the growth of these ideas from Coleridge through Bergson... The falling from fashion of the mystical and metaphorical has caused a neglect of Bergson in historical overviews of Modernist aesthetics. We seem more concerned to make the Modernists assent to post-structuralism than to understand the development of Modernism itself. Thus, books like Kiely's Modernism Reconsidered (Harvard, 1981) do not even mention Bergson or consider organicism.... [they seem] to grasp only vaguely the historical development of [their] own subject matter." (pp. 267-68) Shortly after this article, Mary Ann Gillies completed her Ph.D. dissertation on "The Influence of Henri Bergson on Early Modern British Literature" (Oxford University, 1989).


348. Ibid., 255.


351. Ibid., 385.


354. See, for example, Mark C. Taylor, Deconstruction in Context.


CHAPTER TWO

Biocentrism

In some remote corner of the universe ... there once was a star on which clever animals invented knowledge. That was the haughtiest and most mendacious minute of "world history" -- yet only a minute. After nature had drawn a few breaths the star grew cold, and the clever animals had to die. (Nietzsche 1873)

[Anthropism is] that powerful and world-wide group of erroneous opinions which oppose the human organism to the whole of the rest of nature, and represents it to be the preordained end of organic creation, an entity essentially distinct from it.... the so-called history of the world -- that is, the brief period of a few thousand years which measures the duration of civilization -- is an evanescently short episode in the long course of organic evolution, just as this, in turn, is merely a small portion of the history of our planetary system; and as our mother-earth is a mere speck in the sunbeam in the illimitable universe, so man himself is but a tiny grain of protoplasm in the perishable framework of organic nature. (Haeckel 1899)

Denken wir uns einen Gott, der ... von einer Sonne aus ... sich verhalte ebenso ... gleichgültig, wie wir ... gegenüber ... einem Ameisenhaufen...[:]

"Das sind nun 1800 Millionen Menschen, welche wie lebender Schimmel die Erde überkrusten, ihre alten Wälder abholzen, ihre tiefen Meere durchtauchen, ihre Pflanzen und Tiere ausroden ...und ... sich selber halten für den Mittelpunkt einer Welt ... bis ... sie allesamt wieder ins Gras beissen und abmarschieren ins grosse Nichts.... Aber ... mit all ihren ... Lehren, Künsten, Gedanken und Geschäften erfüllen sie unbewusst nur das grosse Gebot der grossen Meisterin: Die Not." (Lessing 1924)

"In relation to the history of organic life on earth," writes a modern biologist, "the paltry fifty millennia of homo sapiens constitute something like two seconds at the close of a twenty-four-hour day. On this scale, the history of civilized mankind would fill one-fifth of the last second of the last hour." The present, which as a model of Messianic time, comprises the entire history of mankind in an enormous abridgement, coincides exactly with the stature which the history of mankind has in the universe. (Benjamin 1940)
We know ... of every organism that the rhythm, form, and duration of its life ... are determined by the properties of its species.... In [nature] we feel ... a limit, and this sense of the limit is identical with our sense of the inward form. In the case of higher human history, on the contrary, we take our ideas as to the course of the future from an unbridled optimism that sets at naught all historical, i.e. organic, experience.... "Mankind," however, has no aim, no idea, no plan, any more than the family of butterflies or orchids. "Mankind" is a zoological expression.... Each culture has its own new possibilities of self-expression which arise, ripen, decay and never return.... These cultures ... belong ... to the living Nature of Goethe, and not to the dead Nature of Newton. I see world history as a picture of endless formations and transformations, of the marvellous waxing and waning of organic forms. (Spengler 1918)³

Denn ich hatte verstanden: Es gibt keine Arten und Gattungen und Familien und Tier- und Pflanzengruppen, es gibt keine Tiere und Pflanzen, keine Protisten, keinen Unterschied von Tier und Mensch; es gibt ein vieltausendfach sich anpassendes einheitliches Leben auf Erden, wenn man so will, ein einziges Geschöpf, dessen Name ist Plasma. (Francé 1927)⁵

The artist today is more than an improved camera.... He is a creature on the earth and a creature within the whole, that is to say, a creature on a star among stars.⁶ [He] cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature. (Klee 1923)⁸

[Bioromantic artists] rücken Dinge in unsere eigenste Mitte, denen wir uns gar zu gern entrückt und überlegen dünken möchten, um unserer menschlichen ... Einbildung zu schmeicheln, dass wir Herren der Schöpfung seien und nicht etwa hinfällige Kreaturen. Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken. (Kállai 1932)⁹

In der Biozentrik eint sich Denken und Leben. (Francé 1921).¹⁰

The whole biosphere ... and the role that human life plays in it are encompassed in one unified vision. The biocentric outlook ... provides a general "map" of the natural world, enabling us to see where we
are and how we fit into the total scheme of things .... From the perspective of the biocentric outlook we see ourselves as biological creatures. Without denying ... our uniqueness, we nevertheless become fully aware that we are but one species of animal life. (Taylor 1986)\textsuperscript{11}

1. Framing Intellectual History

In this chapter I frame the types of views expressed in these passages as "biocentrism." Adapting the term from early 20th century German usage, I define biocentrism as the neo-Romantic, biologistic, Holistic, "nature"- and "life"-centric rather than anthropocentric intellectual stream.\textsuperscript{12} Political conditions and a shift in emphasis among some biocentric philosophers after World War One further demand the distinction between turn-of-the-century and interwar biocentrism. It is the interaction of biocentrism with biomorphic Modernism and the naturamorphic analogy in Western art of the first half of the 20th century which comprise the "Bioromantic" cultural pattern.

Framing biocentrism -- even in a preliminary, sketchy, amateur fashion such as I am able to undertake here -- is a challenging task, for the picture is complex. While historians of ideas have studied some components of biocentrism, others have received little or no attention, and the ill fit of these elements into the prevailing historiographic framework is largely unexamined.\textsuperscript{13} Most importantly -- and this is where the proposed category of biocentrism comes into play -- despite hints and near-misses, no adequate attempt has been made to define a category in the history of ideas broad enough to be useful to cultural historians concerned with attitudes towards nature and their expression through art in the relevant period, and yet sufficiently specific to reflect the concerns of the artists.\textsuperscript{14} As a cultural/art historian delving into the field of "straight" intellectual history, there is
bound to be a degree of superficiality, indeed naiveté in such an undertaking, and I readily admit this. There is also an apparent circularity in this strategy: I define the category, I use the category in my work, and this usage then "proves" the legitimacy of the category. But while the naiveté is something the informed reader will have to contend with, the circularity of the argument is only a problem if the reader assumes that I wish to "prove" anything. Rather than proof, I am interested in a reframing which makes visible.

a. Fin-de-siècle Neo-Romanticism

Nietzsches Philosophie des Vormittags verdickte sich bald zu allerhand vitalistischen oder sonnenpries- terlichen Weihen des grossen Pan, der Welt als tön- endem Glücksrad. Und merkwürdig verband sich vieler lei davon -- via Bölzsche, Fidus, 'Hab Sonne im Herz en,' 'Der Wald ist meine Kirche' -- mit einer Art von poetisch gemachten, doch abgestandenem Natur- kult.... [D]er immer mehr verdinglichte Mensch rebe llierte nun in allen seinen ... Partien ... indem er die Mechanik ringsum lediglich zu verlebendigen suchte, ... Haeckels 'Welträtsel' mit ihrer sonnigen Banalität, sozusagen pantheistelnd gemachten Mechan ik, passten von hier aus nicht schlecht zum Jugend stil. (Bloch 1927)\textsuperscript{15}

What characterized the Romantic movement, above everything else, was its universal striving for unity and integration with the living order of cre- ation. (Wiedmann 1979)\textsuperscript{15}

I want to go beyond emotion to give order to move- ment. The new romanticism. (Klee 1914)\textsuperscript{17}

The turn of the century was characterized by a revival of aspects of Romanticism, among them an intuitive, idealistic, Holistic, even metaphysical attitude towards the idea of "nature," of the experience of the unity of all life, what Max Scheler referred to as VITALMYSTIK and its kosmovitale Eins- fühlung; what Bloch ironically termed Hurrepantheismus.\textsuperscript{18} Scheler described the revival as "die unmittelbar gegenwärti- gen Gruppen von Bewegungen die, ohne oder mit Anknüpfung an
Antimodernity and Kulturkritik

i. Antimodernity and Kulturkritik

The coming to presence of technology threatens revealing, threatens it with the possibility that all revealing will be consumed in ordering and that everything will present itself only in the unconcealedness of standing-reserve. (Heidegger 194953)²³

Daraus entstanden ein Neudionysiertum à la Klages, ein Neudiluvium à la C.G. Jung, ein Rückgang auf Vorbewusstes, Vorgeschichtliches [Dacqué], als wäre es das verlorene Heil, mit Preis des Chaotischen als solchem. (Bloch 1927)²⁴
Der entscheidende Einfluss der Technik auf die künstlerische Entwicklung der letzten 50 Jahre ist unverkennbar. Die ungeheure Ausbreitung ihrer Energien und Werke zu einem dichten Netz von Rationalisierung und Motorisierung nicht nur der Natur sondern auch wesentlicher Beziehungen des menschlichen Lebens musste alle Reserven unserer Irrationalität, unserer Seele wachrufen. Je mehr Technik, um so heftiger und inniger die Sehnsucht nach ihren Gegen gewichten... (Kállai 1931)

A critique of modernity and of its humanist ideology was inherent in this nature-centric Neo-Romanticism. This critique, one which masked a profound pessimism concerning humanity's place in nature, was the darker side of kosmische Einheitsgefühl, of Hurrapantheismus. As I have discussed in the Introduction, in America William James' and Bergson's ideas combined with the Transcendentalist revival -- the latter expressed for example in the pioneering environmentalist activities of John Muir and the Sierra Club -- into what Jackson Lears has termed "anti-Modernism." The European and American trends revived themes of Romanticism, and can be seen to have formed part of a pan-Western "anti-Modernist" cultural current which Giovanni Vattimo has aptly characterized as the "crisis of Humanism." The Germans refer to it as Kulturkritik, a critique of modernity -- that is rampant urbanization, industrialization, capitalization, commodification, internationalization, and the instrumentalist view of nature -- carried out mainly by Lebensphilosophen. As the turn-of-the-century vegetarian and naturopath Adolf Just wrote, "Das Grosstadtleben verdirbt Körper, Geist und Seele, weil es immer mehr von der Natur und allem Natürlichen hin wegführt." He goes on: "Wodurch ist zum grossen Teil das Elend, die Verlor enheit und Verlogenheit der Menschen gekommen? Durch die Entwicklung des Geistes in seinem Wissenschaftlichen, durch Erfindungen und Technik, die zum grossen Teil die körperliche Arbeit den Maschinen übertrugen und dadurch auf allen Gebieten eine dementsprechende Mechanisierung des Lebens hervorriefen." Kulturkritik was expressed through the widespread cult
of Nietzsche, the international network of *fin-de-siècle* reformist impulses which German speakers conveniently refer to as "Lebensreform," as well as the ecological wing of the early 20th century *Jugendbewegung* [Youth Movement] and the concurrent pedagogical renewal, the *Schulreformbewegung*.[31] As Franz Sawicki poetically expresses it, this was an attack on "die einseitige Verstandskultur, die das Herz unbefriedigt und die dunkeln Tiefenschichten der Seele ausser acht lässt, die wohl Licht spendet, aber den Boden ausdörrt, so dass die Wurzeln des Lebens absterben."[32] Or as Ferdinand Fellmann phrased it, *Lebensphilosophie* was a reaction, which "richtet sich generell gegen überzogene Absolutheitsansprüche der Vernunft."[33] As we see in the passage at the start of this section, in 1931 Ernő Kállai interpreted the history of Modernist art as a dialectical struggle between the celebration and counteracting of modernity, between "nature" and what he termed the "profane Trinity rationalism-materialism-utilitarianism."[34]

While Martin Heidegger's phenomenological-ontological critique is characteristically expressed in a language which animates causal categories by employing the infinitive case (a sort of epistemological animism), and it is more general than those of lesser *Lebensphilosophen*, his message is the same: modernity (as an intensification of technology) is a great danger to people and nature; it prevents them from being experienced in any other way than as potential raw material, what he refers to as "standing reserve." This critique emerged from what Sawicki defines as the central problem of *Lebensphilosophie*: the distinction between *Geist*, or intellect, and *Seele*, which is the locus of *Leben*, or life:

> Der Begriff des *Lebens* ist an sich so umfassend, dass er auch die Funktionen des Geistes umschliesst. Von der Lebensphilosophie wird der Begriff jedoch gewöhnlich in einem engeren Sinne genommen und das Leben in Gegensatz zum Geiste gestellt. Das menschliche Ich zerfällt danach in zwei Sphären. Die rationale Sphäre ist der *Geist*. Die tiefere, irrationale Schicht ist die *Seele*. Dazu gehören die Triebe, die
Gefühle, das gefühlsmässige Erkennen und das Unter-
bewusste. Was sich dort regt, ist das wahre Leben.
Die Lebensphilosophie ist also der Aufstand der
irrationalen Tiefe gegen die Vorherrschaft des Geis-
etes.

As Bloch suggests the deeper, unconscious self along with its
impulses, the "Dionysian" self, is in this system valorized as
the "authentic" self, the self which should be consulted
(through "intuition," for example) to ensure authentic expres-
sion. This search for authenticity in the Seele rather than
the Geist underlies the "primitivism" of the Modernist pro-
ject, and "primitivism" is the central aesthetic impulse of
both biomorphic Modernism and the "elementarism" of early
1920s geometric abstraction, just as it is of much Modernist
artistic production. Georg Lukács suggests this in his
account of neo-Nature Romanticism:

"They are what we once were," says Schiller of the
forms of nature, "they are what we should once more
become." But here ... we discover a ... conception
of nature ... in which we can clearly discern the
ideal and the tendency to overcome the problems of a
reified existence. "Nature" here refers to authentic
humanity, the true essence of man liberated from the
false, mechanising forms of society: man as a per-
fected whole who has inwardly overcome, or is in the
process of overcoming, the dichotomies of theory and
practice, reason and the senses, form and content;
man whose tendency to create his own forms does not
imply an abstract rationalism which ignores concrete
content; man for whom freedom and necessity are
identical.

The transposition of the scientific debate to the meta-
physical plane; the search for authentic expression was most
famously and most radically carried out by Klages in his 1929
magnum opus, Der Geist als Wiedersacher der Seele. Following
the critiques of Bloch and Georg Lukács, Klages' Der Geist als
Wiedersacher der Seele was received variously as a John the
Baptist-like preparing-of-the-way for Hitler's messianic anti-
rationalism, or alternatively, it was praised as a searing
critique of the instrumentalist modern consciousness before
even Heidegger engaged in it. As Fellmann has pointed out, a
more nuanced view of Klages and his thought would be helpful. Klages scholar Richard Hinton Thomas explains the thesis of the book:

If on the one view 'Geist' is an ennobling, liberating aspect of life, for Klages it is not part of life at all. It is a sort of space invader from another world, from 'outside life.' The emphasis is always on the destructiveness of 'Geist'. It is destructive of peace, of nature ... of organic bonds, of 'life'. It is 'Geist' that thinks up the instruments -- industrialization, technology and so on -- of what we deceptively call progress, and wherever the idea of progress has held sway, man in his arrogance has 'scattered the seeds of murder all around and the horror of death.'

The critique of environmental degradation was closely associated with this anti-rationalist discourse, particularly among the relevant philosophers between the wars. As part of Kulturkritik, the biologists Johann Jakob, Baron von Uexküll and Raoul Francé; and the philosophers Oswald Spengler, Klages, Heidegger and Theodor Lessing wrote on this subject, and they affected the thinking of artists and critics such as Adolf Behne, Lazar El Lissitzky, Mies van der Rohe and Ernő Kállai.

As the literature on Spengler and his influential Der Untergang des Abendlandes is large, and his project well-known, I will here only point to the biologistic, ecological and utopian organic nature of his critique of technology. As Kluge phrases it, "Spengler's These vom Ende der Technik, seine Sensibilität für die Zerstörung äusserer Natur können nicht getrennt werden von seiner Perspektive zur Aufhebung dieses Zustandes, einer biologistischen Utopie: Die organbiologische Pflanzenmetaphor zur geschichtsphilosophischen Begründung des Zerfalls...." Welt and its associated technology, science and death in Spengler's and Geist in Klages' discourses occupy positions structurally analogous to Heidegger's Gestell (enframing):

enframing does not simply endanger man in his relationship to himself and to everything that is. As a
destining, it banishes man into that kind of revealing that is an ordering. Where this ordering holds sway it drives out every other possibility of revealing. Above all, enframing conceals that revealing which, in the sense of poiesis, lets what presences come forth into appearance.\textsuperscript{46}

As we saw in the passage from his lecture given for the Freideutsche Jugend in 1913 above, Klages considered this danger and blamed materialism, industrialism and technology, in short, modernity. On this subject Francé wrote:

Die Menschheit, die sich schon heute dessen rühmt, die Atomzersprengung als Kraftquelle sich dienstbar machen zu können, wird nicht ruhen, bis diese Einsichten noch andere Früchte getragen haben, ausser den ideellen ... Denn unter dem Banner der materialistischen Idee sucht ja die Menschheit im Paradiesgarten der Natur nicht nach Erkenntnis der Gesetze, um danach ihr Leben reiner, vollendet und harmonischer gestalten zu können, sondern ausschliesslich nach goldenen Früchten, die ihre Genusssucht befriedigen und ihr Herrschaft über die Natur verleihen.\textsuperscript{47}

As the völkisch environmentalist Gerhard Tenschert has pointed out, Francé is prophetic about the possible abuses of atomic technology, and he names materialism and the domination of nature as the dangers. Unlike Klages, Heidegger and Spengler, Francé did not oppose technology as long as its application did not upset the ecosystem it was part of.\textsuperscript{48} In his many publications, rather than the dangers of technology per se, Francé emphasized the importance of natural and historical preservation in the Heimat, the home region -- a view which fed as easily into anarchist notions of cultural and economic autonomy and harmony, as it did into Walter Darré's völkisch ideology of Blut und Boden.\textsuperscript{49} Bramwell has termed the intellectual and political movement towards ecological views of nature and its preservation since about 1880 "ecologism," a category whose relationship to the discussion is dealt with later in this chapter.\textsuperscript{50}

Klages, probably the most important philosopher of interwar biologicist and nature-centric Neo-Romanticism (what I will define later in this chapter as Biozentrik or biocent-
risms), is, as Michael Grossheim wrote in 1994, "...weitgehend ein weisser Fleck auf der Landkarte der Philosophiegescichte, ein Raum für mögliche Entdeckungen." Klages' philosophical writings are literary rather than precise, and dense without being as sophisticated as Heidegger's (a philosopher who, despite his relevance to our discussion, it is problematic to pin down as "biocentric"). These are reasons Klages' work has been marginalized to the extent that it has been, despite the fact that he is one of the few important 20th century philosophers to deal seriously with the environmental question as it is generally understood today. As Bramwell points out, "Klages' ...message...was, perhaps, too extreme to influence the mainstream philosophers of his time.... Klages' criticism is in fact the essence of today's 'green' and ecological cultural criticism, which also attacks what is seen as excessive rationality." Typical of the treatment accorded Klages is that of Harvard science historian Anne Harrington, who writes that "...we must [not] return to the point ... where any holistic science, or indeed any sort of challenge to the epistemological, existential, or moral self-sufficiency of traditional science, is branded 'irrationalist' or potentially 'fascist'" not a paragraph after she took the opinions of others at face value, and dismissed Klages as a "graphologist and pop-philosopher" of the "cranky Right." Not only does Thomas discount the idea that Klages was a proto- or crypto-Nazi, he even opposes his inclusion in the so-called konservativen Revolution of interwar Germany which Harrington was presumably referring to. Even taking into consideration the effect his thought did have on the National Socialists, and the according to Thomas -- "culturally" rather than racially-based anti-Semitic feelings Klages shared with many others of the age, as Thomas points out, "[t]his is a far cry from the violent world of National Socialism, and we can better appreciate how it was, that what Klages excluded from his praise of Nietzsche [the Will to Power] was the side of him which the
Nazis most admired."\(^5^6\) Indeed -- without whitewashing him of the degree of complicity he shared with anyone who was anti-democratic, anti-Semitic, and dealt with Nazi Germany -- it is important to keep in mind that not only did Klages (unlike Francé) always refuse to join the Party despite their efforts to recruit him, he actively opposed it, and he lived as a Pacifist in Switzerland throughout the Nazi era.\(^5^7\)

Rather than with the "conservative revolution" (of which Spengler was a part), Thomas places Klages into a position analogous to the biocentric Anarchist Gustav Landauer: "Comparisons between Klages and Landauer are thus easy enough... They do not make Klages into an anarchist. What they do suggest is that in any discussions of Klages, anarchism is at least a more useful point of reference than National Socialism...."\(^5^8\) In fact Klages was a typical Biozentriker and the principal philosopher of anti-anthropocentrism after Nietzsche.\(^5^9\) Confusion around his politics (and there is no doubt that he was both conservative and pessimistic) is typical of analyses of the biocentrically minded, a topic dealt with in more detail below. In any case, despite the shivers Francé's biologistic racial essentialism; Spengler's and Klages' critical stance towards Democracy, their anti-Semitism and their admiration by the Nazis; and Heidegger's out-and-out Nazism, may send up our collective spines, one must keep in mind that neither Marxism, nor a supposedly "objective" "bourgeois" rationalist science, in fact dealt with the "looming environmental disaster" in this century. And despite the German National Socialists' and the biocentrics' mutual flirtation during the mid 1930s, neither did Fascism. It was biocentrism or "ecologism" that attempted to -- and is attempting to -- do so. In a time of increasing environmental consciousness therefore, this intellectual stream demands attention from art historians as much as it demands it from intellectual historians.
ii. Biologism: Raoul Heinrich Francé

Auf die Epoche physikalisch-chemischer Weltbetrachtung, die zum Materialismus führte, folgt jetzt naturgemäß die biologische Weltbetrachtung. (Behne 1916)\(^6\)

Das Zeitalter des biologischen Denkens ... hat erst begonnen. (Francé 1928)\(^6\)

The constructive counterpart to Kulturkritik was biologism, a pervasive "popular Darwinian" Weltanschauung at the turn of the century which privileged biology among the sciences, applying its concepts and methodologies -- such as evolution and "the survival of the fittest" -- to other spheres of knowledge.\(^6\) Herbert Spencer saw "society itself as an organism and that therefore social progress was analogous to biological change."\(^6\) The Thomas H. Huxley and Spencer-inspired "Social Darwinism," which attempted a biologistic legitimation of capitalist competition, and Peter Kropotkin's Anarchism, which wished to justify altruistic social cooperation employing analogies from "nature," represented ideological poles of political scientific thinking based on biological observation which pervaded Western culture in the late 19th century.\(^6\) Huxley's student, Kropotkin's friend, and Bergson's admirer, the Scottish biologist and urban theorist Patrick H. Geddes, saw the biological concept of evolution as applicable to all fields of knowledge: "Changing order, orderly change, and this everywhere -- in nature inorganic and organic, in individual and in social life -- for this vast conception, now everywhere diffusing, often expressed, rarely as yet applied, we need some general term -- and this is Evolution."\(^6\) Geddes applied the principles of "mutual aid" to a "dynamic, holistic vitalist and unitary" conception of human settlement, influencing urban theorists and architects such as Lewis Mumford, Hugo Häring and Hannes Meyer.\(^6\) In the Germanic cultural sphere, many major public intellectuals such as Schopenhauer, Nietzsche, Ernst Haeckel, Ernst Mach, Hans Driesch, and Sigmund Freud were representatives of biologistic thinking.\(^6\) Max
Nordau’s theory of social degeneration, Paul de Lagarde’s biologistic-völkisch nationalist expansionism, Houston Stewart Chamberlain’s racialism and Spengler’s biologistic morphological account of history, set the stage for the biologistic aspect of National Socialist politics. For reasons of economy (these figures are dealt with elsewhere) and because his writing is the least known and yet most important to interwar artistic culture, I will focus my attention on the work of Raoul Heinrich France.

Around 1920, Raoul Francé emerged as one of the most radically -- and perhaps naively -- biologistic of public intellectuals in germanophone Central Europe. Trained as a botanist, engaged in pioneering research on soil ecology, largely self-educated in philosophy, and driven by an impulse to render science useful in everyday life, Francé developed a system of applied ethical thought extending to all spheres of human activity and understanding which he referred to as "objektiv," "sachlich," "biozentrisch," or simply as "biologische Denken." While initially announced in 1920, he articulated his totalizing biologistic program in 1928:

Das 'biologische Denken'... entspringt nicht einer Mode, einem Schlagwort, etwa vergleichbar dem von der Entwicklung ... vom Monismus ... das vor einem Menschenalter die Bildung und Kultur durchdrang und in Gärung versetzte. Denn es geht nicht wie jene von einer einzelnen Persönlichkeit aus, sondern durchsichert, numehr schon seit etwa einem Jahrzehnt die gesamte geistige Arbeit. Überall, in der Philosophie, in der Psychologie, in der Literaturwissenschaft, der Soziologie, in der Medizin, der Arbeitswissenschaft, der Physik, um nur einige der hervorstehenden Punkte zu nennen, wendet man sich biologischer Denkungsart zu, aus einer Art innerer Notwendigkeit, gewissermassen nach Erschöpfung der übrigen Möglichkeiten.... Das Zeitalter des biologischen Denkens ... hat erst begonnen.78

Perhaps no other biologistic intellectual was so bold in applying "biological thinking" to all spheres of human endeavor. While often naive, Francé’s system was a complex and not unsophisticated one. Following Kant, Schopenhauer, and par-
particularly Eduard von Hartmann's phenomenological line of reasoning, France held that an ontology is impossible, that "metaphysics is a biological issue." He was influenced in this connection by the positivist-Monist Empiriocritizismus of Richard Avenarius and Ernst Mach, who held that "Reality ... consists neither in 'minds' nor in 'atoms.' It consists in experiences -- in colors, sounds, tastes and other data of sensation." In other words, reality is constructed by us rather than it being something "out there" waiting for us to perceive it. As Spengler phrased it,

Nature is the shape in which the man of higher Culture synthesizes and interprets the immediate impressions of his senses. History is that from which his imagination seeks comprehension of the living existence of the world in relation to his own life, which he thereby invests with a deeper reality. Whether he is capable of creating these shapes, which of them it is that dominates his waking consciousness, is a primordial problem of all human existence.

Knowledge is only possible within the limits of our sensory organs, which therefore define a perceptual envelope France referred to as the Zoesis. France termed as "Bios" "the sum of all experiences," a kind of "nature-for-us" akin to von Uexküll's conception of Umwelt and to Heidegger's "Being-in-the-world." These views led to France's acceptance of the psychologist O. Kohnstamm's "psycho-biological" position defined in 1903 that "das Wesentliche und Charakteristische aller Lebenserscheinungen auf elementare psychische Grundfunktionen zurückzuführen sei...," in other words, biology is psychologically determined. By around 1907-08 "psychobiology" or "Neo-Lamarckism" had coagulated into what Adolf Wagner termed a "movement," one with its own journal.

France went beyond this empiriocritical stance, however, to a phenomenologically contradictory position when he accepted Gustav Fechner's and Haeckel's neo-Vitalist idea of an animating "soul" or "psyche" in living beings, his own version of which he developed in his work on "plant psychol-
ogy" parallel to Driesch's doctrine of the Entelechie between 1900 and 1905. In 1912, Rudolf Eisler described this aspect of Francé's position as "psycho-vitalism," the belief that "Das Leben ist eine Äusserung psychischer Faktoren," rendering, for all intents and purposes, "psycho-vitalism" a synonym of "psychobiology." In accepting the position that "life is an expression of psychic factors," Francé approached the radical psychovitalism of Ernst Marcus and Jacob von Uexküll, who saw reality as directly affected by the "perceiving" subject. Marcus saw light itself as a something which emanates from the subject rather than from (i.e. reflected by) the perceived object.

Similarly, Walter Erben writes that von Uexküll behauptet, dass der Mensch mit seinen Sinnen den Erscheinungen entgegenlebe und das nicht nur im bewussten oder träumerischen Reflektieren, sondern physisch, materiell. Sehen, Tasten, Hören stellen Explosionen von Materie dar, die das angeschaute, gehörte, begriffene Objekt durchdringen, Zeugungen, die das 'Andere' besamen, so dass es zu einem Produkt des Ichs wird.

Inspired by his own pioneering work on soil Biozönose -- what he referred to as Edaphon -- Francé constituted the Bios as a holistic system: "Es liegt also in Wesen des Biologischen, dass jedes Erlebnis und die Summe aller Erlebnisse: der
Bios, als ein Ganzheitskomplex erscheint, der aus Teilen besteht, die einander irgendwie zugeordnet sind.\textsuperscript{81} Francé identified such eco-systems at all scales from single-celled creatures upwards. As a result he developed a prescient "systems" view of the world, seeing it as a kind of nested hierarchy of integrated ecosystems, what he referred to as a series of Integrationsstufen:

\begin{quote}
Die Welt als ganzes ist ein Gleichgewichtsystem, das durch Kreisläufe in zahllosen Prozessen seinen Ausgleich und damit seine Dauer findet. Zur Dauer führt nur dieser harmonische Ausgleich, den auch das Leben in Entwicklungen und Funktionen anstrebt, aber nur unvollkommen verwirklichen kann. Je mehr sich ein Vorgang dem harmonischen Zustand nähert, desto weniger Reibung am Weltganzen erfährt er, desto mehr nähert er sich auch dem bestmöglichen Zustand (Optimum).\textsuperscript{32}
\end{quote}

Added up, these Integrationsstufen in equilibrium were equivalent to Swedenborg's "...überwältigenden Gedanken, dass die Welt eine grosse Einheit sei."\textsuperscript{83} Lessing expressed the idea poetically:

\begin{quote}
Betrachten wir die Erde als lebenden und sterbenden Organismus, ... so untersteht auch dieser Organismus, gleich wie der kleinweltliche des Menschen: dem auszugleichenden Spannungszustande eines immerwährenden Stoffwechsels. Im zyklischen Rhythmus scheinen Gewässer und Festlande, Winde und Schollen, ja Erde und fremde Gestirne an einander gebunden zu sein. Ein Gesetz des Gleichgewichts wägt das Werden oben auf den Gebirgen und das Wachstum unten in Tiefen der See wie auf einer unsichtbaren Waage.\textsuperscript{84}
\end{quote}

As in the case of Lessing, Francé's systems-based method of holistic thinking convinced him of a basic "Harmonie in der Natur."\textsuperscript{85} As a result of having seen the suffering caused by the First World War and its aftermath in Germany, around 1919 Francé began to see this equilibrium in natural ecosystems not only as a descriptive model, but also as a normative principle for humans, who seemed not to be maintaining their ecosystems in equilibrium of late. Francé fell into the trap of applying organic descriptive models of "natural" ecosystems as normative prescriptions for social systems without addressing the
conundrum that if all human behaviour is "natural," then there is no "unnatural" position to avoid. "Es gibt nur ein Mittel," he wrote in 1920, "sich von den Leiden möglich fern zu halten, und das ist: die Gesetze der Welt, in der wir leben, kennen zu lernen um sich auch im Einklang mit ihnen verhalten zu könn-

en!"6 In this respect his thinking is related to the hol-

istic ideas of contemporary Gestalt Psychology, whose foun-
der, Wolfgang Köhler's key concept was also equilibrium.67

The study of the Gleichgewichtsystem is what Francé
introduced in 1920 at the meeting of the Schopenhauer Society
in Dresden as biozentrische Erkenntnislehre (biocentric
epistemology), the basis for his "objective" or "biocentric"
philosophy and his publishing program.68 In his 1923
epistemological manifesto Die Welt als Erleben, Francé builds
on this foundation a totalizing biologistic program of both
knowledge and behaviour:

Unser Ausgangspunkt war, aus der ersten Erkenntnis
der biologisch bedingten Unmöglichkeit absoluter
Erkenntnis zu der Quelle der Einsichten vorzubring-
en. Die ... Notwendigkeit zwang uns, daraus eine
biozentrische Erkenntnislehre abzuleiten. Die not-
wendige Folge dieser muss die Begründung einer ...
biologischen Logik sein. Durch eine solche entsteht
eine andere Rangordnung der Wissenschaften wie die
jetzt gültige. Ihre Konsequenz ist wieder eine bio-
logische Ethik im moralischen Handeln, eine Biotech-
nik im praktischen Schaffen und eine biologische
Ästhetik ... auf dem Gebiet des reinen Schaffens.
Eine neue Einsichtswelt entsteht, die zu einer neuen
Lebensordnung und Schöpfung einer Kultur einladet.
Drei grösse Lehren gründen sich darauf: eine Ord-
nungslehre des Wissens (Biotik), eine Verhaltungs-
lehre des praktischen Lebens (Telotik) und eine
alles zusammenfassende Kulturlehre (Harmonik), die
in der höchsten religiösen Vorstellung gipfelt.69

Francé's biologism, his reading of Einstein's theory of
relativity and of Nietzsche, resulted in an ethical relativism
which transposed questions of fact to those of ends:70

Die erste Konsequenz der Biozentrik ist die Auffass-
ung dass die Rolle des Verstandes keine logische,
sondern ein biotische ist. Es sei noch einmal daran
erinnert, wie die Objektive Philosophie die Frage
'wozu denken wir?' beantwortet. Wir fanden dass das Denken -- und mithin der Verstand -- nicht um seiner selbst willen da sei, sondern als Hilfsmittel zur Orientierung in der Umwelt.... Dies ist die zweite Konsequenz der Biozentrik: Alles mögliche Erkennen ist relativ.92

Since all perception is relative, "Ethik, Soziologie und Ästhetik sind dann gleichfalls biologisch bedingt und müssen sich relativistisch orientieren."92 The value of anything and everything is to be determined by its utility in maintaining or achieving harmony in any given Biozönose; in the case of humans, the nested hierarchy of ecosystems we inhabit: our families, our Heimat (in Francé's conception a forerunner of Kirkpatrick Sale's "bioregion" concept), our nations, and the earth as a whole.93 As Francé wrote in a passage Mies van der Rohe marked in his copy:

Heimat: die Umwelt, an die ich Kraft meiner Herkunft und meiner Gewöhnung angepasst bin. Die Menschen nennen meine Heimat meist missverständlich ihr Vaterland.
Natur: der Inbegriff meiner Zoesis.
Glück: das Gefühl meiner Harmonie mit meiner Biozönose.
Zivilisation: die Umbildung der heimatlichen Biozönose in optimale Gebrauchsformen als Künstliche Biozönose.
Kultur: die Harmonie der Künstlichen Biozönose mit dem Erlebnisganzen.94

This applied, practical version of biocentric epistemology, Francé termed Lebenslehre.95 Francé laid this program out in his Hauptwerk, the two-volume Bios: Die Gesetze der Welt of 1920-21, and developed it during the first half of the decade in an ambitious series of volumes he characterized as the Grundlagen einer objektiven Philosophie.96 This was probably the most comprehensive biologicist epistemological and normative system available at the time.

Though totalizing, it was by no means clear to a reader of the early twenties that Francé's orientation was "capitalist" rather than "socialist." Just as with the National Socialists, there were corporatist, indeed communitarian and coop-
ervative elements in his social thought. Though Francé recognized Spencer as a forrunner of his own biozönotischer Soziologie, his emphasis on harmony over competition and on altruism in nature and human society, positioned Francé nearer to Kropotkin’s biologicist anarchist social theory of "mutual aid" than to Social Darwinism, which tended to legitimize capitalist competition in the marketplace. He also resembled Kropotkin in that despite his romanticization of "nature," he saw a potentially positive role for technology in society. However, as a consequence of his emphasis on the desirability of "equilibrium" in ecosystems, Francé also took the position -- like Spengler -- that revolutions were undesirable because they brought about change too quickly, upsetting social balance. This conservatism -- in contrast to the belief in both the possibility and desirability of revolutionary change characteristic of biocentric anarchists such as Kropotkin, Landauer and Raoul Hausmann -- ultimately positioned Francé as a social reactionary from both the Marxist and Anarchist points of view.

Inasmuch as his thinking accorded with that of Kropotkin, Francé was related to Klages, who, as we have seen, has been compared to Landauer. However, unlike Klages and Spengler, Francé was no Kulturpessimist with respect to technology; he was not against technology per se. For Francé, "das Weltgesetz erzwingt es, dass zuletzt die Technik des Organischen und die des Menschen identisch sind." Just like non-human technology, our technology is built up of combinations of seven basic forms or Grundformen. If human technology is a subset of organic ("natural") technology, then it is not something foreign to or necessarily destructive of our ecosystems. Just as we stand to profit from observing the workings of Biozönose in nature, we stand to benefit from our observation of naturally-occurring technologies. Technologies of all kinds, including non-human ones, and our ability to learn from them, Francé termed Biotechnik, a predecessor of today’s
"bionics" or "biotechnology." Indeed Francé supported himself in part from patents he took out on technologies adapted from "nature."

As is to be expected, Francé did not hold back from pronouncing on cultural and aesthetic issues. He denied the existence of a cultural space autonomous from the "natural," and therefore of a cultural history independent of natural history. In his copy of Francé's *Die Kultur von Morgen*, Mies marked the following passage:

Keine Kulturgeschichte, noch weniger ein Kulturverständnis ist mehr denkbar, ohne eine Naturgeschichte und ohne Naturwissen, für immer ist Kulturwissenschaft gebunden an naturwissende Köpfe, und wenn noch einer daran geht mit blossom historisch oder philologisch geschulten Fingern, dem muss man die Eignung und Vorbildung dazu absprechen.

Thus, applied arts (Kunstgewerbe) he saw as a subset of Biotechnik pure and simple. Francé's disciple Huberta von Bronsart proposed an "objective" or "biocentric" aesthetics in which "der Kunst [die] Bestrebung [ist], das Sein zu verklären." Quoting Francé she writes "'Kunst ist nur dann Notwendigkeit, wenn die Kunstwerke Abbilder der Weltgesetzlichkeit sind.'" She read Francé as promoting an expanded, functionalist conception of art which includes "jede Schöpfung die eine Verklärung der Biozönose darstellt; eine organisatorische Leistung, eine Philosophie, eine Religion kann ein Kunstwerk sein." Despite the quality of his own scientific illustrations, which served to illustrate his ecosystems view of the world, Francé's biologicist views of art were grounded in an essentially conservative aesthetic sensibility on the one hand, and on that organicist aesthetic obsession which privileged Golden Section proportions as the only ones to be employed in cultural production, on the other.

While Raoul Hausmann was sharply critical of the (in a political sense) reactionary position expressed in *Die Kultur von Morgen*, i.e. of Francé's opposition to willed change in any given ecosystem, and to its totalizing, indeed totalitar-
ian implications, the apparent scientific authority, the practicality and the collective, cooperative, i.e. gemeinschaftlich implications of Francé’s program appealed to Leftist cultural practitioners during the twenties who were in reaction to the speculative, occult, messianic and individualistic tone of the "Expressionism" they emerged from, and were unsettled by the economic, social, cultural and ideological chaos of post-war Germany. Indeed, at the historical moment, i.e. around 1923-24, when hope for a world revolution was fading among leftist intellectuals, Francé’s "objective," that is, sachlich vision of practicality and order in nature, could fill a gap for some people, even if his position was, from a Marxist position, essentially reactionary. Also, just as the Monism of Haeckel and Wilhelm Ostwald was seen by pre-war intellectuals as bridging science and religion, Francé’s neo-Monist system fulfilled the desire for a scientifically-based quasi-religious Weltanschauung after the war, becoming the post-war equivalent to what Bloch referred to as fin-de-siècle Hurrapantheismus. But members of the Weimar German avant-garde were also attracted to Francé’s legitimization of human technology as "natural." Indeed it was Francé’s framing of human technology as part and parcel of technology in nature, i.e. as Biotechnik -- and certainly not his naive biologistic aesthetics -- which was interesting to the Weimar German avant-garde. For artists such as the International Constructivists of Weimar Germany, Francé’s pop-philosophy provided easy answers apparently rooted in the apodicticality of "nature" to vexing questions, and his Grundformen potentially legitimated the artists’ arbitrary "elementary" or "abstract" styles of artistic and architectural production, be they curvilinear (biomorphic), orthogonal (geometric) Modernist and/or informed by a "machine aesthetic." In 1923 Francé declared that "the biocentric way of thinking appears now not merely as a possible, but as the only possible way to order experience (... i.e. nature), to make it
useful to us and the other parts of the ecosystem we inhabit, in short, as the only possible way to live."\textsuperscript{115} In making this statement Francé was echoing the psychiatrist and art patron Heinrich Stadelmann, who in 1916 wrote that "The great achievement of our era is biological thinking, which has revolutionized science and art." While Francé would have agreed with Stadelmann so far, it is ironic that Francé, no friend of the Expressionist avant-garde, would have also had to read the statement that "Expressionist art aims at inner truth and away from the external world; it is biological thinking that has taught us that 'the invisible inner element produces visible form.'"\textsuperscript{116} While, as Raoul Hausmann pointed out, Francé's biologism is disquieting in its totalitarian implications -- and Hausmann's intuition was borne out -- it is central given his authority among players in the Bioromantic discourse.

2. From Nature-Centric Neo-Romanticism to Biocentrism

We have encountered terms -- Monism, Neo-Vitalism, Lebensphilosophie, Vitalmystik, Psychovitalism, Psychobiology, Neo-Lamarckism, biologism -- which refer to a related set of both philosophical and scientific categories. This relation was noted by contemporaries such as Kurt Graeser, who writing as a Monist in 1908, noted "d[ie] biologische[n] Gesammtauf-fassung, welche jetzt als 'Neo-Lamarckismus' oder 'Neo-Vital-ismus' bezeichnet wird":\textsuperscript{117} and by Wagner, who that same year equated the Psychobiological and Neo-Lamarckian "movements."\textsuperscript{118} Eisner described Francé as "evolutionistischer Monist, Panpsychist, Pantheist..." and a believer in both "Psychovitalism" and Neo-Lamarckism, and we have seen how, from a critical position, Bloch linked Haeckel, Nietzsche, Klages, Bölische and Neopantheism.\textsuperscript{119} In fact, these subcomponents of Neo-Romanticism and the "Neue Naturphilosophie" interconnected and intersected in ways so complex, as to make
it impossible to disentangle them from each other, much less to disentangle the philosophical categories from the scientific ones. While this is the case, it is necessary to consider the relations between the categories as they are employed in the literature in order to enable the contextualization of the players. While the differences between the categories are important to keep in mind, I will attempt to elucidate those nature-centric aspects of the components which are amenable to combination in a single construct of biocentrism.

a. Lebensphilosophie

Und wieder klammerte sich die Welt der Gelehrsamkeit an ein Wort. Dieses Mal war es das Wort: Leben. Leben wurde Modewort. (Lessing 1924)

The primarily philosophical component of nature-centric Neo-Romanticism was the biologistic wing of Lebensphilosophie, a philosophical variety which, based on the results of Naturphilosophie and of 19th century science (especially biology), attempted to rethink philosophical categories such as "life" and "nature," as well as epistemology, ethics and morality. In his history of German philosophy in the modern period Herbert Schnädelbach reminds us of the general import of the concept of "life" in modernity, of its role in the anti-modernist cultural critique which suffused the fin-de-siècle, but also of the fact that, as in the case of Wilhelm Dilthey, not all Life Philosophy was biologistic:

It is important that the term 'life' in this connection does not refer primarily to anything biological. In fact, 'life' is a concept ... which ... led the attack on ... a civilization which had become intellectualistic and antilife, against a culture which was shackled by convention and hostile to life, and for a new sense of life ... in general for what was 'authentic', for dynamism, creativity, immediacy, youth. 'Life' was the slogan of the youth-movement, of the Jugendstil, neo-Romanticism, educational reform and the biological and dynamic reform of life. The difference between what was dead and what was living came to be the criterion of cultural criticism, and everything traditional was
summoned before the 'tribunal of life' and examined to see whether it represented authentic life, whether it 'served life', in Nietzsche’s words, or inhibited and opposed it. 122

Despite its wider implications it seems to me that the Lebensphilosophisch obsession with "life" derived from an amalgam of the biologistic and Naturphilosophisch viewpoints. As Bramwell formulates it "Life-philosophy was a response to the revolutionary idea that man and world and nature were one ... and the resulting implication that man’s intellect was not autonomous. 123

As is apparent from the quotes, paraphrases and references to his writings in the passages quoted at the start of this chapter, the most suggestive, influential representative of this philosophical position was Friedrich Nietzsche. Neither on the Left nor the Right, more than any other philosopher, Nietzsche’s biologically-based system of ideas decentered the human species and inspired a rethinking of traditional Judaeo-Christian morality and ethics. 124 A Lebensphilosoph such as "Nietzsche implicitly places the affirmation of life at the center of man’s being." 125 Besides Nietzsche; Schopenhauer, Eduard von Hartmann, Bergson, Hermann Keyserling, the later Georg Simmel, Lessing, Spengler, Klages, Dilthey, Eduard Spranger, and the "Pragmatists" William James and John Dewey, were all counted as Lebensphilosophen. 126

b. Neo-Vitalism

damals zu keimen; die Überwindung des Materialismus war sein Ziel. Die neue Naturphilosophie, die dann überwucherd und ihr Ziel so verlierend, wie in der ersten nachkantischen Periode des Naturdenkens, sich in die okkultistischen Spekulationen verlief, welche die Gegenwart unfruchtbar machen, schlug mich zunächst in ihren Bann. (Francé 1927)\textsuperscript{127}

At its height, Lebensphilosophie intertwined with Neo-Vitalism,\textsuperscript{128} and the Monism of the Monistenbund, both of which -- though rooted in contemporary science and promoted by scientists -- focused on philosophical issues. "Vitalism" has been defined in opposition to "Mechanism" as "a miscellany of beliefs united by the contention that living processes are not to be explained in terms of the material composition and physico-chemical performances of living bodies."\textsuperscript{129} Vitalism is characterized by "the belief that forces, properties, powers or 'principles' which are neither physical nor chemical are at work in, or are possessed by living organisms, and ... any explanation of the distinctive features of living organisms which did not make references to such properties, forces, powers or principles [such as Mechanism] would be incomplete."\textsuperscript{130} Continued in various forms from the time of Aristotle through Spinoza to the present, Vitalism -- like Occultism -- reemerged in the late 19th century as a reaction to, or an attempt to mitigate what were seen to be the excesses of Materialism, Mechanism and Positivism. As Wagner put it: "Proklamierung einer exakten nichtmechanistischen Naturforschung -- der Neovitalismus stellt einen nicht mehr ignorierbaren Gegner ... der mechanistischen Weltanschauung dar."\textsuperscript{131} Around the turn of the century a new, more sophisticated kind of Vitalism developed, what has been termed "Neo-Vitalism" and what Mikhail Bakhtin and others since him have referred to as "Critical Vitalism."\textsuperscript{132} Philosophers usually classified as Neo- or Critical Vitalist (though they are sometimes termed Lebensphilosophen) include Nietzsche, Henri Bergson, Hans Driesch, Klages, and Johannes Reinke.\textsuperscript{133} Wolfgang Krabbe sees Vitalism as having been the "conventional ideol-
ogy" of the Lebensreform movement. In the Introduction to their anthology on Neo-Vitalism Burwick and Douglass discuss the emergence of this philosophy:

Gilbert Ryle scorned [Vitalism].... Still, 'critical vitalism' ... has deserved more careful assessment than Ryle allows. This vitalism emerged in the nineteenth century transition from matter-based physics to an energy-based physics; it was an emergence noted by artists, philosophers, and scientists alike, which began early in the century.... Whereas naïve vitalism had posited a substance (archeus, vital fluid) in order to fit the evidence of a materialist ontology, critical vitalism focused on process and dynamic impulse in the context of an ontology of energy and idea. German Naturphilosophie was joined by the critical vitalisms of Bergson and Driesch, and the aesthetic and social vitalism of Nietzsche. There can be no doubt that, as the century closed, the vitalist tradition was being powerfully reinterpreted by some of the most celebrated intellectuals in the West.13

While I can only touch on this topic -- which awaits fuller treatment in that history of Neo-Vitalism urgently in need of being written14 -- the possible Vitalist solutions to the Mechanist-Vitalist debate were diverse. They included Driesch's revival of the Aristotelian Entelechie based on his observations of the regenerative capabilities of dissected sea-urchin blastomeres; von Uexküll's related Gen, which he felt harmonised with Entelechie; Francé's "psychovitalistic" and biologic amalgam of a pervasive life-substance, a kind of superorganism he termed Plasma; the more poetic and speculative Bergsonian élan vital and Klagesian kosmogoner Eros; the quasi-metaphysical Haeckelian "Seele;" and the physics-based Ostwaldian Energetik.15 As we have seen, the more Pantheistic of these systems, those characterized by what he termed the kosmovitale Einsfühlung, Max Scheler labeled Vitalmystik. As Jain writes:

In Notizen aus dem Nachlass stellt Scheler, wohl angeregt durch Nietzsches Unterscheidung zwischen dem Apollonischen und dem Dionysischen, zwei Ideal-typen von Mystik einander gegenüber: die "Ideenmystik" und die "Vitalmystik". Scheler charakterisiert
Scheler saw as "ein zweifelloser Fortschritt" Bergson's and Driesch's concept of the unity of organic life over what he termed the "alten Monismus" of Hegel, Schopenhauer, Schelling and von Hartmann.\textsuperscript{139}

There was no coherent Neo-Vitalist ontology or epistemology, and there is little agreement about the varieties of Neo-Vitalism or the distinctions between Neo-Vitalism, Organicism, Holism, mysticism and even mechanism.\textsuperscript{140} There was certainly no self-aware "Neo-Vitalist" group and Driesch was one of few philosophers designated as "Neo-Vitalist" to embrace the term.\textsuperscript{141}

c. The Monistenbund

More coherent as a social grouping, equally diverse intellectually speaking, and based on contemporary scientific research just as Driesch's thinking, was early 20th century Germanic "Monism." In general, Monism is defined as "a metaphysical system based on the assumption of a single ultimate principle or kind of being instead of two or more; [one which is] opposed to dualism and pluralism...."\textsuperscript{142} This definition begs the question of what that single ultimate principle is, and suggests the multiplicity of possible Monisms. "Monism" was introduced in its current sense as opposed to "Dualism" in the early 19th century and was adopted by German biologist and Darwin popularizer Ernst Haeckel, France's boyhood hero and Driesch's professor and early mentor.\textsuperscript{143}

Haeckel's usage of "Monism" beginning in 1863 marked a decided shift in the nature of the debate around Monism and Dualism.\textsuperscript{144} Rather than operating within the discourse of metaphysics, as the Monist-Dualist debate had done previously, Haeckel removed it to that of natural science. He was "con-
vinced of the essential unity of organic and inorganic nature, and argued that the simplest protoplasmic substances arose from inorganic carbonates through spontaneous generation... [rather than] a miraculous origin...." He argued that 'consciousness, thought and speculation' are 'functions of the ganglionic cells of the cortex of the brain,' his 'hard' determinism, his mechanism, his complete rejection of the supernatural, and his enthusiasm for science, all inclined his contemporaries to classify him as a materialist. With what Bloch cleverly calls "sonnige Banalität," he wished to reduce the "riddles of the universe," as he termed scientific unknowns, to one "riddle," that of the nature of substance, and he claimed that his Monism did this. He saw Darwin's theory of natural selection as a materialist mechanism to explain organic life, its origins and its changes. In 1868 he wrote that "Evolution is now the magic word with which we will solve all of the riddles around us, or at least be on the way to solving them." Haeckel defined Monism simply as "that unifying conception of nature as a whole." While this position seems materialist and mechanist -- and Haeckel certainly appeared as such to Christians and other idealists (whom he attacked mercilessly throughout his career), as Bloch points out, there was an ambivalence in Haeckel's own thinking from the start, a substrate of pantheistic vitalism rooted in German Nature Romanticism, a quasi-animist belief that "both matter and ether possess sensation and will in the lowest grade." For much of his career, Haeckel's ontology pendulated like some gestalt figure with two possible sense-configurations between a materialist Monism and this other, Vitalist kind of Monism, what we have seen Bloch refer to as a "pantheistlich gemachte Mechanik," before becoming lodged permanently in the configuration which signified "Vitalist" towards the end of his career. While

his Monism seemed to assert that everything was unified because everything was matter ... in his
Riddle of the Universe, where he summarized his ideas, Haeckel vehemently denied that he was a materialist because his system, unlike materialism, did not see matter as dead. Rather, Haeckel placed himself in what he thought was the tradition of Spinoza and Goethe. These thinkers, he believed, saw nature as a single universal substance that was both matter and spirit—a universe of animated matter.¹⁵⁰

Given such a multifaceted position, Haeckel's views were received in different ways during his long career. "Haeckel clashed with clericals and scientific colleagues, political figures and philosophers. Like a many-sided geometrical figure, Haeckel—zoologist, popularizer of Darwinism, and polemicist for his own Monism—excited varying images in the minds of rivals and admirers."¹⁵¹ While this was the way he was seen, during most of his career Haeckel in effect sought a mediate position; he was anxious to differentiate his Monism from both materialistic and idealistic monisms. According to Gienapp, Haeckel's "Monism was neither the elaboration of a new atheistic materialism based on Darwinian evolution nor the unfounded fanciful speculation of a nature philosopher," both accusations commonly levelled at him. "Rather it was a romantically based view of nature in which the materialistic tendencies inherent in this point of view were fully elaborated."¹⁵² As with France later on, the mediate location of Haeckel's Monism between the reductive materialism of positivist scientific thinking, and of idealist religious or esoteric systems of thought, was what made it so appealing to those artists who sought such a position themselves; a synthesis of hard science and metaphysics.¹⁵³ In this context one can fully understand Kandinsky's statements such as "The world sounds. It is a cosmos of spiritually affective beings. Thus, dead matter is living spirit."¹⁵⁴

This drive to mediate and synthesize was also reflected in Haeckel's project to seek beauty in nature—particularly at the microscopic level of his own research—as an ethical, or normative value. As Hardy notes, he "was especially inter-
ested in art forms in nature and believed that the microscope had newly aroused our aesthetic sense.\textsuperscript{155} Both Haeckel's position between materialism and idealism, and his publication around the turn of the century of some of his most stunning scientific illustrations as *Kunstformen der Natur* -- an album intended as a pattern book for artisans -- account for his later influence on artists operating within the Bioromantic cultural pattern.

His popular Monist manifesto, *Die Welträtsel* appeared in 1899, and became a world-wide bestseller, read by many of the generation who were growing up around the turn of the century.\textsuperscript{156} Strongly evident in *Die Welträtsel*, Haeckel's ambivalence tilted increasingly towards the vitalist, indeed *vitalmystisch* (or rather *Hurrapantheistisch*) end of the spectrum during his career and by 1904 he had drawn up plans to transform Monism into a scientifically-based, in effect Neo-Vitalistic, "Monistic Religion" as an alternative to the traditional religions.\textsuperscript{157} In his thirty "theses of Monism" of 1904, Haeckel planned a Monistenbund [Monist League] as the basis for a "potential 'compromise' church, as the 'link' between science and religion" based on the precepts of early Christianity, the philosophy of Spinoza, and the writings of Goethe.\textsuperscript{158} Paul Weindling has written of this:

Nature was venerated as a healing and restorative force; organic doctrines were used to promote ideals of a cohesive and unified society. By the 1890s Darwinian organicism, which was originally allied with anticlerical political liberalism, had been successfully deployed in support of quite different cultural values ... given expression ... in the Monist League ... that believed in the virtue of nature itself to improve the quality of human life. By viewing Darwinism as a "secular religion", features of German culture can be brought to light that have previously been overlooked because it has been assumed that *Darwinismus* represented merely an increasingly mechanistic analysis of nature.\textsuperscript{159}

The Monistenbund was founded in 1906 by Haeckel, Ostwald and Mach to promote the development of such a "religion,"
though it has also been seen to be a typical organization of the Reformbewegung. Raoul Francé and the scientific writer and novelist Wilhelm Bölsche were also founding members of the Monistenbund, Bölsche propounding a view of the sex drive ("love") as the vital force. In 1911 Ostwald -- by then a Nobel Prize winner -- assumed the presidency of the Monistenbund, which he held until 1915. Ostwald's Monism was based on his "Energetism," the idea that "energy is the substrate of all phenomena and ... [A]ll observable changes can be interpreted as transformations of one kind of energy." As Holt has pointed out, "Ostwald... regarded his Energism (sic) as the ultimate monism, a unitary 'science of science' which would bridge not only physics and chemistry, but the physical and biological sciences as well." Ostwald's Energetism offered a more scientific nomenclature than Haeckel's emphasis on the naturally-occurring "soul" as the animating force, a factor which may account for Ostwald's greater influence on the general public, including artists, by the early 20th century. Mach, meanwhile, took a radically biologicist, or in Pauline Mazumdar's terms, a "biological positivist" approach to Monism. For Mach, only a biological phenomenology was possible, a knowledge based on the Vorstellung of sense impressions. In fact, as pointed out by John T. Blackmore, Mach's relations with the other Monists were essentialy negative. He joined or allied with the other Monists and with Driesch because they were anti-mechanist, rather than because he accepted their "positive" solutions to epistemological and ontological problems. His and Richard Avenarius' position was in fact the one which gained more adherents in the interwar period. This tension was later reproduced at the Hannes Meyer Bauhaus in 1929, when members of the "Verein Ernst Mach" -- the "Logical Positivists" -- lectured there after Biozentriker such as Hans Prinzhorn had done so.

It was on the question of materialism, that von Uexküll
and Driesch -- who labelled Monism "disguised Materialism," and the members of the Monistenbund, clashed.\textsuperscript{170} In addition to its materialism, von Uexküll attacked Monism for its "Darwinism" and its religious aspirations, writing that "Zu dieser Allerweltswahrheiten gehört heutzutage der Darwinismus, der als Monismus zu einer Art Religion der Halbbildung geworden ist.... Das Volk glaubt ... an Haeckels 'Welträtsel', wie es früher an den Katechismus glaubte."\textsuperscript{171} But despite these disagreements, Haeckel's status as both the spiritual father of the Monist League and as an important Neo-Vitalist late in his life, and the au fonds Vitalist nature of both Ostwald's "Energetist Monism" and Francé's Plasmatik, demonstrate the extent to which Neo-Vitalism and Monism were interlinked, indeed disentangleable, even if Mach's positivistic Monism was also present.\textsuperscript{172}

Returning to the question of the relationship between Neo-Vitalism and the philosophy of life, Fellmann writes of the determinant role Neo-Vitalism played in the development of Lebensphilosophie: "Es kann kein Zweifel daran bestehen, dass der neovitalistische Evolutionismus die Denkform mitgeprägt hat, an der sich der lebensphilosophische Lebensbegriff orientierten konnte."\textsuperscript{173} Some historians, such as Anna Bramwell, simply assume the identity of Neo-Vitalism (including Monismus) and Lebensphilosophie.\textsuperscript{174} Philosophers such as Bergson, Klages, Dilthey and Simmel are alternately listed as being Lebensphilosophen and neo-Vitalists. Lebensphilosophie, Neo-Vitalism and the Monistenbund were so closely linked, as to be parts of a single philosophical current.

d. The New Biology: Neo-Lamarckism, Organicism, Holism

Die neue Biologie versteht unter Urform "nicht mehr einen für die 'Entwicklung' im Darwinischen Sinn stammsgeschichtlich neutralen Anfangspunkt, sondern die in allen zu einem Typus 'gehörigen Arten und Gattungen, auch in den anfänglichsten schon vollständig vorhandene typenhaft konstitutionelle Gebundenheit und Bestimmtheit, die Potenz (man denke an
die Bemühungen von Hans Arp organische Lebensformen in letzter, konzentriertester Potenz zu Bildern und Plastiken zu verarbeiten) "die bei allem ausserem evolutionistischem Formenwechsel als das Lebendig-Beständige da ist -- eine Entelechie wie auch Goethe wohl den Begriff Urform fasste..." (Kállai quoting Daqué, 1932) \(^{175}\)

Organicism: 1. any theory that explains the universe on the basis of an analogy to a living organism. 2. any theory that explains the universe as the function of a whole causing and coordinating the activities of the parts. Compare with Animism, Holism, Vitalism. Opposed to Mechanism. \(^{176}\)

Holism: The theory that there is a real, fundamental, and irreducible difference between living and nonliving, between organic and inorganic activity. The parts of living (organic) wholes function differently within the whole from the way they do outside it. Organic wholes must be studied as wholes... \(^{177}\)

The second component of turn-of-the-century nature-centric Neo-Romanticism, that of the "New Biology," is equally complex. Science historians have written of the *bona fide* "neo-idealist" scientific perspectives mainly within the field of biology such as Neo-Lamarckism, Organicism and Holism, which were to varying degrees in revolt against the prevailing reductivist-mechanistic, instrumental, and positivistic scientific practices of the time. \(^{178}\) Paul Weindling writes that during this *fin-de-siècle* "Theology ... had been shaken by historical scholarship. Biology, however, promised to extend the idea of social progress to the history of life.... A vast new market ... had emerged for Haeckel's organicist synthesis." \(^{179}\)

As we have seen, Haeckel was a complex figure whose work was received multiplicitously: arch-materialist and arch-mechanist as well as arch-idealist, arch-vitalist, even arch-mystic. While his philosophical orientation was grounded in German *Naturromantik*, from Darwin Haeckel adopted the rejection of a teleological understanding of evolution, seeing instead -- in a decidedly proto-Bergsonian manner -- "the
world as an eternal evolution of substance, and man as part of
that evolution." However since he believed in the
inheritability of acquired characteristics, Haeckel was also
Lamarckian. In fact Haeckel and Herbert Spencer were crucial
to the rise of a Neo-Lamarckian reaction to the theory of
natural selection which happened simultaneously with the
popularization of Darwinism in the late 19th and early 20th
centuries, an apparently contradictory process which
Alfred Kelly -- who skilfully avoids the question of Neo-
Lamarckism in his book -- has described as the "descent of
Darwin." As Adolf Wagner wrote in 1908, "Noch vor zehn
Jahren war es ein Wagnis, in Fachkreisen über den Lamarckismus
in anderem Sinne als über eine Theorie von lediglich histori-
schem Interesse zu sprechen. Ein solches Wagnis ist es aller-
dings auch heute noch, wenn es sich um ausgesprochen mechan-
istische Kreise handelt, nicht mehr aber, wenn die Gesamtheit
der Biologen in Betracht kommt." Von Uexküll begins one of
his best-known book with the words: "Wir stehen am Vorabend
eines wissenschaftlichen Bankrottes, dessen Folgen noch un-
übersehbar sind. Der Darwinismus ist aus der Reihe der wissen-
schaftlichen Theorien zu streichen." Indeed, this "Eclipse
of Darwinism," as Julian Huxley termed it, or "Non-Darwinian
Revolution," as Bowler refers to it, and its Neo-Lamarckian
aspect was widespread. While not all Neo-Vitalists and
Monistenbunder were Neo-Lamarckians, the three most important
neo-Vitalists, Haeckel, Driesch and Bergson were, as were
Raoul Francé, von Uexküll and Peter Kropotkin, the biocentric
anarchist so important to the Weimar avant-garde. Inevi-
tably Neo-Vitalism and Neo-Lamarckism are closely associated,
and as we have seen, by around 1907-08 Neo-Lamarckism or
psychobiology as Francé termed it, had formed into what Wagner
termed a "movement."

In his book Geschichte des Lamarckismus als Einführung in
die Psycho-Biologische Bewegung der Gegenwart, Wagner defended
Neo-Lamarckism from accusations of "mysticism" in much the
same fashion Haeckel had:

Ich las unlängst irgendwo die "Klage", dass die heutige Zeit beunruhigende Symptome zeige, an der exakten Beobachtungstätigkeiten und der exaktwissenschaftlichen Deutung der Tatsachen kein Genüge mehr zu finden, sich neuerlich einem gewissen, naturwissenschaftlich angehauchten "Mystizismus" in die Arme zu werfen. Unnützige Sorge! ... mit wissenschaftlichen Neuerungbestrebungen hat der Begriff des "Mystizismus" nichts zu tun, es wäre denn höchstens, dass man diesen Begriff auf alles anwenden will, was wir noch nicht bis auf den letzten Grund durchschauen; dann aber wäre auch die exakte mechanistische Naturwissenschaft durch und durch "mystisch"! In Wahrheit aber hat die neue Bewegung einen sehr realen Hintergrund: das Verlangen der Menschheit nach geistiger Befriedigung. Zu dieser bedarf sie mehr als blosse Disputierstoff für die Gelehrten; sie will, dass die Wissenschaft bewussterweise Anschauungen zusteuere, welche eine harmonische Ausgestaltung des geistigen Innenlebens zulassen, welche die Wirklichkeit möglichst von allen Seiten erfassen, statt alles in eine ungenügende einseitige Doktrin einzuzwängen.\footnote{98}

However contradictory, Haeckel's attempt to synthesize the mechanist with the vitalist, the scientific with the "religious" or "mystical," the material with the ideal and the Darwinian with the Non-Darwinian, was precisely what many saw as necessary to combat a perceived degeneration of society and the alienation of the public from science at the turn of the century. This "organicist synthesis" is what Francé was referring to when he wrote of "die neue Naturphilosophie" in the \textit{fin-de-siècle}.\footnote{99} Francé's wife, the writer Annie Francé Harrar characterizes this almost theological, vitalmystisch attitude of neue Naturphilosophen when she recounts the Munich circle of the Buddhist Hans Ludwig Held early in the 20th century. Referring to those who followed Haeckel's idea of the "ensouled cell," she writes:

Auch Naturwissenschaften sassen unter uns, die hingerissen waren von dem Wundern der lebenden Zelle. In ... dem Protoplasma, sahen sie die einzige Vor- aussetzung sämtlicher organischer Leistungen, zu denen für sich auch der Geist zählte. Immerhin hiel-
ten sie es für möglich, dass sich aus dem Nucleus
doch vielleicht noch so etwas wie eine Zellseele
herausschälen liesse.\textsuperscript{190}

Probably the most metaphysical attempt to establish a
neo-Nature Philosophy was that undertaken by Edgar Dacqué,
professor and curator at the Palaeontological State Collec-
tions in Munich.\textsuperscript{191} Through his popular books, especially
Urwelt, Sage und Menschheit of 1924, he became known for his
untypically anthropocentric and teleological-vitalist Goethean
revision of Darwinian theories of evolution: that we humans,
or rather our "entelechy" (understood in the old Aristotelian
rather than new Drieschian sense) contained within "itself"
the Urform of our ultimate development from the very start of
our evolution, i.e. that we evolved from palaeozoic forms to
the modern within our "species" rather than through various
genuses and phyla, and that myths of monsters such as sea-
serpents and dragons (dinosaurs) prove this. As a consequence,
writes Dacqué, "der Mensch [ist] die grundsätzliche Urform,
weil er das Höchste ist" and all other species represent
evolutionary dead-ends.\textsuperscript{192} Seeing everything in frankly meta-
physical Vitalist (what he termed "magical") terms, Dacqué
believed all phenomena were "ensouled." As a contemporary
review put it: "Dacqué's [Ideen sind] von Bedeutung: weniger
wegen seiner sachlichen Ergebnisse ... als vielmehr als Symp-
tom für den Krisenzustand der gegenwärtigen Naturwissenschaft,
der dadurch entstand, das heute alle Grundlagen des natur-
wissenschaftlichen Denkens zum Problem geworden sind."
\textsuperscript{193}

While popular with biocentric non-scientists with metaphysical
leanings such as Ernő Kállai, Mies van der Rohe, Hugo Haring,
Kandinsky and the art historian Carl Georg Heise, this theory
was so speculative as to be categorized as pseudo-science
despite Dacqué's respectable position.\textsuperscript{194} Though he rejected
both Haeckel and Driesch in his writings, and he made little
reference to Lamarck, Dacqué's thought is inconceivable with-
out the Neo-Vitalist aspects of Haeckel's and Driesch's
thought or without the Lamarckian revival.

It was out of the turn-of-the-century Neo-Nature Philosophy, especially as elaborated by Driesch, and out of Neo-Lamarckism, that the scientifically more respectable Organicism and Holism developed as part of the anti-mechanistic, systems-based approach to biology in the early part of the century. Emergent from the Neo-Vitalist and Monist circles of Haeckel and Driesch, it is impossible to separate this phenomenon out from Neo-Vitalism and Monism despite the rhetoric -- both then and now -- to the contrary, though Holism and Organicism came to the fore after the First World War, at a time when Neo-Vitalism and Monism had gone out of fashion. The Germans have referred to this phenomenon as "die Neue Biologie," a term which -- as Michael Kröger's usage of it indicates -- is employed in a historical sense in Germany, while in North America it is in use for an analogous phenomenon as it exists today.

It is not necessary here to unravel or resolve the debates around this "New Biology" concerning natural selection versus Neo-Lamarckian and teleological views of evolution, materialism versus idealism, monism versus dualism, mechanism versus Organicism, Neo-Vitalism or Positivism, and reductivism versus Holism. The current state of science history is one of confusion -- both terminological and conceptual -- concerning these matters. Rather than argue for an airtight category with firm boundaries, what I will do is to focus on the commonalities of what I see as the interlocking complex of Organicism and Holism. Thus, though -- like Neo-Vitalism and Monism -- it was not necessarily anti-materialistic, and -- like Neo-Vitalism and Holism -- it did not always eschew mechanistic explanations, the New Biology shared ground with the romantically-derived, neo-pantheistic, almost mystical focus on the problematic of life and Becoming of Lebensphilosophie, the Monistenbund, and Neo-Vitalism.

A comparison of the definitions of Organicism and Holism
quoted above should make clear that Holism is subsumable under sense no. 2 of Organicism. Thus it is not surprising that the terms are used interchangeably. For example Parascandola writes of Henderson's "Holistic, organismic approach" as a single trend in the biological science of the early 20th century.200

Recently there has been at least one serious attempt each by historians to define Organicism and Holism as categories in the history of science: Donna Jean Haraway's construction of Organicism as a new Kuhnian paradigm engendered by a shift from the use of the machine metaphor (by both mechanists and vitalists) in 19th century biology to the metaphor of the organism, and Anne Harrington's definition of Holism as part of a cultural response -- as expressed through science -- to the perceived mechanization of society and thought.201

Both Haraway and Harrington construct complex models of Organicism and Holism. Haraway's model involves groups among German speakers, Americans, the British and the Soviets in which she privileges their rhetorical anti-Vitalism:

Perhaps these rough divisions constitute separate paradigm groups in the Kuhnian sense. But across the national and individual differences, these men hold common views and address themselves to common problems that they felt the older perspectives dealt with poorly. All saw vitalism as part of the mechanistic paradigm rather than opposed to it because both were limited by the same images and metaphors. The organicists saw themselves as a new phenomenon working at ideas and experiments made possible only very recently by internal developments in biology and by salient intellectual transformations in other sciences including physics and political theory.202

Harrington's model of an anti-mechanistic science of "Holism," meanwhile, invokes Neo-Lamarckism as a common feature:203

The new "holistic" science of life and mind that was to replace the old Machine science was really more a family of approaches than a single coherent perspective. The need to do justice to organismic purposiveness or teleological functioning ... was central... Beyond that need was a range of overlapping understandings.204
Even as holism in some respects proved to be a plu-
ralistic and sometimes even quarrelsome phenomenon, in other respects it always remained a surprisingly closely knit one: certain recurring themes and problems made up a coherent conceptual grid whose architecture, without being rigid, allowed distinctions to be drawn between innovations and theoretical developments that were 'inside' the frame and those that posed a threat to it. Although political events like World War I had repercussions for everyone, holistic comrades-in-arms 'recognized' one another in the first instance because they all (quite literally) spoke a common language, made use of certain common theoretical conventions, and saw themselves as in dialogue... with common philosophical, scientific, and cultural legacies.205

While Harrington limits her discussion to germanophone Central Europe, and so her category is not strictly speaking comparable to Haraway's, it shares features with Haraway's "organismic paradigm." An obvious intersection is Gestalt theory, which comprises much of Harrington's construction, and forms a major part of the German component of Haraway's. More crucial is the common origin of Haraway's and Harrington's categories in the work of Hans Driesch,206 establishing both Organicism and Holism as -- historically at least -- varieties of a sort of neo-Neo-Vitalism. Thus, though Haraway's perspective is international while Harrington is specific to Central Europe; and Haraway defines her category via a shift in the prevalent metaphor, while Harrington identifies Holists by their conceptual commonalities and common social response, they are describing aspects of a single category, a kind of Organicist/Holist complex.

Because of its common origin in the work of Driesch, moreover, this complex intersects extensively with Neo-Vitalism, Monism and Lebensphilosophie. Indeed, in the minds of many writers, Organicism and Vitalism are equivalent or very closely linked. Thus, Jack Burnham does not distinguish between the two when he writes that "[t]he organic ideology and its vitalistic manifestations must be looked upon as part of a continuum of evolving attitudes within the social concep-
tion of what defines organic." Not only does Harrington cite Driesch as the founder of German Holism, she names among its important representatives Driesch’s friend von Uexküll—a pairing recognized by Heidegger himself. When the Driesch scholar Horst Freyhofer discusses Driesch and von Uexküll (along with Klages and Bergson) as "Vitalists," and Heidegger as "Organicist," we begin to realize the extent to which Lebensphilosophie, Organicism, Holism and Neo-Vitalism are interlinked.

While Haraway is anxious in her book to distinguish between the organismic paradigm and Neo-Vitalism, others such as Hilde Hein have argued for their essential identity. Haraway holds that the machine paradigm determined the mechanist-vitalist debates of the 19th century. "Vitalism of a quasi-metaphysical kind is in opposition to mechanistic materialism as a philosophy, but it is not in opposition to the machine [metaphor]." Thus, as we have seen Harrington point out, the various groups of early 20th century Organicists "saw vitalism as part of the mechanistic paradigm rather than opposed to it because both were limited by the same images and metaphors." She follows Morton Beckner in arguing that it was not until the turn of the century, when Driesch and others challenged the prevalence of the machine as a metaphor for biological science, and replaced it with the organism, that a true Organicism could develop: "The first third of this century was marked by constant debates between neomechanists, neovitalists, and older branches of each. Despite the fact that each camp rested secure in the belief that reason and experiment resided with it alone, no resolution could or did occur until the machine paradigm common to mechanist and vitalist alike was fundamentally altered." As a result, both Haraway and Beckner paint a complex picture of the relationship between Neo-vitalism and Organicism. Beckner writes:

In fact there is considerable affinity between the two schools. They both agree that the methods of the
physical sciences are applicable to the study of organisms but insist that these methods cannot tell the whole story; they agree that the "form" of the single whole organism is in some sense a factor in embryological development, animal behaviour, reproduction, and physiology; and they both insist on the propriety of a teleological point of view.... But [they] differ in one fundamental respect: [vitalism] holds ... that the characteristic features of organic activity ... are caused by the presence in the organism of a nonphysical but substantial entity.... [This] affinity ... is more than an accident. In the history of biology it is difficult to disentangle vitalistic and organismic strands.... The distinction between them was drawn clearly only in the twentieth century....

Building on Becknert's argument, Haraway stresses the differences between Organicism and Neo-Vitalism. She characterizes Organicism as a realist structuralism and Vitalism as metaphysical. She sees this "Organicist structuralism [a]s a third way to deal with form, organization, and regulation; [a]s different from both the additive point of view (mechanism) and from philosophies of emergence (vitalism)." That this distinction between Organicism and vitalism is problematic, however, is suggested by Haraway's own usage of the term "nonvitalist organicist," as well as by Hilda Hein's materialist view:

[Organicism] is not a third alternative to mechanism and vitalism, but a shuffling confusion of the real question which divides them. Mechanists argue in favor of a continuity of nature such that the laws and concepts in terms of which the physical universe can be made intelligible are also sufficient to explain living phenomena. Vitalists deny this, maintaining instead that there is a break in continuity ... such that additional laws and explanatory concepts must be introduced in order to account for life. Since these are contradictory positions, it is impossible to opt for a third alternative, and organicism does not do it.... [I]n the end organicism takes its place on the side of the vitalists.

An analogous controversy exists within the discourse around whether Holism is a variety of materialism or not. Garland Allen distinguishes between "mechanistic materialism"
and "Holistic materialism" or simply "Holism," implying that Holism is by nature always materialist.217 Golley on the other hand, writes of both materialist and idealist Holists.218 While some have been anxious to emphasize the distinctions between Holism and Neo-Vitalism,219 the same arguments linking Organicism to Neo-Vitalism hold in the case of Holism and Neo-Vitalism: The Holist/Organicist complex emerged from the Neue Naturphilosophie to form a "New Biology," part of the nature-centric neo-Romantic cultural current of the fin-de-siècle.

e. Biozentrik

Die biozentrische Denkweise erscheint jetzt nicht mehr als etwas Möglicheres, sondern als der einzig mögliche Weg, um die Erlebnisse (nichts hintert zu sagen: Natur) zu ordnen, nutzbar zu machen, kurz gesagt: um leben zu können.... (Francé 1923)220

While I have been focusing on the commonalities, one could equally well enumerate a list of differences between the constituents of this fin-de-siècle nature-centric Neo-Romanticism. Indeed, because of these differences, it is problematic to conceive of it as a single geistesgeschichtlich category. It might be more useful to think of these constituent discourses (such as Neo-Vitalism, Organicism/Holism, the Monistenbund, Lebensphilosophie, Neo-Lamarckism, the Neue Naturphilosophie, Biologism, the Reformbewegung) as sets containing arrays of concepts and beliefs. While the arrays of concepts and beliefs within each set are not identical, there is a degree of commonality between them, i.e. the sets intersect. (Figure 2) The intersection I am concerned with here consists of an array of closely-related concepts -- the privileging of biology as the source for the paradigmatic metaphor of science, society and aesthetics; a consequent biologically-based epistemology, indeed psycho-biology; an emphasis on the centrality of "nature," "life" and life-processes rather than "culture;" an anti-anthropocentric Weltanschauung; the self-
directedness and "unity" of all life; a valorization of kosmovitale Einsfühlung; a stress on flux and mutability in nature rather than stasis; a concern for "whole-ness" as opposed to reduction at all levels -- which were present to significant degrees in all these categories. It is to refer to this biologist, Organicist, nature-centric, i.e. anti-anthropocentric, vitalmystisch, psycho-biological, Vitalistic-Monist and holistic aspect of the components of fin-de-siècle Neo-Romanticism, i.e. their intersection in this respect, that I revive a German term employed by Klages, Françé and their followers: Biozentrik.²² Biozentrik is here constituted as a commonly-held bundle of concepts, theories, beliefs, practices, and prescriptions which privileged Leben over Geist, which foregrounded the concept of our inseparability from and dependence on nature, and which had their origins in Romantic Naturphilosophie, biologist, and neo-Lamarckism. If we mentally reconstruct, in turn, other epistemological fields in the intellectual world of the time, e.g., Empiricism/Positivism, Marxism/Socialism, and Biozentrik’s Neo-Romantic sibling, the turn-of-the-century Occultist revival as we have Biozentrik, i.e. as the intersection of groups of concept-bundles or discourses -- and if we take into consideration the fact that individuals change their views over time, indeed that they hold conflicting views simultaneously -- then we begin to understand how it is that a single discourse such as Neo-Vitalism can contain within itself both materialist and idealist views, both mechanism and Vitalism, or how the Monist League could include Haeckel and Ostwald as well as the arch-Positivist Mach.²² If we think finally, of the fact that the synchronic structure outlined above also changes diachronically -- with the period around the First World War and its aftermath constituting a particularly salient rupture, then we begin to understand how complicated history can be, and why it is crucial to keep individual differences and life-stories as well as changes over time in mind while trying to understand
the "big picture" through reductive modelling.

Though I do not shirk from the concept of influence and though I attempt to outline possible conduits of information flow, in recognition of the above, I do not argue for definite means of transmission. I recognize that information flow is a complex process which, in the end, it is impossible for historians to account for. This complexity is analogous to that of each subjectivity being discussed.

Just as the constituent discourses of Biozentrik included materialists and mechanists who shared these beliefs with most Positivists, or like Haeckel and Francé, occupied mediate positions or shifted between these views over time, these discourses included others (such as Haeckel) whose kosmovitale Einsführung, their vitalmystisch belief in the unity of "nature," or some metaphysical animating force, drive or substance, were shared with the intersection-core of Occultism. This is where figures such as Rudolf Steiner, Arthur Dove, Bruno Taut, Wassily Kandinsky, Maurice Maeterlinck and Emily Carr can be situated: if we conceive of each individual subjectivity as a set in her or his own right holding an array of ideas, the boundaries of their sets extend into the intersection-cores we term Occultism and Biozentrik.223 Others, such as Klee, Arp and Mies are roughly coterminous with the intersection-core of Biozentrik.224 One could conduct a similar analysis concerning the commonality between Biozentrik and Marxism/Socialism, embodied in biocentric Anarchist figures such as Kropotkin and Landauer, but also in artists such as Hausmann, El Lissitzky and Moholy-Nagy.

Biozentrik can perhaps best be characterized as Naturromantik -- including both its scientific and metaphysical baggage -- updated by 19th century biology. In its usage by Klages, Biozentrik was contrasted with both logocentrism and anthropocentrism.225 Biozentrik rejected anthropocentrism, de-centering the human species in favour of "nature" and "life." Since humanity was seen to be part of these larger
wholes of life and nature, everything humans do and produce is also part of nature for biocentrics, and hence explicable in its terms. As Haeckel and others had before him (see the list of quotations at the start of this chapter), the English Organicist philosopher Alfred North Whitehead wrote of the realization that "...human beings are merely one species in the throng of existences. These are animals, the vegetable, the microbes, the living cells, the inorganic physical activities." The inevitable ethical dimension of this realization has led to environmentalism. Indeed it is no accident that the science of ecology emerged from Biozentrik: Haeckel coined the term Oekologie in 1866, in his magisterial Generelle Morphologie, and the Neo-Vitalist Holist von Uexküll coined the term Umwelt (environment) in 1909.228 France, building on his version of the ecosystem concept, Biozönose, carried out ground-breaking work in the field of soil ecology. As we have seen, France was also an early environmentalist: it was typical for Biozentriker to be engaged in both the descriptive (scientific) and normative (environmentalist, political) varieties of ecological study just as Haeckel's intentions were scientific, normative, ethical and aesthetic. With this in view it is less surprising that we should find biocentrically minded individuals in the Anarchist, Socialist, and Fascist camps.

The cognate English form of Biozentrik, "biocentrism" has a history of usage: The 1933 edition of the Oxford English Dictionary defines "biocentric" as "treating life as a central fact," while in his introduction to Klages-disciple Hans Prinzhorn's study of the art of mentally disabled people Bildnerei der Geisteskranken, James L. Foy writes that "Biocentrism provides an outlook on man through a new kind of recognition of man's intimate and inescapable kinship with, and dependence upon, the self-regulating animal, vegetable and inorganic worlds." Given the above discussion, it comes as no surprise that the dominant usage today in English is an
environmentalist one, but one that is cognate with earlier uses. Thus, environmental ethicist Paul Taylor employs the term to refer to the view that "the living things of the natural world have a worth that they possess simply in virtue of their being members of the Earth’s Community of Life," ideas which echo those of Francé and other Weimar biocentric thinkers unknown to Taylor. In his book Taylor restates the biozentrisch view of humans being merely one species among many, part of the greater system of life:

We have considered five general empirical truths which, when brought together and placed in the forefront of our awareness, give us a sense of oneness with all other living things and lead us to see ourselves as members of one great Community of Life. To face the realities of human existence expressed in these truths is to become cognizant of our status as members of the Earth’s whole biotic community, a status we share with every other species.

Taylor’s text, and his insistence that this outlook is "consistent with all known empirical truths" (i.e. biological and other science) is an indication of the continuity, though unconscious, of his ideas with those of interwar and fin-de-siècle biocentrism, even if recent usage of the term carries with it the implication of a more radical environmentalist position. Taylor’s ignorance, like Kirkpatrick Sale’s, is typical of post-war environmentalists. That Taylor’s usage of "biocentrism" ultimately derives from the German is suggested by David Oates crediting its early use to the "Deep Ecology" movement, founded by the Norwegian ecologist Arne Naess, who emerges from Norwegian Biozentrik -- a discourse closely related to the German one -- represented earlier by figures such as the Nobel-prize-winning-novelist-turned-Nazi, Knut Hamsun. This -- in a Freudian sense -- repression of their own history on the part of environmentalists is another topic awaiting treatment.
3. Politics

Thus men ... wander about in the garden of Nature ... with few exceptions [they] pass blindly by one of the most patent principles of Nature's rule: the inner segregation of the species of all living beings on this earth. Even the most superficial observation shows that nature's restricted form of propagation and increase is an almost rigid basic law of all the innumerable forms of expression of her vital urge. Every animal mates only with a member of the same species.... The stronger must dominate and not blend with the weaker, thus sacrificing his own greatness. Only the born weakling can view this as cruel, but he after all is only a weak and limited man; for if this law did not prevail, any conceivable higher development of organic living beings would be unthinkable. (Hitler 1924)

a. The German Cultural Sphere

While I employ "biocentrism" to refer to a phenomenon throughout Europe and North America (this will be useful in discussing the biomorphic Modernist art general to Western 20th century culture), in this dissertation I focus on biocentrism in German-speaking Central Europe during the first half of the 20th century. I do so because in most respects -- the widespread nature of the biocentric mode of thinking, from the point of view of artistic production, and the interaction of scientific image-making with both biocentrism and biomorphic Modernism -- the German cultural sphere was paradigmatic. As Anne Harrington writes concerning Holism:

The self-defined borders, colors, and contours of this [holistic] grid clearly mark it as a 'German' construction. That said, we should nevertheless not insist on a more rigid definition of holism's 'Germaness' than was in fact operative at the time. The paper trail left by holistic life and mind scientists did not respect the political borders of Germany proper but to varying degrees embraced the German-speaking parts of Switzerland, Hungary, and Austria as well.

Harrington's contention is not only born out within the Holistic discourse, however. While Driesch and Haeckel were
from Germany; Ostwald and von Uexküll were Baltic Germans who
made their careers in Germany; and Mach was a Bohemian who
taught in Prague and Vienna during his career. Perhaps most
instructive in this connection is the case of Raoul Francé,
whose biography I will here outline.

Francé's polyglot background was not unusual in the
Austro-Hungarian empire. His paternal great-grandfather is
supposed to have been a serviceman in the Napoleonic army who
was stranded in Austria during the French invasion. Francé's
paternal name, "Franzé," is apparently a corrupted spelling of
what Francé's grandfather had referred to himself as: français. This grandfather assimilated to the German-speaking
population of that part of Bohemia known as the Sudetenland,
but Francé's father married a Moravian woman from a family who
were Czech nationalists. To complicate matters even further,
there were also Polish and Hungarian branches of the family.
Given that they named their son "Raoul" rather than "Rudolf,"
that Raoul changed the spelling of his name from Franzé to
Francé, and that he was educated to speak French, the family
seemed intent on maintaining connections with their French
roots. Francé was born in Vienna, moved to Budapest with
his family in 1884 when he was ten, and spent his boyhood
summers with the Moravian side of the family. Thus he learned
German and Czech at home, French from a tutor, and Hungarian
after the move to Budapest. Francé attended university in
Budapest, worked in the Hungarian National Museum under the
neo-Vitalist biologist Géza Entz, and published scientific
articles. Like so many other late 19th century immigrants to
Budapest, by the turn of the century Francé was well on his
way to assuming Magyar ethnicity. In 1898, however, he was
appointed researcher at the Institute for Plant Diseases at
Mosonmagyaróvár (Ungarisch-Altenburg), in a bilingual (German-
Hungarian) part of Hungary not far from Vienna. There he wrote
his first book, Der Wert der Wissenschaft, a collection of
aphorisms on the value of science. The volume was published in
Dresden by the first publishing house he sent it to; indeed it was such a success that it opened up for Francé the possibility of moving to Germany to advance his career. When his first marriage failed, feeling isolated in a small town, and by his own account, made aware of his "Germanic" ethnic roots while living in a partly German-speaking area, he quit his job and moved to Munich in May of 1901.

Francé's experience was analogous to that of Ernő Kállai, who, born in Hungary of mixed ethnic Serbian and ethnic German background, moved to Germany to further his career in the arts in 1920, after having taught in an isolated German-Hungarian community. It is significant that given Francé's options at a time of congealing national identities in Central Europe, he chose a "German" identity over the "Czech," "Austrian," "Hungarian" or even "French" alternatives available to him. It is likely that, in addition to the personal factors listed above, Germany's leadership in the field of biology at the time had to do with this choice, much as Berlin's reputation as an important artistic centre was important to Kállai in his decision to move there. In any case, as we shall see, this choice was a fateful one, and bears out what is surely a cliché, that it is the Mischling, displaced emigrant who becomes most obsessed with ethnic or cultural "purity" and with Heimat.

Thus, in Germany, Francé -- even more than Kállai -- became "German." In Munich, at his Biological Institute, Francé met the Polish-German biologist and writer Annie Harrar, whom he married in 1923. After the Institute was ransacked during the Munich commune of April 1919, the Francés moved to the small, story-book-perfect medieval Franconian town of Dinkelsbühl on the "Romantische Strasse," a move which -- apart from a withdrawal from the metropolis -- had völkisch overtones which can be interpreted as an attempt to strike "roots" in a mythical German Heimat that Francé and Harrar had little connection with. While he had written of the Munich
region as an organic whole which had been rendered inorganic by massive immigration, he saw Dinkelsbühl and the region around it focused on the medieval trading town of Rothenburg ob der Tauber as a paradigmatic "Heimat" Biozönose.  

Francé spent his winters in the intellectually more stimulating city of Weimar, however. A Socialist at some point in his early career, Francé remained "officially" outside of politics at this time, though in Weimar he moved in the neo-conservative circles of Weimar's cultural elite around Nietzsche's sister Elisabeth Förster-Nietzsche, Friedrich Lienhard, and when he came to accept the Nietzsche Prize, Spengler (of whom he was otherwise critical).  

As pointed out by Raoul Hausmann in his critique of Francé's 1922 book Die Kultur von Morgen, it was a troubling document, with its biologically-based call for a return of German culture to its "organic" roots in the "forest," that is, to "Gothic" culture, and in its call for a "eugenic" "cleansing" of the German "race." Indeed -- and Hausmann could not have known this at the time -- it paralleled some of the ideas current in National Socialist circles. It should be pointed out, however, that Francé did not hold German culture or the German "race" (Francé did not use the term "Aryan") to be superior to others as the Nazis did; all his suggestions were applicable to other "cultural Biozönose" by extension, and he spoke out directly for the maintenance of cultural diversity in the world.  

Ironically, it was also during the early twenties that Francé exercised his greatest influence on members of the Leftist intelligentsia. Indeed it is a significant coincidence that Francé spent the winter months in Weimar from 1919 to around 1924, years that the Bauhaus was located there, and a period which coincided with the peak periods of his literary production, his fame and his influence, despite the fact that he was ambivalent towards the Bauhaus itself. Sometime between 1923 and 1926, Francé moved back to his native Austria, to Salzburg. After this, when they were not engaging in expedi-
tions around the world, for health reasons, the Francés began to spend their winters in Ragusa (Dubrovnik), on the Adriatic coast of what was then Croatian Jugoslavia, eventually moving there for most of the year.\textsuperscript{250} The outbreak of war made it necessary for them to flee Croatia. Francé returned to Hungary this time, dying in Budapest of his ailments in October of 1943, four months before the German occupation.\textsuperscript{251}

Francé's case is exemplary of the kind of cultural space in which biocentrism evolved and flourished late in the last century and early in this one: While polyglot in its Central European origins as Harrington has pointed out, it was focused on Germany; balanced between the political Right and Left. Why this should be so is a question about which there is a fair degree of agreement amongst historians. As the central locus of Nature Romanticism, and later of Lebensphilosophie, biological science, and the various forms of Neue Naturphilosophie, the ground for biocentric thinking was most fertile in Germany, even more so than in Britain and North America, which shared with Central Europe the "Nordic" heritage of Romantic Nature Philosophy. As Kelly writes:

\begin{quote}
Germany, rather than England, was the main center of biological research in the late nineteenth century. This professional activity attracted large numbers of popularizers, who took advantage of the vast and unusually receptive reading public. For not only was Germany the most literate of the major European countries, it also offered the richest environment for Darwinism to expand beyond the confines of science. Political liberalism had been thwarted in Germany in 1848, and Darwinism became a pseudopolitical ideological weapon for the progressive segments of the middle class. Science commanded respect as an unstoppable form of progress.\textsuperscript{252}
\end{quote}

Precisely because we are dealing here with the volatile Germanic cultural sphere, it is crucial to circumvent the trap of ahistoricism. Structurally, i.e. at the synchronic level, I believe that Biozentrik is a viable construct of the history of ideas, and I will use this term in a synchronic sense. Diachronically however, it is problematic, even over the
temporal span of 1890 to 1940, for as political contexts have shifted, even similar sets of ideas took on very different meanings.\textsuperscript{253} With the rise of National Socialism which, as we have seen in the Introduction -- and as suggested by the passage from Hitler's \textit{Mein Kampf} quoted above -- was in one of its major guises a biocentric variant of international Fascism, the connotations of biocentric ideas shifted in general. Speculations on whether Haeckel would have joined the Nazis had he lived beyond 1919 on the one hand; and discussion concerning Driesch's, von Uexküll's, Spengler's and Klages' refusals to join the Nazis despite recruitment efforts, versus Francé's and Prinzhorn's associations with them on the other, are two entirely different problem-complexes.\textsuperscript{254} As Kelly writes of Social Darwinism,

> Nowhere is the task of disentangling the ... strands of Social Darwinism more formidable than in Germany. For the historian, German Social Darwinism seems trapped in the dark shadow that Nazism casts backward into the late nineteenth century. Certainly Hitler's crude bombast recalls the very words of Social Darwinism.... However the common historical treatment of German Social Darwinism as a theoretical rehearsal for Nazism is a mistake. Reading history "backward" may have its rewards.... But such insights are likely to be bought at the price of distorted perspective. Cast in the role of proto-Nazi, Social Darwinism almost inevitably takes on not only a malevolence, but also a prominence, coherence, and direction that it lacked in reality.\textsuperscript{255}

In other words, it is because of the shadows cast by Nazism backwards and forwards in time and the high-voltage political charge that these shadows transmit, that one must distinguish Klages', Francé's, von Uexküll's and Spengler's "interwar biocentrism" from fin-de-siècle biocentrism or the "New Nature Philosophy" as Francé termed it, not to mention the biocentrism of the Post-World-War-Two period.\textsuperscript{256}
b. Bramwell's "Ecologism": Problematizing the Taxonomy

When it comes to biocentrism and its constituent discourses, confusion concerning political affiliations within the Left-Right continuum is rife. One is struck by the degree to which biocentrically-minded individuals either tended to remain outside mainstream, Left-Right party lines, or by their slippage from one to the other. Historians working within this binary continuum dealing with Biozentriker and the discourses their interactions constitute, have struggled with the presence of either position's political other within itself.257 Thus, the German literary historian Otto-Ernst Schuddekopf has referred to the "Ökologen der zwanziger Jahre, die konservativen Revolutionäre und ständestaatlichen Utopisten" as the "Left-wingers of the Right."258 The Marxist literary and cultural historian Gert Mattenklott has remarked meanwhile that one could describe the "ecologists of the 1920s" with equal justification as the "Right-wingers of the Left."253 He goes on: "Wir finden aber die Belege für solche Auffassungen durchaus nicht nur bei den gegenwartsverdrossenen Autoren der konservativen Revolution." They are just as apparent among Marxists such as Alfred Döblin.260

Because of the nature-centric aspect of National Socialism, and because many Nazis were genuinely biocentric, through guilt by association, both the neo-Marxist and Positivist camps tend to associate the constituent discourses of biocentrism -- Lebensphilosophie, Neo-Vitalism, the Monistenbund, Organicism/Holism and popular Darwinism -- with the Right, indeed with Fascism (through an interesting case of selective memory and marking the post-1950s environmentalist movement has tended to be exempt from this).261 This combination of reading history in reverse and guilt by association was established before the Second World War by Marxist critics such as Ernst Bloch, György Lukács and Arnold Hauser, who have induced the tendency among subsequent Leftist writers to always judge all biocentric views negatively, seeing them as
totalizing, a-historical or anti-dialectical, i.e. as essentially "reactionary," and thus as antithetical to a "progressive" social consciousness.\textsuperscript{262} Mainstream post-war Positivist science historians, meanwhile, have identified biocentrism's constituent discourses with the Vitalist camp of the Vitalist/Mechanist debate, the side discredited by the science of biology since World War II, especially since James Watson and Francis Crick's deduction of the structure of the D.N.A. molecule in 1953.\textsuperscript{263} Burnham's statement that "[b]ecause vitalism centered its reasoning on noncausal and nonphysical beliefs, it has functioned as a conservative, if not reactionary, agent" demonstrates that the Positivist view accords with the Marxist position that biocentrism is ideologically "reactionary."\textsuperscript{\textsuperscript{264}}

Because environmentalism has typically been seen (and seen itself) to be a "Left-wing" cause since the 1960s, the biocentric aspect of National Socialism is still surprising to many, and is (usually unconsciously) repressed by environmentalists. Indeed, major Nazis such as Rudolf Hess and Richard Walter Darré were biocentric,\textsuperscript{\textsuperscript{265}} there was a significant segment among Nazi scientists that was Holist/Organicist,\textsuperscript{\textsuperscript{266}} and the Nazis appropriated the term die neue Biologie to their own racist science.\textsuperscript{\textsuperscript{267}} The passage quoted from Hitler demonstrates that his thinking was typical of the crude biologism common at the time (though there is little if any evidence of outright environmentalism in Mein Kampf). This is why the Nazis courted figures such as Spengler, Klages, von Uexküll and Driesch, and why even those biocentrics living in Germany who ultimately rejected them (Spengler, Driesch and von Uexküll), were treated with kid-gloves.

The extent of this appropriation is indicated in a statement made by Hans Reiter, president of the Reich Health Office in 1937: "Today, the German people may well be considered first in the world in terms of the organic views of its leaders."\textsuperscript{\textsuperscript{268}} Indeed Robert A. Pois has identified a "Religion
of Nature" within National Socialism, a fusion of neo-Romantic nature mysticism and a crude biologism, indications of the Nazis' participation in biocentric discourses:269

The 'naturalism' of the [National Socialists] certainly has parallels with a sort of fuzzy nature-mysticism which can be observed throughout the West.... Thus, in its anti-Judaic emphasis upon the sanctity of nature, 'National Socialism' has to be seen as symptomatic of a general, perhaps largely unconscious, discomfiture with the Judaic-Christian tradition, something which attained political expression in Germany but can hardly be seen as confined to it.270

It is the case that some Biozentriker (Francé, von Uexküll, Paul Krannhals, Spengler) were associated with völkisch "Heimat" ideology271 and the konservativen Revolution; that some, such as Francé, Prinzhorn, and Heidegger, joined the Nazis (the latter remaining with them to the bitter end272) and Nazi Germany was in the mid 1930s the country in which biocentric ideas came closest to constituting a state ideology. However, there were also traditions of Leftist and Anarchist biocentrism (Kropotkin, Landauer), and prominent Biozentriker such as music educator Heinrich Jakoby, Gestalt Psychology-founder Wolfgang Köhler, and Lebensphilosophen Lessing, Bergson and Simmel, were of Jewish heritage.273 An example of the primacy that the racist ideology of Alfred Rosenberg enjoyed in the Nazi state is the 1933 murder of Lessing at Marienbad in Bohemia, one of the first political murders the Nazis arranged after the Machtbergreifung.274 Furthermore, most Fascist parties were not ecologicist at all,275 and an ultimately successful anti-Holistic/anti-Organicist backlash within the Nazi Party began to be conducted by "Nazi Mechanists" by about 1935.276 Probably as a result of this backlash, there were attempts to forcibly retire von Uexküll from his Institut für Umweltsforschung in Hamburg in 1936, and as we shall see, Francé was in trouble with the Party by 1938. Thus, while it is true that there was an association between aspects of biocentrism and of National
Socialism, it is also true that some biocentrics were opposed to Nazism, just as many Nazis were opposed to biocentric ideas. In other words, just as not all Modernist art was informed by a Leftist ideology (e.g. Futurism), not all biocentric thinking was associated with Fascism. Biocentrism is neither essentially nor predominantly Fascist.

Still, it is apparent that the partial Nazi appropriation of biocentrism has marked its constituent discourses. Thus the characterization of Lebensphilosophie, Neo-Vitalism, Monism and the Organicist/Holist complex as Right-wing is typical of the older literature, as is the tendency in recent scholarship to point out the actual complexities of the issue. Schnädelbach writes that

[i]f the ... history of life-philosophy is so little known, and if its revivals, in the form of the Guru-boom, the ideology of the ‘Greens’ and the ‘Alternative Society’ ... are not usually recognized as such, this is chiefly because life-philosophy is branded with the stigma of irrationalism and of being a precursor of fascism.\(^{277}\)

As Bramwell notes, "Life-philosophy ... certainly coincided with the rise of National Socialism, but the line of development was not a straightforward one, nor is there any apparent causal link."\(^{278}\) Fellmann seconds this view and calls for a reassessment:

Die ideologische Indienstnahme hat die Idee der Lebensphilosophie bis zur Unkenntlichkeit verunstaltet. Auch und gerade nach der ideologischen Katastrophe bleibt die Aufgabe bestehen, die Idee der Lebensphilosophie einer kritischen Prüfung und einer gerechteren Beurteilung zu unterziehen. Es muss erst viel vom Schutt der unseligen Vergangenheit abgetragen werden, um das humane Gesicht der Lebensphilosophie freizulegen.\(^{279}\)

A one-sided judgement, furthermore, of Lebensphilosophie, ignores what Hartmut Nowacki has pointed out to be the powerful current of Lebensphilosophie within the German Communist Party itself during the Weimar Republic.\(^{280}\) With respect to the political complexion of the Monistenbund Bramwell writes:
Although Monists have been described as right-wing because most were eugenically-minded, their political affiliation was for the most part firmly on the left... Many belonged to the German Social Democratic Party... [t]here was [even] a move by Monists to merge with... [that] Party. Carl von Ossi- etzky and Magnus Hirschfeld, both prominent left-wingers, were Monists. Wilhelm Ostwald thought that all Monists must be oriented against conservatism, orthodoxy and ultramontanism.... Haeckel's followers in the Monist League belonged to the optimistic, progressive, scientific Left.281

Alfred Kelly also points out that the political affiliations of the Monistenbund membership ranged from the Left to the Right and this span was mirrored in Monism's reception.282 While, as Gasman shows, there were Rightists who supported Haeckel and his views, as Bramwell points out, the opposite was also true. Freud was an admirer of Haeckel from the 1890s onwards, while one of Nazism's first victims was sex researcher and gay activist Magnus Hirschfeld, whose Institut für Sexualforschung, founded in Berlin in 1919, had a "Haeckel Room" for public meetings decorated with busts of Haeckel and Darwin.283

As much as Lebensphilosophie and Haeckelian Monism, Neo-Vitalism has been seen as a direct precursor to National Socialism. We have seen how Klages was seen as "Nazi" because of his anti-Semitism and because some of his ideas appealed to some National Socialists. Driesch, the most visible neo-Vitalist in Germany, and considered by Nazis and others as the "father" of Holism, was stridently anti-Nazi.284 As we have seen, von Uexküll, despite his close friendship with the prophet of racialism, Houston Stewart Chamberlain, showed himself to be opposed to the firing of Jewish academics in 1933-34. While Gasman presents Haeckel as a "Volkish Prophet" (sic), the neo-Marxists Dale Riepe and David de Grood see him as a "progressive biologist," and he was explicitly denied as a "forerunner" by at least one prominent Nazi.285 The Neo-Vitalist British novelist D. H. Lawrence is similarly problem-
atic when it comes to his placement within this political taxonomy.286

Finally, the pattern established here is to be found in the literature on the Holist/Organicist complex. Typical in some respects is the case of the Holist psychologist Felix Krüger, who lectured at the Bauhaus in May of 1932 under its most Leftist director Hannes Meyer, and then praised Hitler at the Thirteenth Congress of the German Society of Psychology the following year, only to be denounced by the Nazis in 1934.287 Because of this complexity, Harrington argues for a nuanced historical treatment:

The 'racializing' of German holism and its partial absorption into the politics and mythology of National Socialism is an important part of the larger story of German holism.... Nevertheless, even if we know how part of the story ... is going to 'come out,' it is important that we resist 'discovering' the outline of a terrible future in holism's past or imagining that all holistic, vitalistic, or teleological views of nature are part of a larger 'destruction of reason' [Lukács] that can be tracked in some straight, degenerating line from the romantics to Hegel to Nietzsche to Hitler. Such claims and temptations are familiar in the older secondary literature on modern Germany, but one can argue they do not do justice either to the historical contradictions of modernity in general or to the role of anti-mechanistic, pastoral, and alternative scientific thinking as a reaction to and comment on those contradictions.... [B]efore 1933, various liberal, democratic, and Jewish scientists were attracted to both the intellectual and cultural promises of holism and managed to share concerns about the 'mechanization' of both science and society with their more reactionary and, in some cases, anti-Semitic colleagues.288

It is important to keep in mind that in combination with prescient ideas on environmental protection, biocentrically minded individuals were typically racialists and eugenicists, positions which, after their adoption by the Nazis, have been discredited, or exposed as potentially dangerous.289 But even in the case of as prominent a figure as Haeckel, the situation is by no means clear-cut. Haeckel is typically praised for his
nature-centric proto-environmentalism, but reviled as a Social Darwinist eugenicist or even as a racist. Kelly argues that though some of Haeckel’s writings had racialist overtones, and he became more nationalistic, indeed anti-Semitic with age, this was by no means unusual at the time (Darwin felt the English to be superior to other "races"), and Haeckel’s anti-Semitism can be read as a concommitant of his stand against the Judaeo-Christian heritage in general rather than as racially based. Even his Social Darwinism has been called into question by Kelly, who after discussing Haeckel’s contradictory writings on the subject, concludes that on the whole "Haeckel ought not to be labelled a Social Darwinist."

In any case, the most popular Monist writer, Wilhelm Bölscbe, was unambiguous in his opposition to Social Darwinism: "...for Bölscbe, Darwinian Monism implied a humanitarian internationalism, not a racist nationalism." As Kelly concludes, "[h]istorians seeking the roots of Nazism have failed to make some crucial distinctions. They have falsely associated popular Darwinism with radical Social Darwinism and racist anti-Semitism. Unfortunately such loose reasoning is typical of the general character of most quests for the ideological origins of Nazism."

Important, again, to notice, is that, as with the discourses discussed above, Social Darwinism and eugenics have been shown by historians to have extended over the Left-Right spectrum. Thus, eugenics, which received extreme expression in the National Socialist attempts to exterminate those considered to be inferior, the infamous Vernichtung Lebensunwerten Lebens, received relatively "mild" expression through sterilisation programs in "progressive" Sweden, Switzerland, Canada and the United States, applied to those deemed "unworthy" to reproduce. Indeed, eugenics was seen as "progressive" by many social reformers on the Left before, and even after Nazism. As Weindling comments, the history of eugenics has been neglected
because it has been seen as a product of ultra-nationalist racial (or völkisch) movements. According to this interpretation, the new anti-semitic rhetoric of the purity of blood and race which gathered force from the 1880s was realized inevitably in the Nazi genocide. But although there were connections between racial hygiene and anti-semitism, the situation was complex, and eugenics did not necessarily point the way towards Nazi racism. There were those of other political persuasions, liberal and socialist, who looked to biology and medicine as the means to engineer social improvements.... [E]ugenics was authoritarian... but it was neither a product of the theory of a superior Aryan race, and nor was it inherently Nazi. The synthesis between Nazism and eugenics was a process of adaptation and appropriation on both sides.297

The German historian Schmuhl concludes that though eugenics as a movement prepared the way for some Nazi social policies, "Das Euthanasieprogramm war kein genuin nationalsozialistisches Phänomen."298 The case of Moholy-Nagy's mentor, the eugenicist Protestant doctor and art collector Hans Harmsen is instructive. Though he was a supporter of limited and voluntary sterilisation programs in the early 30s, he actively resisted the implementation of the Nazi euthanasia program in 1935.299 As Richard Wollin has commented, "with the advantage of historical distance, one realizes just how much of an overlap exists between the cultural left and right in the case of the interwar generation. For critically minded German intellectuals of this period, the vitalistic critique of Zivilisation had become an obligatory intellectual rite of passage."300

In her book Ecology in the Twentieth Century: A History, Anna Bramwell has proposed a political model which addresses this historical conundrum.301 She writes: "My own hypothesis is that the apparent contradictions of the ecological movement can be resolved by seeing it as forming a new political category in its own right, with a history, right wings and left wings, with leaders, followers and a special epistemological niche all to itself.... Ecologism is a political box. It is a
new box, into which many distinguished and important thinkers fit who fit only partially into other, better-known boxes." Bramwell conceives of "ecologism" as consisting of two major components: while one of them, deriving from Haeckel, is roughly equivalent to the biocentric discourse-intersection as I have defined it here, the other major component of "ecologism" is the field of energy economics. Thus, while ecologism is close to biocentrism, it is not identical to it. Still, I considered using "ecologism" rather than "biocentrism" as the geistesgeschichtlich category relevant to biomorphic Modernism. I rejected the idea, however, because even if I choose to elide the economic component of ecologism, (which has little or no relevance to the artists I am dealing with), Bramwell defined "ecologism" as a category foregrounding an environmentalist politics, a characteristic which, despite its presence, is not at the centre of concern of the artists and art theorists I am dealing with here. Indeed, I am concerned with distinguishing those artists not incorporating an ecological politics into their work from those who did, a division by and large constituted by the conceptual (as well as stylistic) divide between biomorphic Modernism ending in the 1960s with the remnants of the "bug and blob" style of that decade; and "Eco-Art" beginning at the end of the 60s in the work of Hans Haacke, Alan Sonfist, Patricia Johanson, Josef Beuys, and the Helen and Newton Harrison team. While biomorphic Modernist artists tended to be naturromantisch first and foremost -- locked into the fin-de-siècle sensibility of a new nature Philosophy -- or their practices emerged from a New Vision, a "New Objectivity" informed by the biologistic functionalism of interwar biocentrism; Eco-artists were principally concerned with an emerging eco-politics. Though interwar biocentric figures such as Klages, von Uexküll and Francé were eco-political pioneers, it was their latent Neo-Romanticism and biologism which the artists appropriated, rather than their nascent environmentalism. Indeed, in general, concerns
with the preservation of "nature" were not widely politicized until after the publication of Rachel Carson's *Silent Spring* in 1962. When this politicization did happen, its artistic equivalent was the shift from the vaguely nature-centric biomorphic Modernist style, towards overtly polemical Eco-art. While it is useful to distinguish between biocentrism and ecologism with respect to artistic production, however, Bramwell’s arguments concerning ecologism as a political category distinct from the Left and Right, are useful in dealing with the political affiliation of *Biozentriker* and their discourses.

Bramwell is of course not the first or the only one to question the standard Left-Right political taxonomy. "Third Way" politics has been a phenomenon at least since the early 20th century in the West, and as we shall see, Francé was self-consciously "Third-Way" in the early twenties. The year Bramwell published her book, Susan Sontag referred to "a tenacious metaphor that has shaped (and obscured the understanding of) so much of the political life of this century, the one that distributes, and polarizes, attitudes and social movements according to their relation to a 'left' and 'right.'" Though her idea may not be entirely new, and whatever problems and ambiguities there might be with her coverage, historiographic methods and ideological stance, Bramwell’s expanded taxonomy of political categories is important, because — as in the case of Kállai’s *Bioromantik*, by the act of naming a discursive tradition, she helps us to notice its manifestations, and therefore to construct its history. Perhaps most importantly, given the overlap between biocentrism and ecologism, the definition of ecologism as a political category adumbrates the views — benign and sinister — that *Biozentriker* actually held. It allows one to examine them on their own merits rather than issuing either general condemnations of them as "reactionary," or engaging in a lazy assessment of them all as "progressive."
c. Interwar Biozentrik

When man attempts to rebel against the iron logic of Nature, he comes into struggle with the principles to which he himself owes his existence as a man. And this attack must lead to his own doom. (Hitler 1924)

...die Lebensphilosophen der zweiten Generation... [waren jene] in der die Lebensphilosophie in ihre ideologische Phase tritt. Es ist die Zeit zwischen den beiden Weltkriegen. Zu ihnen gehören als prominenteste Figuren der Untergangsprophet Oswald Spengler, der Widersacher des Geistes Ludwig Klages und Theodor Lessing, der Philosoph der Lebensnot. Ihre Schriften enthalten viel Merkwürdiges, nicht selten Haarsträubendes, aber auch hier fördert die Selbst-Erfahrungsperspektive überraschende und ernst zu nehmende Einsichten zutage. (Fellmann 1993)

After 1918 ... holism often spoke with a political accent. (Harrington 1995)

Fellmann, Harrington, and others have attributed this "political accent" to the crisis of German society arising from Germany's defeat after the First World War, a crisis of which Hitler's halbgebildetes writing was merely one acute symptom. Given the politicization of what had not been a particularly politicized practice previously, and a decided shift away from Vitalmystik in the world views of the interwar biocentrics, whether towards a biologic Kulturpessimismus (as in the case of Spengler and Klages' Biozentrik), or towards an optimistic biologic functionalism (as in the case of Francé's Objektive or Biozentrische Erkenntnislehre and von Uexküll's Biologische Weltanschauung), it seems advisable to constitute interwar Germanic biocentrism as a temporally discontinuous discourse despite continuities in thinking with fin-de-siècle biocentrism. Indeed, a kind of historical rupture is discernable around World War One within the discourse of Biozentrik, and a subsequent emergence into the highly-charged political landscape of Weimar Germany. From a more romantically inclined Neue Naturphilosophie, as Raoul Francé termed turn-of-the-century biocentrism, the practice and thinking of
France, von Uexküll and Klages constituted an interwar biocentricism which was both more pragmatic and functionalist, and more pessimistic than the pre-war variety.

The constitution of interwar biocentrism as a discourse is, however, a daunting task. Fellmann refers to the "Masse der zweit- und drittklassigen Autoren" of the second generation of Life Philosophers. Even taking into consideration Harrington's crucial study of interwar German Holism, Proctor's work on National Socialist biology and medicine, and Fellmann's writing on late (i.e. interwar) Lebensphilosophie, this is a region of the history of science and philosophy even darker than the turn of the century once one exits the spotlight zones of figures such as Spengler and Klages. With little choice but to engage a "quick and dirty" strategy, I have assumed here that Driesch, Klages, Francé, Spengler, and von Uexküll are paradigmatic enunciators of interwar German biocentric thought, and I will take the contents of Mies van der Rohe's library as an ersatz-"canon" of this discourse. While abridged and arbitrary, I think that this strategy is at least a viable starting point for the history of biocentrism between the wars which at some point should be written.

i. Mies' Library

There is of course no canonical set of biocentric texts, but there is at least one surviving library assembled between the wars which focused on literature that, as architectural historian Fritz Neumeyer put it, "followed a nature-philosophical-biological conviction" which reflected "that coordination between nature, physics, and philosophy that had evolved in the twenties," and that was assembled by an architect operating within avant-garde Weimar German artistic circles. This is the library of Ludwig Mies van der Rohe.

In addition to the most complete collection I know -- including German libraries -- of Francé's and his wife Annie Francé-Harrar's books, relevant titles by Goethe, Carus,
Nietzsche, Bergson, Driesch, the late Simmel, Dilthey, Klages, and von Uexküll, indicate Mies' interest in the central authors of the biocentric tradition. Indeed it is only works by the older generation of Monists such as Haeckel, Ostwald, and Bölsche -- out of fashion after the war -- which strike one as missing from this collection as it is now: Unlike Haeckel and Bergson, Driesch continued to be read and regarded highly after World War I. Indeed George Rousseau refers to the "pan-European crisis during the 1920s over Hans Driesch's vitalism," a crisis which Bakhtin was commenting on in 1927 when he coined the term "critical Vitalism," and Harrington has described Driesch as "the most influential contemporary spokesman" for the shift from a machine to an organic metaphor of biological thought.

Among works of biocentric psychology, i.e. psychobiology (another topic awaiting historical treatment), Mies owned Hans Prinzhorn's Klagesian Leib Seele Einheit, two books by Holist psychologist Felix Krüger, the Lebensphilosoph Eduard Spranger's Lebensformen, Helmuth Plessner's Die Einheit der Sinne, and Rudolf Odebrecht's Gefühl und Ganzheit. Mies' library also included Dacqué's Urwelt Sage und Menschheit, important to the development of Kállai's conception of Bioromantik, and among books retained by Wassily Kandinsky during his life.

There was after the First World War a variety of organicist political theory which, as Eckart Scheerer has pointed out, was part of "...a larger movement among conservative German intellectuals to visualize a 'third way' between the evils of socialist Marxism on the one hand, and those of liberal capitalism on the other." Simultaneously, many on the Left and in the Youth Movement were interested in the Anarcho-Organicist political science of Kropotkin and Landauer; and these left-wing biocentric views received their philosophical expression in Theodor Lessing's 1924 book Untergang der Erde am Geist (Europa und Asien). In fact, it was not unusual during the early twenties for cultural figures such as
Mies -- and even artists further to the Left such as Lazar El Lissitzky -- to be interested both in biocentric anarchism and conservative organicist political thought.\textsuperscript{120} Thus, though Oscar Hertwig's and Jakob von Uexküll's books on the state as an organism are missing from Mies' library,\textsuperscript{121} in addition to Francé's books on related subjects, Mies did own Oswald Spengler's best-seller \textit{Decline of the West}, the right-wing organicist Francé-fan Paul Krannhals' \textit{Das organische Weltbild}, Chrysostom Panfoeder's, \textit{Das Organische}, Adolf Wagner's \textit{Der organische Staat}, and Rudolf Leinen's \textit{Der Wille zum Ganzen}, as well as the crucial texts of Kropotkin.\textsuperscript{122} The extent to which biocentric views were current among left-wing German intellectuals is suggested by the fact that by the mid 1920s Hans Haustein was writing regularly on themes related to interwar \textit{Biozentrik} in his "Biology" column in the \textit{Sozialistische Monatshefte}, a left-wing journal read by and contributed to by many avant-garde artists and critics, including Kállai.\textsuperscript{123}

Since for biocentric thinkers biologistic aesthetics and political theory were major themes, it is not surprising that Mies' library included many books of the teens and twenties which dealt with the biology of plants and animals, anti-anthropocentric books which focused on the higher level of technical and sensual development of such species than was normally attributed to them.\textsuperscript{124} Apart from two copies of Francé's influential \textit{Die Pflanze als Erfinder} and related volumes by Francé, Mies owned works of zoology and plant science by Hans André, Leopold Bauke, Frederik J. J. Buytendijk, Hermann Drechsler, the Flemish poet Maurice Maeterlinck, Martin Philipsohn, and Albert Wigand.\textsuperscript{125} That these poets and scientists were aware of their work within a contemporary biocentric context is suggested by the Dutch biologist Buytendijk's statement of 1932 that "Klages hat der biozentrischen Erscheinungsforschung ihre eigene ... Methode ... gegeben," and of Bauke's reference to Francé as "unser Meister."\textsuperscript{126} Apart from Francé's, Hermann Kranichfeld's and Remigius Stölzle's works
in Mies' library underline the non-Darwinian and/or Neo-Lamarckian point of view within the biocentric discourse.\textsuperscript{327} In addition to Francé's influential books on the subject, particularly Bios: Die Gesetze der Welt, ecological, Organicist and Holist philosophies of biology in Mies' library included Emerich Zederbauer's Die Harmonie im Weltall, in der Natur und Kunst, and the Budapest philosopher Baron Béla von Brandenstein's Metaphysik des organischen Lebens.\textsuperscript{128} Concerning biocentric aesthetics, again, in addition to Francé's writing on the subject in Bios and other books, Mies owned the biocentric art historian and theorist Ernst Fuhrmann's book on ornament, Der Sinn im Gegenstand, the Francé-inspired biocentric design theorist Siegfried Ebeling's Der Raum als Membran, and Ernst Kropp's Wandlung der Form, a work popular among members of the Deutsche Werkbund in the 1920s which traded on the naturamorphic analogy in all fields of design, including architecture, and which was one of the earliest publications to feature the photography of Karl Blossfeldt.\textsuperscript{329}

ii. Klages and von Uexküll

Klages' background combined many of the elements which comprise the category of biocentrism. Early on he studied chemistry in Leipzig with Wilhelm Ostwald, the future founder of the Monistenbund, as well as psychology with Wilhelm Wundt, thus exposing him to the two main scientific streams of the time: the neue Naturphilosophie and Positivism.\textsuperscript{310} Later, in Munich in 1893, one of his professors was Wilhelm Conrad Röntgen, who pioneered the alternative imaging processes which would inspire the scientific image analogy to such an extent, but he also studied psychology with Theodore Lipps -- along with Fechner a leading figure of the field of psychological aesthetics -- as well as philosophy.\textsuperscript{331} Profoundly inspired by Neo-Romanticism, especially in its Nietzschean biocentric guise, he founded the "Kosmische Runde" in Munich with the writer Karl Wolfskehl in 1899. Among his closest friends were
the vitalmystisch proto-Expressionist writer Stefan George, Ricarda Huch -- the most important biocentric writer in Germany who was a woman, and her cousin Friedrich Huch. As a key member of George’s Expressionist circle, August Wiedmann sees Klages’ anti-rationalist philosophy as having been important to the development of Expressionist aesthetics. Concerning his philosophical influence, Klages enthusiast and scholar Hans Kasdorf writes that "[e]ine so umwälzende Wirkung auf die Philosophie seiner Zeit wie etwa Kant um 1800 hat Klages um 1930 nicht gehabt.... Andererseits aber möchte ich die Wirkung von Klages auf seine Zeitgenossen etwa in den Jahren von 1920 bis 1950 stärker und vielfältiger nennen als diejenige Nietzsches auf seine Zeitgenossen in einem vergleichbaren Zeitraum seines Lebens." If this is true -- and even if it is an exaggeration -- then it only highlights the extent to which Klages has disappeared from memory, not to mention Nietzsche’s staying power.

This disappearance is analogous to that of Houston Stewart Chamberlain’s close friend Jakob von Uexküll, who, besides Francé, was the most cogent representative of the functionalist, biologicist variety of interwar biocentrism. After developing the concept of Umwelt [environment] in 1909, von Uexküll was determined -- on the eve of World War One -- to provide the "Bausteine zu einer biologischen Weltanschauung." Von Uexküll’s influence on his contemporaries in many fields of endeavour was enormous, but he is little-known today -- especially in the English-speaking world -- despite his invention of the concept of Umwelt [environment]. His writings were important to several important figures of the Weimar avant-garde. Indeed, a necessary study to be undertaken is von Uexküll’s influence on figures such as Karl Ernst Osthaus, Mies van der Rohe, Theo van Doesburg, and Adolf Behne, the latter whose highly influential 1918 book Die Wiederkehr der Kunst is a von Uexküllian manifesto for the renewal of art on a biologicist basis.
Klages probably exercised the strongest influence on the artists of Weimar Germany through his environmentalist lecture "Mensch und Erde," and through his Ausdruckskunde, the study of 'expression' through rhythm -- especially as transmitted through his writing on graphology, "characterology" and rhythm. Plessner has named Klages, along with Freud, the most important transformative force on modern psychology. Because of the privileged status Klages accorded images [Bilder] as authentic means of perception, Fellmann has indicated the potentially enormous influence Klages exercised on Gestalt psychology. The aesthetic implications of Klages' biocentric psychology were enunciated in the popular writings of his disciple Prinzhorn, through whom they had a powerful effect on contemporary "primitivism" among Modernist artists.

Besides Prinzhorn, among Klages' admirers one can assemble a group as diverse as Walter Benjamin, Hannes Meyer, W. H. Auden, Alfred Kubin, and the art historians Josef Strzygowski and Sixten Ringbom.

Between the wars the ecstatic, neo-Romantic kosmische Einheitsgefühl of the turn of the century was inverted into Klages' pessimistic biologism. In Weimar Germany Klages' Kulturkritik represented the 'shadow side' of Vitalmystik. This view held that as creatures of nature we are not only capable of feeling the ecstasy of our oneness with it, we are equally able to experience its "demonic," often destructive, power. Furthermore, while cosmic rhythms animate our own Seelen, our human Geist alienates us from nature, and this process is both dangerous and irreversible. Those who espoused this ambivalent or outright pessimistic biologism (such as Ernő Kállai and Raoul Hausmann) were critical of what they saw as the naive optimism of biocentric thinkers such as Francé and Moholy-Nagy.
iii. Francé


The interwar biocentric writer with perhaps the widest popular impact on Weimar German culture was Francé. Raised in an agnostic household, it was relatively easy for him to accept the prevailing scientific world view of the time.° Like Klages', Francé's early interests and education were typical of the biocentric pattern. He discovered science as a young teenager, and he began using a microscope as early as 1887 when he was 13. He early on became an expert graphic renderer of what he saw through the microscope.° To avoid being trained as a businessman as his banker father wished, he moved out on his own at age seventeen, and he became a drawing assistant for the Budapest satirical journal Borsszem Jan-kó.° Thus, like his youthful heroes Haeckel and von Humboldt, Francé displayed aptitudes both as a naturalist and as an artist from youth. He seriously, and for quite some time, considered becoming a painter.° He studied medicine at Budapest University, also attending classes in philosophy, art history and history, and he spent 1896 in Breslau in Silesia (now Wroclaw, Poland) studying with the microbiologist Ferdi-
nand I. Cohn, discoverer of the bacterial spore. In 1897 he published his first work, Der Organismus der Craspedomonaden which, according to Roth, "even today is considered one of the classic works of protistology." He continued his study of philosophy on his own in 1898-99 while working as director of the Institute for Plant Diseases at Mosonmagyaróvár. As we have seen, there he read through much of the Western philosophical material, with the classics of the Vitalist and Lebensphilosophisch traditions such as Pythagoras, Aristotle, Spinoza, Kant, Goethe, Schopenhauer and Nietzsche, making the deepest impression on him. But he was also affected by his study of Fichte, Hume, Leibniz, and Herbert Spencer. He discovered the "neue Naturwissenschaft" of Driesch, Ostwald, Mach and others in 1898, which inspired him to write Der Wert der Wissenschaft around 1900. Moving from Hungary to Germany in 1902, Francé founded the German Microbiological Society in 1905, and its Biologische Institut the following year, which he directed until 1919. The Institut "developed into one of the most respected centers of microbiological research and education in Europe," becoming the centre of the new field of microbial ecology, and a site where Francé and his associates conducted research into plant physiology and "plant psychology." Founder or co-founder of several scholarly and popular scientific journals, in 1904 Francé established with Wilhelm Bölsche the scientific counterpart to Klages' Kosmische Runde, the Kosmos-Gesellschaft which published an important series of popular scientific books in the spirit of the "neue Naturwissenschaft." An original combination of often fresh research presented in a popular style, the "Kosmos-Bücher" series was an enormous success, and Francé himself produced twelve volumes for the series. He was also a founding member of the Monistenbund in 1906, the same organization he later criticized. The Kosmos-Bücher, Francé's post-war series of "Bios-Bücher" published by the Voigtländer Verlag of Leipzig, and his many
titles brought out by major German publishing houses, gained for Francé a popular following which is as remarkable for its intensity, as it is for the extent to which it has been since forgotten.\textsuperscript{356} By 1924 Francé's books had sold no fewer that one and a half million copies, and by 1962 they had sold a remarkable three million in total.\textsuperscript{357} And these statistics do not even take into account the numerous articles on a breadth of subjects which Francé published.\textsuperscript{358} The remarkable diversity of Francé's research and writing was reflected in the wide range of interest elicited by his production. As Adolf Wagner writes in his introduction to the Festschrift published for Francé's fiftieth birthday:

Diese Festschrift ist eine der merkwürdigsten, die vielleicht jemals einem Fünfzigjährigen zugeeignet wurden. Wohl sind wir gewohnt, Dichter einem Dichter, Gelehrte einem Gelehrten, Männer der praktischen Arbeit einem der ihrigen an einem solchen Tage ein gutes Wort und einen Glückwunsch darbringen zu sehen. Aber ganz ungewöhnlich ist es, wenn sie sich vereinigen, um es offen in die Welt hinaus zu sagen, dass sie alle von einem einzigen Kopf sich einmal irgendwie befruchtet und angeregt fühlten, und dass sie nun sich von den verschiedensten Seiten des Lebens die Hände reichen in dem einigenden Bestreben, jeder von seinem Standpunkt und dennoch eine für alle die Bedeutsamkeit dieses seltsamen Kopfes Francé anzuerkennen.\textsuperscript{359}

We have seen that in his book Der Organismus, Francé wrote that "Das 'biologische Denken'... entspringt nicht einer Mode, einem Schlagwort, etwa vergleichbar dem von der Entwicklung... vom Monismus... das vor einem Menschenalter die Bildung und Kultur durchdrang und in Gärung versetzte. Denn es geht nicht wie jene von einer einzelnen Persönlichkeit aus, sondern durchsichert, nunmehr schon seit etwa einem Jahrzehnt die gesamte geistige Arbeit."\textsuperscript{360} Francé's implied criticism of Haeckel's central role in the Monist movement in this passage diverts attention from -- as Raoul Hausmann realized -- his attempt to assume an analogous role within what amounted to an Interwar neo-Monist biocentric movement.
France's intentions to found a "school" were already discernable early in the century. Around 1907-08, as Adolf Wagner states, France was instrumental in attempts to constitute "Psychobiology" as a "movement."\textsuperscript{361} While, since he was a member of Haeckel's Monistenbund, France does not seem to have intended the "Psychobiological Movement" to rival Monism, Psychobiology was not identified as an aspect of the "Monist League."\textsuperscript{362}

Two events of 1919 seem to have altered France's ambitions with respect to the Monist League, as well as his political sensibilities. In April of 1919, during the Bavarian Soviet Republic -- for no apparent reason according to the Francé -- Francé's Biological Institute was ransacked. As the Kropotkinian biocentric Anarchist Gustav Landauer was -- along with Erich Mühsam and Ernst Toller -- one of the three leaders of the Räterepublik in Bavaria, this event seems to have put to rest any sympathy Francé may have had for Socialism or Anarchist biocentrism.\textsuperscript{363} Francé must have been resentful towards Landauer for the lack of discipline and coordination which allowed his life-work to be so badly damaged.\textsuperscript{364}

The other factor was the precipitous decline in the popularity among intellectuals of the Monist League during and after the war. The criticism of Haeckel was two-fold. On the one hand, anti-materialists such as Adolf Behne saw Haeckel and Ostwald as arch-Materialists and arch-Positivists, whose views led to the catastrophe of the Great War. As Behne wrote in 1916: "heute ist die Naturwissenschaft eines Haeckel, eines Ostwald, aller Monisten und Positivisten in den denkbar tiefsten Miskredit gekommen."\textsuperscript{365} On the other hand, with the publication in 1917 of Haeckel's Kristallseelen, others, such as Francé, came to oppose him for his apparent shift towards mysticism. In a clear reference to Haeckel, in his autobiography Francé wrote that the "neue Naturphilosophie" which had enthralled him around the turn of the century, later abandoned its original goals, and "in die okkultistischen Spekulationen
By the time of Haeckel's death in 1919 the old man's eclipse was almost total. Francé himself, who had a complex, ambivalent, indeed Oedipal relationship with Haeckel, was frank concerning the problems he had with his childhood hero.

Though -- with Monism out of fashion -- after the war Francé downplayed it as the context from which he emerged, he and his disciples saw "objektive Philosophie" as the heir to Monismus. Thus, in Fischer's official biography of 1924 Francé is referred to as a "Monist," that same year his conservative disciple Huberta von Bronsart describes his philosophical system as a "new Monism," and in his 1923 Buch des Lebens, Francé referred to it outright as "die wahre Monismus." With all this in mind, Francé's announcement of his ambitious "objective" or "biocentric" epistemology, his "biological thinking," made in 1920 at the meeting of the Schopenhauer Society, can be interpreted as an attempt to assume the leadership of post-war Monism, i.e. of interwar Biozentrik.

Like Haeckel, Prinzhorn and von Uexküll, Francé aimed to popularize biocentric attitudes, both scientific and philosophical. Emphasizing this pedagogical, indeed evangelical role, no less important a figure of German literature than Stefan Zweig wrote the following appreciation for the Festschrift:

While an artist or architect of the stature of Zweig was not included in this Festschrift, Francé's importance to the interwar German avant-garde was significant, and has never been fully appreciated.\textsuperscript{370} Even Stanislaus von Moos, who rightly suggests that Francé was "probably the most important inspiration for most European avant-garde artists and architects intrigued by the analogies of natural and technical form," does so in a footnote.\textsuperscript{371} The year before Zweig's text appeared, early in 1923, Paul Westheim published a chapter of Francé's book on plants as inventors in the influential Berlin art periodical Das Kunstblatt.\textsuperscript{172} This publication elicited a rush of interest among international Constructivists living in Weimar Germany. Lazar El Lissitzky was so enamoured of Francé's book Bios: Die Gesetze der Welt, that he incorporated ideas from it into the special issue of Schwitter's journal Merz he edited, and he sought contact with Francé.\textsuperscript{171} László Moholy-Nagy began to incorporate Francé's ideas into his Bauhaus teaching around the mid twenties, and, as I argue in Chapter Four, Moholy-Nagy's influential concept of "New Vision" -- which contributed to the aestheticization of scientific photography in Weimar Germany -- emerged out of his interest in Francé's writings. Architectural historian Fritz Neumeyer has pointed out the importance of Francé's thought to no less important a figure of the history of modern architecture than Mies van der Rohe.\textsuperscript{374} Indeed, as we have seen, Mies was such an ardent admirer of Francé that he had a standing order at Karl Nierendorf's bookstore in Berlin for any and all of Francé's books,\textsuperscript{175} and just as Moholy continued to teach Francé's principles at the School of Design in Chicago, Mies taught Francé's ideas while he was director of the Bauhaus, and he continued to collect Francé's books and teach him in Chicago while he was working at IIT. In 1926, before he was appointed director of the Bauhaus, Hannes Meyer placed Francé first on a shortlist of "latterday [intellectual] saints" which included only Einstein, Freud and the French entomol-
ogist Henri Fabre in addition to him. Friedrich Ebeling, Thomas Ring, Karel Honzík, Ernő Kállai; and possibly Friedrich Kiessler, Ella Bergmann-Michel and Hans Erni, were also affected by Francé, while as we have seen, Raoul Hausmann attacked him from a left-wing biocentric perspective.

Based on hints and suggestions in the cited texts of Steadman, Elderfield and Nisbet, in Chapter Four I argue that the discussions around Francé’s writings in the mid-20s gave rise to what could be termed a "biocentric Constructivist" discourse which sought the legitimation of these artist’s interests in technology and geometric abstract style through Francé’s biocentric philosophy. This discourse, furthermore, represented a shift in nature-centric avant-garde artistic practice which mirrored Francé’s reformation of Monism (i.e. biocentrism), one from a more romantically-based, Expressionist art to the functionalism of the Neue Sachlichkeit.

Francé is an instructive example, however, of the ways in which biocentrism was affected by the political developments of the interwar period in Germany; there were structural parallels between his thinking and that of National Socialism from the early twenties onwards; indeed he was a biocentric who succumbed to what Fritz Stern has termed "National Socialism as Temptation." Indeed, in his critique of Francé made in 1923, and his following publication in Die Aktion, Raoul Hausmann characterized Hitler as "nur ein nebensächlicher Faktor" beside figures such as Francé and the Nietzschean-Christian pop-philosopher L. C. Häusser, who represent the humanistisch-wissenschaftliche ... Seite des Nationalsozialismus.... Francé als Khung-Tsee- und Schopenhauer-‘Vollender’ [and Häusser] sind ... nichts anderes als die sich selbst für Genies, für Gipfel erklärenden Durchschnittsbürger, die ... zuviel und zu wenig wissen, um sich nicht zwangsläufig als Führer ... zu fühlen und auszubieten ... Volkskaiser zu werden.

Hausmann’s evaluation was both prophetic and a gross misjudgement of Hitler’s potential. But Francé’s relationship with the
far right was -- as in the cases of many biocentrics -- rife with contradiction. While -- as Hitler -- he may have had ambitions to be Volksführer, neither Francé nor his wife Annie Harrar were "pure" Germans, and neither pretended to be. In fact, both were part Slavic in background; Francé’s mother being Moravian, and Harrar’s father having been the Polish painter Alexander Sochaczewski. Francé was also part French and he never hid the fact that he grew up Hungarian. Both were children of immigrants; Harrar’s father emigrated to Munich from Poland, while Francé’s parents had moved from their respective Bohemian homes first to Vienna and then to Budapest. Francé -- like Klages -- criticized those Nietzschean categories which the Nazis favoured above all for misinterpretation, the "Will to Power" and the Übermensch, and he expressed his admiration for Nietzsche’s concept of "Europeanness." He held German culture in high esteem, indeed he saw it as central among European cultures, but only while making it clear that even it was subject to the judgement of his "objective," i.e. biocentric ethical standard. In Plasma-tik, Francé writes:

Der letzte der grossen ‘Weimaraner’, der freilich den Geist von Weimar fortiibildete zu seinem ‘freien Europäertum’, Nietzsche, hat dieses Vermächtnis wohl empfunden.... Das Vermächtnis des Besten, was Deutschland -- und deutsche Kultur ist das Herz der ‘Kultur’ überhaupt (glaubt es mir, dem Mischling aus drei europäischen Rassen, der ebenso viel Recht hätte, sich Romane wie Slawe zu nennen, wie er sich mit gleichem Recht als Deutscher bekannt) -- das Vermächtnis des Besten, was deutsche Kultur hervorgebracht hat, soll nun nachgeprüft werden mit den Augen und Kenntnissen der Wirklichkeit.

Though both Francé and Harrar -- as many associated with the konservativer Revolution -- valorized German culture above all others, they were also fascinated by non-German cultures and wrote about them. Francé’s love for Berlin as a city speaks of his enjoyment of cosmopolitanism while his book on Munich written in 1920 contradicted this, reflecting his
anger at his institute being ransacked during the Munich Soviet of April 1919. Indeed it displays a new-found völkisch conviction that uncontrolled immigration was a negative factor in that city’s "organic" development, which was echoed in Hitler’s disgusted discussion of Vienna’s multicultural makeup a few years later.\textsuperscript{384} By 1921 Francé was promoting a social order which though it was (by his own admission) unattainable, was based on analogies to the "successful" insect societies of ants, bees and wasps, and was thus uni-racial, i.e. (unlike himself and his wife), racially "pure."\textsuperscript{385} The call of the self-avowed Mischling for racial purity within Biozönose is a subject calling for a psychoanalysis I am unable to engage in.

While, like many biocentrics on both the Left and Right at the time, Francé supported the concept of Rassenhygiene and eugenics as means to improve humanity and human society, he was not -- like Hitler and Rosenberg -- "racist" in the sense of a hierarchy of valuations among the "races." Rather he was -- like von Uexküll -- a racialist, i.e. he believed in the construct of "race" as something both real and valuable.\textsuperscript{386} That the Francés’ were anti-racist is suggested by Harrar, who in her memoir criticizes Spengler’s view, allegedly communicated to her directly, that the "white" race was the only "creative" one. However, she also expressed opposition to dictatorship in general, and Hitler and the Third Reich in specific in this memoir, and given her husband’s later affiliation with the Nazis (which she fails to mention), it is possible that these statements were meant as a smokescreen to divert attention from his Nazi past.\textsuperscript{387}

In 1924, however, on the question of the relative value of "races" Francé was direct: "Gibt es minderwertige Rassen? Das wäre aber keine ‘objektive Philosophie’, die sich einfangen lisses von der aus der Luft gegriffenen Behauptung, als gebe es minderwertige und höhere Rassen und Völker an sich."\textsuperscript{388} Because he believed that the culture of each race within its Biozönose was valuable in its own right, each was
also to be valued and maintained in as harmonious, and there-
fore "pure" way as possible. When his biographer asked him
about his politics, Francé is reported to have replied with
disquieting emphasis: "Sie fragen nach meiner Politik?
Deutschland den Deutschen, Ungarn den Ungarn, England den
Engländern, Afrika den Afrikanern, -- aber allen ihr Land und
ihre Seele ganz bis zum letzen."189

A "racialist" rather than a hierarchical "racist," then,
Francé -- also like von Uexküll but unlike Klages -- appears
not to have been anti-Semitic. The fact that Francé had
admirers of Jewish background such as Zweig, Lissitzky and
Moholy-Nagy suggests that Francé was at least not openly anti-
Semitic.190 He certainly did not object to his books being
published by Ullstein, the most saliently "Jewish" and "cosmo-
politan" of the big Berlin publishers,191 and indeed by 1920
he had arranged for, or consented to, his books being pub-
lished in Yiddish and Hebrew, not a common phenomenon at the
time.192 The most direct evidence in his writings of Francé's
respect for Jewish culture, indeed of his opposition to anti-
Semitism, is the anecdote "Der Rabbi als Erzieher," whose very
title is an ironic comment on Julius Langbehn's 1890 book
Rembrandt als Erzieher, an early document of German völkisch
Kulturkritik known for its anti-Semitism.193 In this passage
of his 1927 autobiography -- part of which appeared in the
1924 Festschrift published for his fiftieth birthday -- Francé
paints an affectionate portrait of the elderly Moravian Rabbi
who was his Czech relatives' neighbour, and clearly a grandfa-
ther-figure for him:194

Am ganz heissen Sommernachmittagen sass ich in der
Synagoge mit ihm. Da war es kühl, und ein angenehmes
grünes Licht floss von der Gärten durch den stillen
Raum. Er las murmeln hebräische Bücher, später
unterrichtete er mich selbst in der wunderlichen
Schrift des alten Wüstenvolkes, und ich lernte die
Thora kennen und bekam allmählich eine tiefe Achtung
vor der Besonnenheit und inneren Festigung dieses
patriarchalischen Judenlebens.195
The young Francé, angry with his own father for not allowing him to pursue his chosen career, was soon to have a second Jewish father-figure in his life: As we have seen, at the age of twenty-two he studied with the microbiologist Ferdinand I. Cohn in Breslau, an experience which was decisive in the development of his scientific career.\(^{96}\)

Early in the twenties, at the height of his popularity, Francé was careful to maintain an image of political neutrality. His biographer writes:\(^{97}\)

\begin{quote}
Es ist... ganz selbstverständlich, dass Francé zwar von allen Parteien in Anspruch genommen wird, weil er die edelsten Seiten jeder Partei im Sinne der Lebenslehre zu den seinem macht, in der Tat aber keiner Partei angehören kann; denn seine Einstellung ist kulturpolitisch, und das heisst aufs Ganze gerichtet; er ist also parteilos. Man hat indessen wegen seiner Mitarbeit an völlig rechts und links gerichteten Blättern auf seine politische Gesinnung Rückschlüsse ziehen zu dürfen geglaubt. Ganz mit Unrecht. Hier sah und sieht er nur ein Mittel, zum Volke zu sprechen.\(^{98}\)
\end{quote}

This text can be read as a manifesto of a Bramwellian ecolcogistic politics as much as it can be interpreted as a statement of Francé’s attempt to define himself as being outside politics. What is notable is Francé’s programmatic decision to publish in both left and right-wing journals in order to reach as wide a readership as possible.\(^{99}\) With this in mind, it is less surprising that he was received positively by both the Left and the Right: While *Bios: Die Gesetze der Welt* was reviewed favourably in the *Sozialistische Monatshefte*, he had a following among left-wing *Jugendbewegten*, and he found admirers among left-wing intellectuals such as Moholy-Nagy, Lissitzky, Kállai and Hannes Meyer; he was also viewed positively by conservative and völkisch organicists such as Paul Krannhals, Adolf Wagner and Huberta von Brunsart.\(^{100}\) As early as 1924, Krannhals, author of *Das organische Weltbild*, saw Francé as a "Wegweiser zur völkischen Kultur."\(^{101}\) In her account of Francé’s philosophy, the neo-conservative von
Bronsart, after considering all the "alternatives" to what she perceived to be the cultural chaos of the time (rejecting Expressionism, materialism, Positivism, neo-Kantianism, Theosophy, the occult, the Jugendbewegung and Anthroposophy in turn), she asks rhetorically, "Aber wo ist der Führer?" As Martin Müllerott has noted, "[François's] Einfluss auf sehr verschiedenartige Kreise, die in der Biologie ein weltanschauliches Fundament suchten, das ihren Vorlieben und Abneigungen entgegenkam, war weitreichend, auch solche mit völkischen Sympathien ... beriefen sich auf ihn." As recently as 1982 a völkisch environmentalist such as Gerhard Tenschert wrote a glowing appraisal of François, and the MUT-Verlag published a new edition of François's book Die Entdeckung der Heimat.

It was the völkisch appraisal of François, however, that was prophetic. Historian Joachim Wolschke-Bulmahn has uncovered a letter written by François in 1938 to the German Reichsschriftumskammer which indicates that he was a member of the National Socialist Party at that point for "years," and that he had worked for the Völkische Beobachter before 1933 already. While one might (just barely) be able to account for the publications in the notorious Völkische Beobachter as part of François's strategy to publish in both left and right-wing journals during the twenties, working for a journal of this nature is suggestive of hatefully anti-Semitic, rather than merely or naively völkisch sympathies. How is one to make sense of this?

François denied a hierarchy of races in 1924 and published the decidedly philosemitic "Rabbi als Erzieher" anecdote in 1927, yet François's views were sometimes imperialist, and by implication, racist. Thus, his defense of cultures throughout the world in the early twenties had by 1928 shifted to support for European Imperialist expansionism in thinly-populated parts of the Third World as a "civilizing" tactic. In his 1934 book Von der Arbeit zum Erfolg, while there is no mention of Nazism per se, the chapter on America has racist overtones
of Nordic superiority and African-American inferiority. Yet, there is no hint of anti-Semitism in his discussion of the Jews of New York, and Francé includes strong words concerning the inhumanity of the slavery inflicted on African-Americans and of the genocide against native Americans.\(^{408}\)

The clearest indication of specifically Nazi sympathies I have encountered in his publications of the 30s is contained in Francé's acceptance speech after his election to the "Deutsche Biologische Akademie":

> Besonders drängt es mich, hier der Deutschen Biologischen Akademie zu Berlin zu gedenken, (sic) die mir die Ehre antat, mich zu ihrem Mitglied zu wählen, gleichsam als Symbol, für wie wichtig dieser Kreis, der so unermüdlich an der Erneuerung des deutschen Volkes schafft, die Gedanken der Bios-Philosophie hält. Wenn eine angesehene Körperschaft bester Männer unserer Zeit diese Gedanken naturgemässer Lebensweise und Lebensschulung als die Grundlage des neuen deutschen Kulturaufbaues aufnimmt und sie verbreitet, dann ist wohl die Hoffnung begründet, dass sie auch wirklich zum Leben gelangen und zu den Grundsteinen gehören werden, auf denen sich der Bau der neuen deutschen Kultur erhebt.\(^{409}\)

The references to the construction of a "new German culture" in the context of Germany in 1934 are unmistakable. Like von Uexküll in the second, 1933 edition of his book Staatsbiologie, Francé was hoping that the National Socialist régime would realize his dream of an organic, "harmonious," biocentric society. And indeed in 1938 Francé's concept of Biotechnik was celebrated by Alfred Giessler as "German Science."\(^{410}\) However, as Wolschke-Bulmahn points out, the context of Francé's 1938 letter is one which suggests "gewisse, nicht genauer bekannte Probleme mit NS-organen."\(^{411}\) Keeping in mind the anti-Holistic backlash after 1935 and Francé's apparent lack of anti-Semitic feeling -- indeed his philo-Semitism -- one cannot help but speculate that Francé's problems with the Party were connected to these factors.\(^{412}\) It is likely that like other organicists, Francé's star would have set by 1938, and this may have combined with his bad health to encourage
him to live on a year-round basis in Dubrovnik.\textsuperscript{413} Francé’s case is ideal as a demonstration of both the possible unities and the disconjunctions between biocentrism and National Socialism, of the complexity of this association. Given his multifariousness in the 1920s, one cannot interpret either the centrist-conservative Mies’, or the leftist Moholy’s, Meyer’s and Lissitzky’s interests in Francé as constituting sympathies with völkisch or proto-Fascist thought. It is more convincing to see them as reflections of their own biocentrisms, and of the usefulness to them of Francé’s naturalization of technology.\textsuperscript{43}

This complex, politically volatile interwar Biozentrik forms the context for the examination of the aestheticization of scientific photography as effected through Moholy-Nagy’s “New Vision,” the framing of biomorphic Modernism as Bioroman- tik by Kállai, and the production of biomorphic Modernist art in general.
Endnotes:


2. Ernst Haeckel, The Riddle of the Universe [1900], Joseph McCabe, trans. (Buffalo: Prometheus Books, 1992), 11, 14


6. Raoul Francé, Der Weg zu mir: Die Lebenserinnerungen, erster Teil (Leipzig: Alfred Kröner, 1927), 179-80. Francé is writing about the late 1890s.


simple issues of material and physical sustenance to encompass as well the human craving for aesthetic intellectual, cognitive, and even spiritual meaning and satisfaction [deriving from nature]." Given this definition, the term "biophilia" could well be applied to turn-of-the-century life-centric intellectual tendencies.

Note that Haeckel employs the term "anthropism" as a collective term for "anthropocentrism," "anthropomorphism" and the "anthropocentric dogma." For Ernst Haeckel's anti-anthropocentric polemic, see The Riddle of the Universe, 11-13.

13. E.g. Anne Harrington comments that "[t]he history of science is still waiting for some systematic comparative analysis of twentieth-century holism in the life and mind sciences that would both clarify larger unifying patterns across cultural and national contexts and also tease apart salient distinctions." Harrington, Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler (Princeton: Princeton University Press, 1996), xxii. On Holism as a component of biocentrism, see below.

14. Like I, Eberhard Roters was grappling with this problem shortly before his death in 1994, indeed we spoke about it briefly when I told him about my dissertation project in Berlin in 1991. In writing about Thomas Ring, he referred to "Rings Auffassung, die mit den entelechisch und morphologisch intendierten lebensphilosophischen Lehrmeinungen Hans Drieschs und Ludwig Klages' unterfüttert ist..." (p. 240). Concluding his essay on Hannah Höch's role as an "eigenständigen spirituellen Vermittlerin" of a certain circle of artists, he wrote:

... was sie aber miteinander verbindet, ist ihre allgemeine biologisch-kosmische Ausrichtung, die zwischen moderner Naturwissenschaft und der Schicksalhaftigkeit menschlicher Bestimmung, zwischen dem Positivismus der experimentellen Forschung und der Autonomie des Geistes eine transmittinge Vermittlung und gleichsam einen "dritten Weg" qua künstlerisches Denken zu bauen sucht. Salomo Friedlaender, Arthur Segal, Hans Arp, Theo van Doesburg, Laszlo Moholy-Nagy, Raoul Hausmann -- so unterschiedlich und zum Teil sogar unvergleichbar diese Künstler in ihrem Werk sind, so sehr sind sie doch in der Interessenlage ihrer künstlerischen Neugier zwischen Relativitätstheorie, Psychoanalyse, Astrophysik, Gestaltpsychologie, Empiriokritizismus und Lebensphilosophie im Spannungsfeld zwischen Technik und eigenem mystischen Erlebnis in künstlerischer Vision weltanschaulich miteinander verbunden. Dafür habe ich hier den von Ring verwendeten zusammenfassenden Begriff "Biosophie" generell einzuführen versucht, der das alles zwar nicht exakt auf einen Nenner zu
bringem vermag, aber doch so etwas wie einen gemeinsamen Schwingungshof bezeichnet. (p. 247)

In: Hannah Höch, Eine Lebenscollage (Stuttgart: Gerd Hatje, 1995), 247. Roters does not mention Ernst Fuhrmann as the originator of the term.


19. Scheler, Wesen und Formen der Sympathie, 104.


31. Lebensreform is defined variously. In a narrower sense, it is usually seen as including vegetarianism and/or health food, land reform, the gymnastics and sport revival, naturopathy,
the housing reform movement, Kleidungsreform, nudism, and the anti-vivisectionist movement. In a wider sense, it also includes the aesthetic education movement (Kunsterziehungs-bewegung) and the general Schulreformbewegung, the Youth Movement, the temperance movement, the Ausdruckstanzbewegung and Anthroposophy. For a discussion of the definition of "Lebensreform," see Giselher Spitzer, Der deutsche Naturismus. Idee und Entwicklung einer volkserzieherischen Bewegung im Schnittfeld von Lebensreform, Sport und Politik (Ahrensburg bei Hamburg: Verlag Ingrid Czwalina, 1983), 12-17. For a discussion of the narrower and wider senses of the term, see Krabbe, Gesellschaftsveränderung durch Lebensreform, 12-13, 171-2. Krabbe dates the widespread use of the term "Lebensreform" to the early 20th century, though it first crops up in 1896. (p. 12) On the Garden City Movement and Lebensreform, see Kristiana Hartmann, Deutsche Gartenstädtebewegung: Kulturpolitik und Gesellschaftsreform (Munich: Heinz Moos Verlag, 1976), 8. On the common origins of Lebensphilosophie, the Jugendbewegung, and the Schulreformbewegung (or pädagogische Reformbewegung, as he puts it), see Bollnow, Die Lebensphilosophie (Berlin: Springer-Verlag, 1968), 9. See also Wolfgang Scheibe, Die Reformpädagogische Bewegung 1900-1932: Eine einführende Darstellung (Weinheim/Basel: Beltz Verlag, 1978).


35. Fellmann, Lebensphilosophie, 198-9. It seems that Heidegger's Seiende (Being) is a concept not too distant from either Leben or élan vital.


39. Most famously in his 1953 lecture "The Question Concerning Technology." On Bloch and Lukács, see below. For positive valuations of Klages, see the journal devoted to Klages studies, Hestia, published in Bonn.

40. Fellmann, Lebensphilosophie, 155.


46. Ibid., 309.

47. Francé, Bios, 56-7. Quoted by Tenschert in his introduction to Francé, Die Entdeckung der Heimat, 10.

48. See, e.g., Francé, Plasmatik, 156-7.
49. Raoul Francé, Denkmäler der Natur (Leipzig: T. Thomas, 1910); Die Entdeckung der Heimat (Stuttgart: Kosmos, 1925); Richtiges Leben (Leipzig: Voigtländer, 1924), So musst du Leben! (Dresden: Carl Reissner, 1930). On Darré see Anna Bramwell, Blood and Soil: Walter Darré and Hitler's 'Green Party' (Bourne End, U.K.: Bucks, 1985). On Klages' and Francé's politics -- while the former refused Nazi party membership, the latter did not -- see below.


53. Harrington, Reenchanted Science, 32. Anyone who has ever tried to read Klages' Der Geist als Widersacher der Seele will know that it is many things, but "pop philosophy" it certainly is not. On Klages and the political Right, see below. Note that this is one of the few criticisms I can make of this excellent book.


55. One of the rare -- if strong -- examples of outright anti-Semitism in Klages' voluminous writings dates from 1940, in his introduction to Alfred Schuler's works. Fellmann, Lebensphilosophie, 155-6. See also Evelin Priebe, Angst und Abstraktion: Die Funktion der Kunst in der Kunsttheorie Kandinskys (Frankfurt/Main: Peter Lang, 1986), 164-5. Compare Roderich Huch's memoirs, in which he discusses Klages' complex attitudes towards Jews such as Stefan George and Karl Wolfskehl. Roderich Huch, Alfred Schuler, Ludwig Klages und Stefan George. Erinnerungen an Kreise und Krisen der Jahrhundertwende in München-Schwabing (Amsterdam: Castrum Peregrini Presse, 1973), 6ff, especially 11.

56. Thomas, "Nietzsche in Weimar Germany -- and the Case of Ludwig Klages," 84. This was -- one must add -- an admiration based on a misreading.

57. Fellmann, Lebensphilosophie, 155.

58. Thomas, "Nietzsche in Weimar Germany -- and the Case of Ludwig Klages," 90.


62. See Fellmann, *Lebensphilosophie*, 29-30. For a Marxist view of organic theories of society, see Heinz-Georg Marten, *Sozialbiologismus. Biologische Grundpositionen der politischen Ideengeschichte*. (Frankfurt/Main: Campus, 1983). Typically, the author assumes that all social biology is meant as a capitalist legitimation device with a potentially racist outcome. As they do not fit neatly into Marten's schema, Anarchist and Leftist social biological figures such as Kropotkin and Geddes are, needless to say, not dealt with.


69. Francé, *Der Organismus*, vii. Francé did not note the irony in a situation in which "objective" biologic reasoning could result in either Spencerian Social Darwinism or Kropotkinian cooperative Anarchism (for which he had sympathy). For an account of Francé's intellectual origins, see below. His wife, Annie (Francé-)Harrar lists Francé's most important scientific achievements as his description of the soil ecosystem or *Edaphon*, his suggestions for humus development through composting, and his conception of *Biotechnik*, which is discussed in Chapter Four. She reports that he was awarded an honourary doctorate for his soil ecology work by Jefferson-Lincoln University in Chicago in 1928. Annie Francé-Harrar, *So war's um Neunzehnhundert: Mein fin de siècle* (Munich: Albert Langen, 1962), 24, 31, 207-16, 220.
70. Francé, Der Organismus, VII. On the announcement in 1920, see below.


73. Spengler, The Decline of the West, 8.


75. On "Psychobiology" being coined by O. Kohnstamm, and for the definition of the term, see Adolf Wagner, Geschichte des Lamarckismus: Als Einführung in die Psycho-Biologische Bewegung der Gegenwart (Stuttgart: Franckh’sche Verlagshandlung, n.d. [1909]), 169. On Kohnstamm’s ideas, see Wagner, 178-81. For Francé’s version of "psychobiology," see his Der Weg zu mir, 186-7 and Die Welt als Erleben, 118. On the development of Francé’s Psychobiology and the "school" that developed around it in Munich early in the century, see Zoesis, 19. Adolf Wagner sees the "psycho-biologische Bewegung" as a second, higher stage of "die heutige lamarckistische Bewegung" in his Geschichte des Lamarckismus, 169. On Francé in this book, see 199-209. According to Sulloway, Freud’s thinking was also "psychobiological." Freud, Biologist of the Mind, 4. We shall see in Chapter Three that Raoul Hausmann was an adherent of philosopher Ernst Marcus’ radically psychobiological position.

76. Wagner sees Francé and A. Pauly as the most important figures of the "movement." "Mit diesen beiden Gelehrten setzte die Bewegung bewusst und folgenschwer ein; von diesem Augenblick an konnte die nicht mehr ignoriert werden, musste die zeitgenössische Biologie ... sich mit ihr abzufinden suchen. Und nicht nur der engere Neolamarckismus, sondern insbesondere die Psycho-Biologie datiert ihren Ursprung recht eigentlich von dem Eingreifen dieser beiden Autoren." (Wagner, Geschichte

77. Francé, Zoesis, 18-19. For an account of Driesch’s philosophy as "ganz ähnlich" to Francé’s biocentrism, see Francé, Die Welt als Erleben, 130-2. Wagner writes: "Wenn zwischen der Psycho-Biologie und Driesch eine Annäherung stattfinden sollte, so wäre das ja sehr zu begrüssen...." (Geschichte des Lamarckismus, 182) The term Entelechie (English "entelechy") refers to an organic system or series of events; i.e. an entity. In English, see, e.g., Driesch, The Science and Philosophy of the Organism (Aberdeen: Aberdeen University Press, 1909). Thanks to Hilmar Frank for originally bringing Driesch to my attention.


79. Ernst Marcus, Das Problem der exzentrischen Empfindung und seine Lösung (Berlin: Verlag der Sturm, 1918), 9-10.


81. Francé, Die Welt als Erleben, 53. See also Francé, Bios and Das Buch des Lebens; Ein Weltbild der Gegenwart (Berlin: Ullstein, 1924), esp. 25. See: Raoul Francé, Das Edaphon (Stuttgart: Franck, 1921), and Das Leben im Ackerboden (Stuttgart: Kosmos, c. 1923). For a history of the ecosystem concept, see Frank Benjamin Golley, A History of the Ecosystem Concept in Ecology: More Than the Sum of the Parts (New Haven: Yale University Press, 1993). Though he acknowledges that "the German foundation for ecosystem studies was firmly rooted both philosophically and technically" (p. 174), Golley does not accept "ecosystem" (a word coined in 1935 by Arthur Tansley;
see p. 8), as a restatement of the Biozönose, developed by Karl Möbius in 1877, biotope, Holocoen (p. 40) or any other equivalent European concepts, characterizing its development instead as "largely an American tale." (p. 2) He contradicts himself on page 40, however, where he acknowledges that "Holocoen and ecosystem are synonyms."

82. Francé, So musst Du leben!, 166-7.

83. Francé, Die Pflanze als Erfinder (Stuttgart: Kosmos, 1920), 22.

84. Lessing, Untergang der Erde im Geist, 457.

85. See Francé, Harmonie in der Natur (Stuttgart: Kosmos, 1926).

86. Francé, Zoesis, 58.


88. Francé, Die Welt als Erleben, 15. On the introduction of this philosophy, see Zoesis, 10.

89. Francé, Die Welt als Erleben, 32-33.

90. On Einstein, see pp. 114-6 and on Nietzsche as a "forrunner" of biocentrism, see p. 22 of Die Welt als Erleben.


92. Francé, Die Welt als Erleben, 29.

93. Though Sale’s version does not have as strong an emphasis on ethnicity. Kirkpatrick Sale, Dwellers in the Land: The Bioregional Vision (San Francisco: Sierra Club Books, 1985), esp. Chapter Four, "Dwellers in the Land." Like most almost all ecological theorists, Sale is unaware of his predecessors.

94. Francé, Die Kultur von Morgen, 49.

95. Francé, So musst du Leben!, 170. In his copy of this book Mies marked the passage in which Francé pointed out which readings to take up in order to inform oneself of the many practical aspects of Francé’s Lebenslehre (p. 170).

97. On Kropotkin, See e.g., Francé, Die Welt als Erleben, 29; Das Buch des Lebens, 268; and Bios, vol. 2, 213. On Spencer, see Die Welt als Erleben, 42-3. It is typical that Wolschke-Bulmahn would jump to the conclusion that Francé was a Social Darwinist, even though Francé’s writings indicate that he was more Kropotkinian than Social Darwinist. See Joachim Wolschke-Bulmahn, Auf der Suche nach Arkadien (Munich: Minerva, 1990), 90-1.

98. On Kropotkin’s positive attitude towards a technology harnessed for the human good, see Ulrike Heider, Anarchism: Left, Right, and Green (San Francisco: City Lights Books, 1994), 18.


100. See his critique of Spengler’s idea of the "Decline of the West." Raoul Francé, Die Kultur von Morgen: Ein Buch der Erkenntnis und der Gesundung (Dresden: Reissner, 1922), 139. Though he criticized it in many respects, Francé considered Spengler’s Der Untergang des Abendlandes to be important because of its attempt to found a "biologisches Geschichtswissenschaft." Francé, Zoesis, 21-3. On Spengler’s critique of technology, see Kluge, Wissenschaft, Natur, Technik, Part 1.


102. Ibid.


104. Francé, Die Kultur von Morgen, 42.


107. Ibid.


109. Writing from a leftist-biocentric position, Hausmann, as far as I can tell, is the only one of the Weimar intellectuals to point out the socially conservative, indeed dangerous implications of Francé’s biology. See his review of *Die Kultur von Morgen*, "Intellektualismus, Gesellschaft und Gemeinschaft," *Die Aktion* (15 July 1923): 347-51 and "Ausblick," *G* no. 3 (June 1924): 14-17. On this, see also below and Chapter Four. Karl Popper later criticized Holism and Organicism as types of biologicist social engineering schemes which led to totalitarianism. See Karl Popper, *The Poverty of Historicism* (London: Routledge and Kegan Paul, 1957), 17-19. See especially his "Critique of Holism," 76-83. Lessing’s was, by contrast, an anti-totalizing *lebensphilosophische* viewpoint. Jain, *Das Prinzip Leben*, 49-50.

110. Mies and others might even have read Francé’s critique of Expressionist art as a reflection of the artists’ desperate clinging to a mythical self, of a "Souveränen Willensübersteigerung," a negation of the "true" goal of art which should be to represent the harmony in natural systems. (This no doubt reflects Ernst Mach’s dictum that "das Ich ist unrettbar." Quoted in Pauline Mazumdar, *Species and Specificity*, 170.) While perhaps dismayed by Francé’s amateurish art criticism, Mies might have been gratified by his praise for the design of Hermann Muthesius and his support for the skyscraper as an "optimale Lösung der Raumfrage in der Weltstadt." See "Expressionismus als Fremdidee" in *Das Buch des Lebens*, 460-2 and 521-3.

111. On this hoped-for world revolution, see Lukács, *History and Class Consciousness*, xiii.


114. For more discussion of Francé's connections to the art world, see Chapter Four. This is a topic which will have to be dealt with elsewhere, however.


116. Paraphrased by and quoted in: Sixten Ringbom, "Paul Klee and the Inner Truth to Nature," Arts Magazine 52 (September 1977): 115. Ringbom is paraphrasing from Stadelmann's Unsere Zeit und ihre neue Kunst (Berlin: Der Zirkel Architekturverlag, 1916), 4, 18, 21. The original reads "Die grosse Errungenschaft des neuen Zeitgeistes ist das biologische Denken." (p. 4) While he does not provide a bibliography or notes, Stadelmann seems to have been informed by Jakob von Uexkull's writing, popular with figures such as Adolf Behne and Theo von Doesburg around 1916.


118. Wagner, Die Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart, IV. Later on it becomes clear that he was thinking first and foremost of what he terms the "Psycho-Lamarckian" aspect of Neo-Lamarckism. (p. 268)


120. Lessing, Untergang der Erde am Geist, 403.

121. There is not total agreement about exactly which philosophers were "philosophers of life," I have drawn on several sources in drawing up this tentative list, including Bollnow, Die Lebensphilosophie; Sawicki Vol., 2; Jain, Das Prinzip Leben ; Fellmann, Lebensphilosophie. Not too surprisingly, some have seen this category as far too diverse. For a summary of this criticism, see Theodore Plantinga, Historical Understanding in the Thought of Wilhelm Dilthey (Toronto: University of Toronto Press, 1980), 70-1. Note that Fellmann, following Bollnow, does not so much see Lebensphilosophie as a revival of Romanticism, but simply labels aspects of Romanticism as the first epoch of Lebensphilosophie. (Fellmann, 27-28 and Bollnow, 3-5) At least one author, Schnadelbach, sees Lebensphilosophie as a post-World War One phenomenon, typified

122. Schnädelbach, Philosophy in Germany 1831-1933, 139. Schnädelbach’s a-biologicist characterization of Lebensphilosophie tends to depend on Dilthey’s approach, rather than on the more biologicist variants of life-philosophy. See, e.g., Schnädelbach, p. 147. Wilhelm Dilthey is usually included among the Lebensphilosophen. (See, e.g., Fellmann, Lebensphilosophie, 108ff.) However, as Plantinga points out, Dilthey’s "...choice of the term ‘life’ does not ... reflect the widespread interest in biological matters that is typical of the late nineteenth century. Dilthey, in fact, manifested no special interest in biology and did not use the term ‘life’ in a biological sense." Historical Understanding in the Thought of Wilhelm Dilthey, 74.


126. For a listing of Lebensphilosophen, see Jain, Das Prinzip Leben, 20. On Raoul Francé’s views of Eduard von Hartmann, see Francé, Die Welt als Erleben, 52, 8, 12, 51-52, 166. On von Hartmann as Haeckel’s opponent, see David de Groot, Haeckel’s Theory of the Unity of Nature (Amsterdam: B.R.Gruner, 1982), 5. On Simmel, see, e.g., Fellmann, Lebensphilosophie, 124ff and Jain, Das Prinzip Leben, 47-8. On Lessing, See Sawicki, Volume 2, 214 and Jain, Das Prinzip Leben, 49-50, 65-8, etc. On Keyserling, see Ute Gahlings, Sinn und Ursprung: Untersuchungen zum philosophischen Weg Hermann Graf Keyserlings (Sankt Augustin: Academia Verlag, 1992) and Jain, Das Prinzip Leben, 113-17. For an account of what one could dub Keyserling’s metaphysical biocentrism, see his "Der natürliche Wirkungskreis," in: Der Weg
zur Vollendung. Mitteilungen der Gesellschaft für freie Philosop-
phie, Schule der Weisheit, Darmstadt no. 10 (1925): 1-17. On
Keyserling and Lebensphilosophie, see Paul Feldkeller, "Büchers-
chau," Der Weg no. 5 (1923): 100-05. On Keyserling’s lecture
series on "Mensch und Erde" (of which the eighth lecture was to
given by Hans Prinzhorn), see "Chronik der Schule der Weisheit,"
Der Weg no. 12 (1926): 18. Despite the obvious reference to
Klages in the title of this lecture series, for Keyserling’s
mixed views on Klages, see "Bücherschau," Der Weg no. 5 (1923):
84-90. For von Uexküll’s praise of Keyserling, see von Uexküll,
Bausteine zu einer biologischen Weltbetrachtung, 50. On Spengler
as Lebensphilosoph, see Kluge, Gesellschaft, Natur, Technik. On
Spranger, see Jain, Das Prinzip Leben, 197ff.

127. Francé, Der Weg zu mir, 176-7.

128. On this relationship, see Schädelbach, Philosophy in
Germany 1831-1933, 146-7.

and Rowe, 1988), 898.

130. E. Benton, "Vitalism in Nineteenth-Century Scientific
Thought: A Typology and Reassessment," Studies in the History


132. See Bakhtin, "Contemporary Vitalism" (1927) in: Frederick
Burwick and Paul Douglass, eds., The Crisis in Modernism:
Bergson and the Vitalist Controversy (Cambridge: Cambridge
University Press, 1992), 80. Bakhtin distinguished traditional
Vitalism from the more sophisticated Vitalism of the fin-de-
siècle. He called it "critical Vitalism," and distinguished it
from the uncritical Vitalism of the late eighteenth and early
nineteenth centuries. In his essay Bakhtin sought to prove,
however, that a truly critical Vitalism was impossible, that
all Vitalisms are by nature dogmatic, that the basic tenets of
Vitalism -- even its critical variety -- must be accepted on
faith. Morton O. Beckner, in his article on Vitalism for Paul
Edwards, ed., The Encyclopedia of Philosophy (New York: Mac-
Millan, 1967), 254, also employs Bakhtin’s term "critical
Vitalism," including principally Aristotle and Driesch in this
category. More recently Michael A. Weinstein has proposed a
"Critical Vitalist" philosophy in his book Structure of Human
Life: A Vitalist Ontology (New York: New York University
Press, 1979), ix.

133. On Driesch see the listings in the Bibliography, as well
as Bramwell, Ecology in the 20th Century, 54ff. On Reinke as a
Neo-Vitalist philosopher, see e.g., Sawicki, Moderne Denker,
134. Krabbe, Gesellschaftsveränderung durch Lebensreform, 108. See also p. 172.


136. Before 1982 Freyhofer wrote: "[a]ny intellectual history of the last hundred years will remain incomplete if it does not include an account of vitalism." Intellectual history continues to remain incomplete in this regard. The Vitalism of Hans Driesch, 13.

137. On von Uexküll’s harmonization of Entelechie andGen, see Jakob von Uexküll, Bausteo zu einer biologischen Weltanschauung. Gesammte Aufsätze. Felix Gross, ed. (Munich: F. Bruckmann, 1913), 99. On the Plasma see Francé, Plasmatik. For Francé’s critique of some of these concepts as opposed to his own Plasma, see Plasmatik, 125.


139. Scheler, Wesen und Formen der Sympathie, 84.

140. Benton attempts to taxonomize the Vitalist-Mechanist continuum in "Vitalism in Nineteenth-Century Scientific Thought": 18. In discussing typologies in this connection, Rousseau refers to Timothy Lenoir’s category of "vital materialism" and notes the breakdown of easy categorizations in the debate. (Rousseau, in Burwick and Douglass, eds., The Crisis in Modernism, 45.) The difficulty of taxonomization reflects not only the general confusion as far as the types of Vitalisms are concerned, but also the extent to which Vitalism is distinguishable from Mechanism, and the degree to which Vitalism is identical to varieties of Organicism and Holism. For example, Max Verworn distinguishes three kinds of Vitalism, one of which, "Mechanistic Vitalism," is essentially identical to some Organisms, and certainly to Holism. He described Mechanistic Vitalism as "the view that ... the life processes rest basically on physico-chemical factors, but the conditions in the living organism are so complex, that they have up to now not been elucidated. These complex conditions which are peculiar to living organisms in contrast to inorganic nature, may for the present call (sic) the life force." Quoted in Pauline M. H. Mazumdar, "The Antigen-Antibody Reaction and the Physics and Chemistry of Life," Bulletin of the History of Medicine 48, no. 1 (Spring 1974): 16. Recognizing the overlap between some kinds of Vitalism and systemic-organicist-mechanist views, rather than to mechanism, J. A. Schmoll opposes Vitalism to "Morbidity." (He opposes mechanism to transcendentalism.) Reported by Roger Bauer in his Preface to Roger Bauer, et al., eds., Fin de Siècle. Literatur und Kunst der Jahrhundertwende (Frankfurt/Main: Vittorio Klostermann,
1977), X-XI. On Mechanism and Vitalism Rousseau writes: "The point is that both philosophies -- Mechanism and Vitalism -- developed hand in hand, and it is difficult to separate them during the Enlightenment. When one faded, the other blossomed; but neither waned for very long." In Burwick and Douglass, eds., The Crisis in Modernism, 32.

141. It was not embraced by his friend Jacob von Uexküll. For examples of the use of the term "Neo-Vitalism" early in the century, see Karl Bräunig, Mechanismus und Vitalismus (1907), 64ff and Hans Haustein's "Biologie" column written for the Sozialistische Monatshefte of Berlin during the mid 1920s, e.g. vol. 63, no. 3 (March 1926), 180. On this relationship, see Schnädelbach, Philosophy in Germany 1831-1933, 146-7.


144. Ibid., 229.


146. Ibid., 400.


153. On the materialist/idealist binary, see Allen, Life Science, xx.


157. Holt discerns four stages in the development of Haeckel's thinking ("Haeckel's Monistic Religion," 267-8), while Kelly sees one course of change, from materialism and mechanism towards vitalism and even religiosity. (The Descent of Darwin, 25.) Note, however, that in Kelly's opinion, despite this evolution, "the public Haeckel is most accurately represented when his work is considered ... as a single unified system." (p. 25)


161. On Francé: Wolschke-Bulmahn, Auf der Suche nach Arkadien, 84. Bölsche, like Francé, was a popular and radically biocentric writer on natural questions, a convinced Haeckelian, and a member of the Monistenbund. Together Francé and Bölsche produced the "Kosmos" series of popular scientific publications which enjoyed enormous success in early twentieth century germanophone Europe. Bölsche's greatest success was his Liebesleben in der Natur of 1898-1902 (Love-Life in Nature. The Story of the Evolution of Love. Translated by Cyril Brown. New York: Albert & Charles Boni, 1926). Because of Bölsche's enormous influence and output (his books had sold 1.5 million copies by 1914), further study is called for concerning his effect on the biocentric discourse as artists participated in it. See, e.g., my speculations on Klee and Bölsche in Chapter Three. On Bölsche see Kelly, The Descent of Darwin, Chapter 3:


164. Ibid., 5.

165. Holt, "A Note on Wilhelm Ostwald's Energism": 386.


167. On Ostwald and Ernst Mach, see also Mazumdar, Species and Specificity, 69.

168. Ibid., 169-70.


170. Capek, "Wilhelm Ostwald," 6. On the polemic against Vitalismus by the Monists (Driesch was seen and identified himself as a Vitalist), see "Gegen den Vitalismus," Der Monismus (1907): 299-300. See Von Uexküll, Bausteine zu einer biologischen Weltanschauung, 123, 130ff.

171. See Von Uexküll, Bausteine zu einer biologischen Weltanschauung, 36.

172. The term "Energeticist Monism" is cited by Capek in "Wilhelm Ostwald," 5.


174. Bramwell, for example, equates Vitalism and Lebensphilosophie, in Ecology in the 20th Century, 177.

175. Ernő Kállai, "Ideen- und Organisationsentwurf zu einer Internationalen Ausstellung moderner Kunst im Leipziger Museum mit dem Namen 'Kunst und Wirklichkeit,' Eventuell mit dem
Untertitel Das neue Weltbild der Kunst." (typescript in the Archives of the Art Historical Research Group of the Hungarian Academy of Sciences, Budapest, MDK-C-I-11/573 1-13). With reference to Edgar Dacqué, *Urwelt, Sage und Menschheit. Eine naturhistorisch-metaphysische Studie* (1924) Sixth edition (Munich and Berlin: R. Oldenbourg, 1931), 56. The otherwise largely unmarked copy of this edition in the Staatsbibliothek in Berlin has an "x" marked exactly where Kállai’s quotation begins. One would wish to speculate that Kállai (living in Berlin at the time) used this copy.


177. Ibid., 127.


179. Weindling, "Ernst Haeckel, Darwinismus and the secularization of nature," 315.

180. Handy, "Ernst Heinrich Haeckel," 400. See Kelly, *The Descent of Darwin*, 24-25, for an account of the origin of Haeckel’s Monism in Darwinism. As we shall see in Chapter Four, this idea, adopted by Francé, became important for Lazar El Lissitzky’s biocentric brand of International Constructivism.


183. Wagner, *Geschichte des Lamarckismus*, VII.


187. On Psychobiology as a "movement," see endnote 75. The close relation of Neo-Vitalism and Neo-Lamarckism is the case even if as Bowler writes, "Driesch, the most prominent vitalist of his day, was only a lukewarm advocate of Lamarckism." On the complex relationship between Neo-Lamarckism and Vitalism, see Bowler, The Eclipse of Darwinism, 80. On Bergson as Lamarckian, see Harrington, Reenchanted Science, 90-1. On France, as Neo-Lamarckian, See France, Zoesis, 19 and Harmonie in der Natur, 46 as well as Wagner, Geschichte des Lamarckismus. On Neo-Lamarckism as a Neo-Vitalist (as opposed to old Vitalist) position, see Wagner, 14-19.

188. Wagner, Geschichte des Lamarckismus, IV-V.


190. Francé-Harrar, Mein fin de siècle, 45-6.


magischen Weltlehre (Munich/Berlin: R. Oldenbourg, 1926).


While Immanuel Velikovsky (who lived in interwar Germany, Switzerland and Austria) seems to be indebted to Dacqué, he does not refer to him in Worlds in Collision (New York: Delta, 1950).


197. On the reticence of Holists and Organicists to acknowledge their Neo-Lamarckian ideas, and of Smuts' "explicit use of Lamarckism in [his] attack on mechanistic biology," see Bowler, The Eclipse of Darwinism, 105.


science and philosophy" in note 4 on page 64.

201. See Haraway's "Conclusion" for a summary of her arguments in Crystals, Fabrics and Fields, 188-206. It should be noted that Haraway does not feel fully successful in having demonstrated such a paradigm shift. Haraway, Crystals, Fabrics, and Fields, 195-206. C.f. Dacqué's framing of his own work as representing a "neue Axiom" in Urwelt, Sage und Menschheit, 13.


203. See Harrington, Reenchanted Science, 89.

204. Ibid., xvii.

205. Ibid.


207. Jack Burnham, Beyond Modern Sculpture. The Effects of Science and Technology on the Sculpture of this Century (New York: George Braziller, 1968), 76.

208. On this friendship and mutual support, see Harrington, Reenchanted Science, 48-54. On von Uexküll's son's denial of his father as a "Vitalist" despite his close association with Driesch, and despite his public image as a Vitalist, see 52-3, 228, note 74. On von Uexküll's praise of Driesch's work as being "von grundlegender Bedeutung," see von Uexküll, Bau- steine zu einer biologischen Weltanschauung, 36. Harrington feels it possible that von Uexküll's concept of Umwelt may have contributed to Heidegger's concept of Being-in-the-World. Reenchanted Science, 53-4.


211. Ibid., 6-7. Haraway and Beckner disagree with Frederick Burwick, who sees the organismic paradigm as emerging already in the 18th century, distinct from both mechanism and vitalism. See Burwick's introduction to Burwick, ed., Approaches to Organic Form: Permutations in Science and Culture, (Dordrecht: D. Reidel, 1987), ix-x.


214. Ibid., 61.

215. Ibid., 17, 23. On this controversy, see Ibid., 193.


221. Note that Francé referred mainly to a *Biozentrische Erkenntnischeermie* or Biocentric epistemology as the basis for what he referred to as *Objektive Philosophie*. See, e.g., *Zoesis*, 10, *Die Welt als Erleben*, 11 and esp. 14. Note however, that he stated that he might as well have termed his *Objektive Philosophie* as *Biozentrische Philosophie*. Francé, *Die Welt als Erleben*, 17. He also referred to it simply as *Biozentrik*. See, e.g., *Bios*, vol. 1, 31.

222. Another way to conceptualize this phenomenon is to think in terms of Wittgenstein's "open set" theory.


Sherrye Baker Cohn has convincingly demonstrated the ways in which occult Theosophical ideas combined with Nature Romanticism and both physical and biological scientific ideas to result in Arthur Dove’s biomorphic Modernist art. As she writes in the Abstract of her dissertation, "Contradictory as they may appear, science and occultism formed the matrix of his mature art by suggesting ways to visualize nature’s hidden energies." Cohn, "The Dialectical Vision of Arthur Dove: The Impact of Science and Occultism on his Modern American Art" (Ph.D. diss., Washington University, 1982, Abstract).

On Taut, see, for example, Iain Boyd Whyte, *Bruno Taut and the Architecture of Activism* (Cambridge: Cambridge University Press, 1979). On Kandinsky in this connection, see Chapter Three. Thanks to Serena Keshavjee for discussing Maeterlinck with me and to Gerta Moray for discussing Carr with me in this context.
It is interesting to note that both Francé and Driesch were interested at various times in the scientific research of occult phenomena. For a photograph by mediumistic photographer Schrenk-Nötzing, see Francé, Das Buch des Lebens, 473-4. C.f. Driesch’s membership in the Society of Psychical Research in London after 1913 (he was president in 1926-27). Hans Driesch, Lebenserinnerungen, Aufzeichnungen eines Forschers und Denken in entscheidender Zeit (Basle: Ernst Reinhardt, 1951), 214-20.

For a response to the criticism that the Neo-Lamarckist or "psychobiological" movement has mystical elements, see Wagner, Geschichte des Lamarckismus, IV-V.

224. It is interesting to note, however, that Mies and Arp had Roman Catholic connections: Mies was born a Roman Catholic and later became an adherent of the Catholic philosophers Romano Guardini and Henri Bergson; Arp was born a Protestant but converted to Catholicism after the death of Sophie Taubert-Arp, probably under the influence of his second wife, the religious Catholic Margarete Hagenbach. The information on Arp is courtesy of Gabrièle Mahn of the Fondation Arp, Clamart, France. On Mies and Catholic philosophy, see Chapter Four, endnote 132. (Bergson, born a Jew, and never baptised, nevertheless became a Roman Catholic in his thinking by the 1930s.) All this reminds one of Kállai’s statement that "Es ist kein Zufall, dass katholische Kulturkreise lebhaftes Interesse für die Bioromantik zeigen." In: "Bioromantik," Forum (1932): 272. Why this would be the case, requires further study.


232. Ibid., 160 and Chapter Three, "The Biocentric Outlook on Life." See also Susan J. Armstrong and Richard G. Botzler, eds., *Environmental Ethics. Divergence and Convergence* (New York: McGraw-Hill, 1993), 354. The editors of this anthology seem to prefer the use of the term "ecocentrism" in this regard, but also note the employment of "deep ecology" and "holism" as synonyms. (pp. 369, 405) For an example of the equivalence of the terms "ecocentrism," "biocentrism," and "deep ecology," see also Ferry, *The New Ecological Order*, xxiv.

233. Kant and Arthur Lovejoy (and perhaps a couple of others) are the only authors cited whose books appeared before the 1960s, indeed the vast majority are citations of books published after 1975. Besides Arne Naess (who is Norwegian) and Georg Henrick von Wright not a single "Germanic" author is cited, not even Konrad Lorenz or the authors of the Green Movement. C.f. also Murray Bookchin's declaration of his 1964 text "Ecology and Revolutionary Thought" as the "manifesto of the ecological movement," as if Klages had never read his "Mensch und Erde" publicly in 1913. This is especially poignant given that Bookchin was among the first to write on environmental issues after the war, as his essay of 1949 indicates. (See Heider, *Anarchism*, 68; 58-9.) On the ahistoricism of the ecological movement, see Ulrich Linse, *Ökopax und Anarchie. Eine Geschichte der ökologischen Bewegungen in Deutschland* (Munich: DTV, 1986), 7.

234. David Oates, *Earth Rising: Ecological Belief in an Age of Science* (Corvallis, Oregon: Oregon State University Press, 1989), 64, 163, 194. Note that Arne Naess, the inventor of the term "deep ecology" was born in Norway in 1912, and may form a bridge from Germanic biocentrism to the contemporary North American ecological movement. See Taylor, *Respect for Nature*, 411. The nobel-prize-winning Norwegian novelist Knut Hamsun -- very popular among biocentrically-minded European readers in the late teens and twenties -- was a völkisch biocentric, and he collaborated with the Nazis during the German occupation of Norway. For the view that "some of Deep Ecology's roots lie in Nazism," see Luc Ferry, *The New Ecological Order*, 90. No doubt much of this silence is due to the fact that references to this fascist pre-history of environmentalism tend to wish to discredit environmentalist causes. But by not addressing, as Thomas Kluge points out in his *Gesellschaft, Natur, Technik*, the unresolved theoretical and political issues and contradic-
tions of Spenglerian and other pre-war, proto-Fascist and Fascist environmentalisms, the post-war environmental movement will continue to face accusations of a repressed or "secret" continuity with Fascist ecocentrism.


237. Unless otherwise indicated, biographical information is from Francé’s autobiography, Der Weg zu mir.

238. In Hungarian he was known by the Hungarian version of these names, "Rezső." See "Francé Rezső," A craspedomonadinák szervezete (Budapest: Királyi Magyar Természettudományi Társulat, 1897).

239. Francé, Der Weg zu mir, 11-23.

240. Francé retained strong feelings for Hungary throughout his life. Thus, he arranged for the publication of some of his books in Hungarian, and he was a life-long reader of the journal of the Hungarian Academy of Sciences. (Francé, Der Weg zu mir, 73) He expresses his affection for Budapest (which he refers to as his Heimat) and for Hungary in his autobiography, Der Weg zu mir, in his discussion of his decision to leave for Germany, which he explains as a desire to return to his ethnic roots. (pp. 162-3). After the outbreak of war caught him and his wife in Dubrovnik, however, he fled to Hungary rather than to his parents’ native Bohemia (then under German occupation), to his native Austria, or to his adopted Germany.


243. Examples often cited in this connection are the "Austrian" Adolf Hitler and the Transylvanian-Armenian Ferenc Szálasi, head of the Hungarian Fascist "Arrow Cross."

244. Kállai, even though he was more of an assimilated "Hungarian" than Francé, would probably have stayed in Germany had the Nazis not come to power, and assimilated fully to Germany. As it happened, they did, and he returned to Budapest in 1935. On Kállai, see Chapter Five.


249. The biographies and Festschrift published on the occasion of his fiftieth birthday in 1924 mark the high-water point of Francé's fame. As I shall argue in Chapter Four, 1923 to 1925 were also the years of the "biocentric Constructivist discourse" inspired by Francé's writings. Francé produced the bulk of his Grundlagen einer objektiven Philosophie during this period. See Francé, Bios, vol. 1, "Vorwort." For his only -- rather ambivalent -- comment on the Bauhaus, see Plasmatik, 9. I discuss this in Chapter Three. On his viewing of the Bauhaus-Ausstellung of 1923 and his meeting with Walter Gropius -- a decidedly un-neoconservative thing to have done within the highly-dichotomized Weimar context of the time, see Francé-Harrar, Mein fin de siècle, 204. Francé-Harrar, a former art critic, was not impressed by the art on show at the Bauhaus-ausstellung, though she enjoyed Tristan Tzara's performance during the Dada-Constructivist Congress in Weimar in late September of 1922. (p. 204)

250. Roth cites 1923 as the year of their move to Salzburg, and 1931 as the year of their move to Dubrovnik, in "The Foundation of Bionics," 238. The years 1924 and 1926 are also cited in the literature as the dates of their move to Salzburg.

251. Additional biographical information is from Tenschert, introduction to Francé, Die Entdeckung der Heimat (1982).


254. On Driesch and Nazism, see Harrington, Reenchanted Science, and Freyhofer, The Vitalism of Hans Driesch, 133-4, 157-64. On von Uexküll's early "hopes" in the Nazi "Bewegung," the Nazis' attempts to recruit him, and his opposition to Nazism after it assumed power, see Gudrun von Uexküll, Jakob von Uexküll: Seine Welt und seine Umwelt (Hamburg: Christian Wegner, 1964), 164-76. According to Schmidt, it was in the second, 1933 edition of von Uexküll's book Staatsbiologie that von Uexküll expressed some optimism concerning the emergent Nazi state. Schmidt, "Die Umweltlehre Jakob von Uexkülls," 13-14. See Von Uexküll, Staatsbiologie. Anatomie-Physiologie-Pathologie des Staates. Second revised edition. (Hamburg 1933). According to Gudrun, his widow, the Baron's opposition to Nazism was based on their policy of firing and persecuting Jews. For his view that his late friend Houston Stewart Chamberlain would not have approved of the use which the Nazis put his racial theories to, see Jakob's letter to Chamberlain's widow Eva Wagner Chamberlain -- Hitler's friend -- reprinted in full by Gudrun on pages 171-3. Eventually von Uexküll was retired from his Institute for Environmental Studies in Hamburg, and he moved to Capri for health reasons, where he died in 1944. See also Jutta Schmidt, "Die Umweltlehre Jakob von Uexkülls in ihrer Bedeutung für die Entwicklung der vergleichenden Verhaltensforschung" (Ph.D. diss., Phillips-Universität Marburg/Lahn, 1980), 13-14. Spengler's rejection of Nazism is well-known. See, e.g., Anton Kaes, Martin Jay and Edward Dimendberg, eds., The Weimar Republic Sourcebook (Berkeley: University of California Press, 1994), 760. While they refused to join the National Socialists, it should be pointed out that they failed to actively resist Nazism. While Prinzhorn did not join the Party, he was closely associated with it from 1930 to his suicide in 1933. See Geinitz, "Hans Prinzhorn," 60-1 and Sander L. Gilman, "Madness and Representation: Hans Prinzhorn's Study of Madness and Art in its Historical Context," in Stephen Prokopoff, The Prinzhorn Collection: Selected Work from the Prinzhorn Collection of the Art of the Mentally Ill (Champaign, Ill.: Krannert Art Museum, 1984). On France, see below. For French Parallels, see Jack J. Spector's "Surrealism Redefined" (a review of Hal Foster's Compulsive Beauty, in the Art Journal, Fall 1994: 110), in which he points out Georges Bataille's and even André Breton's flirtation with the French Fascist journal Contre-Attaque in 1934-35. While Breton rejected such an association, Bataille -- even if briefly -- engaged in it.

256. On this question, see Harrington, Reenchanted Science, xxi.

257. The breakdown of the Left-Right structure of ideological categorization is reflected in Andrew Hewitt’s statement: "Fascism eludes classification. It disorients political analysis in the confusion of left and right, refuses to point the way forward by conflating progress and reaction. Fascism is and was a scandal, both historically and theoretically." Fascist Modernism. Aesthetics, Politics and the Avant-Garde (Stanford, CA: Stanford University Press, 1993), 68.


259. For approaches to this Left-Right problem, see also the acknowledgement that the biocentric tradition affected both the Left and the Right by Helmut Günther, "Geschichtlicher Abriss der deutschen Rhythmusbewegung," in: Eva Bannmüller and Peter Röthig, eds., Grundlagent und Perspektiven ästhetischer und rhythmischer Bewegungserziehung (Stuttgart: Ernst Klett, 1990), 35.


261. Bramwell, Pois and Ferry have begun to point out the commonalities between Nazi nature ideology and that of the environmental movement. This continues to be controversial. According to Bramwell, Walther Darré and Rudolf Hess were among the most prominent in this category, but according to Pois, so were Ernst Krieck, Heinrich Himmler, and Hitler himself. Bramwell, Ecology in the 20th Century, 197. Pois, National Socialism and the Religion of Nature.

262. On the problematic nature of concepts such as "progressive" or "advanced" and "regressive," see Mark C. Taylor, Disfiguring: Art, Architecture, Religion (Chicago: University of Chicago Press, 1992), 14.

See, Bloch's description of Klages as a "weekend philosopher" or as a "kompletten Tarzan-Philosophen..." Quoted in Roland Müller, Das verzwickte Ich -- Ludwig Klages und sein philosophisches Hauptwerk 'Der Geist als Widersacher der Seele' (Bern and Frankfurt/Main: Herbert Lang, 1971), 21.

Georg Lukács, Die Zerstörung der Vernunft (Berlin: H. Luchterhand, 1962), 202-5. Lukács categorizes Klages as one of
the "Präfaschistisches und faschistische Lebensphilosophen" along with Alfred Rosenberg. This is especially astonishing given Klages' opposition to Nietzsche's idea of the "Will to Power," indeed to all forms of power, his lifelong Pacifism (which Lukács was aware of -- see p. 206), his related residency in Switzerland from 1915 until his death in 1956, his refusal to join the Nazis, and Alfred Rosenberg's and other Nazis attack on him in the late 30s. For a critique of Lukács's slandering of Klages, see Richard Hinton Thomas, "Nietzsche in Weimar Germany -- and the case of Ludwig Klages," in Anthony Phelan, ed., The Weimar Dilemma: Intellectuals in the Weimar Republik (Manchester: Manchester University Press, 1985), 86-7. On Lukács's own heavy use of Vitalist terminology (not surprising given his intellectual history, particularly his early devotion to Nietzsche, Dilthey and Simmel), see Rodney Livingstone's "Notes to the English Edition" of Lukács, History and Class Consciousness, 344. On this question see also Jain, Das Prinzip Leben, 76-8.

In volume 4 of The Social History of Art, Hauser -- in a more nuanced fashion than Lukács, groups figures such as Bergson, Ortega y Gasset, Spengler, Hermann Graf Keyserling, Klages "and the rest" together as those thinkers who are "consciously or unconsciously reactionary and prepare the way for fascism." (Stanley Godman, trans., New York: Vintage Books, 1958) 228.

263. Freyhofer, The Vitalism of Hans Driesch, 168-9. It seems, after World War Two, as if Positivism/Materialism was the position triumphant in the dominant scientific establishment, but the various forms of Vitalism never died out completely. In 1972 Hilde Hein reported on the status of the Mechanist/Vitalist controversy. She wrote that despite the fact the "[c]ontemporary scientists and historians of science have declared the mechanism-vitalism debate a dead issue ... the controversy persists and that while modifications of positions have followed the evolution of scientific concepts, the basic metatheoretical commitments remain as essentially unchanged and unexamined foundations of contemporary differences within the field of biology." Hilde Hein, "The Endurance of the Mechanism-Vitalism Controversy," Journal of the History of Biology, 5, no. 1 (Spring 1972): 159-61. Since 1972, at the height the hegemony of Positivist science, the debate has intensified with the rise of various "New Age" sciences such as that described in Augros and Stanciu, The New Biology.

264. Quoted by Burnham, in Beyond Modern Sculpture, 56.

265. On Darré and the "Green Nazis," see Bramwell, Blood and Soil, especially chapter eight. See also Ferry, The New Ecological Order, Chapter Five, "Nazi Ecology." This is not to deny the strong Neo-Vitalist element in popular Nazi thinking. But such an element was equally strong among non-Nazis in the
early 20th century, indeed among everyone affected by Nietzsche's writings, and can therefore not be seen to be an exclusive characteristic of Nazism.

266. See Harrington, Reenchanted Science, Chapter 6 and Proctor, Racial Hygiene, Chapter 8, "The 'Organic Vision' of Nazi Racial Science."


268. Quoted in Proctor, Racial Hygiene, 223.

269. Pois, National Socialism and the Religion of Nature, 10-11, 39. Though Pois is not familiar with the larger geistesgeschichlich context of biocentrism, he does essentially say this: "What Hitler had done was to wed a putatively scientific view of the universe to a form of pantheistic mysticism presumably congruent with adherence to 'natural laws.' In this, he bore a marked resemblance to such Darwinians as Ernst Haeckel who ... informed their scientific endeavors with large doses of romanticism...." (pp. 39-40) Anna Bramwell argues that National Socialism differed from other European Fascisms in that they were not nature-centric. Another nature-centric Fascist movement -- but one which did not achieve political power -- was the one in England, which exercised a strong influence on British Modernists such as Wyndham Lewis, Ezra Pound and even D.H.Lawrence. See Bramwell, Ecology in the 20th Century, Chapter Eight.

270. Pois, National Socialism and the Religion of Nature, 3. Harrington has identified the rhetoric of Organicism and Holism in Nazi culture in Reenchanted Science, chapter 6. Of course, as Bramwell and Pois have pointed out, this is a notion uncomfortable to many: "This being the case, one wonders why so little attention has been paid to the most interesting view that the leading ideologues of Nazi Germany had with regard to humankind's place in the natural world. It is the opinion of this writer that outside of the fact that ... some historians probably do not take this (or ... any) aspects of Nazi ideology very seriously ... in the character and tone of the Nazi approach one can readily apprehend ... elements which demonstrate that, in certain crucial aspects, National Socialism was very much in the mainstream not only of German but of Western philosophical and religious developments. Unconsciously, perhaps, people are a bit uncomfortable with this." (p. 35) On this topic, see also Ferry, The New Ecological Order, Chapter 4.
271. On France and National Socialism, see below. On Krannhalst's organicism and National Socialism, see Juga Krannhalst's Foreword to the second edition of Krannhalst's *Das organische Weltbild* (Munich: Bruckmann, 1936), unpag.

272. There is an extensive literature on Heidegger's active Nazi involvement in 1933-34, and his subsequent failure to leave the Party until 1945. See, e.g., Critical Inquiry (1989). Note that while Prinzhorn was associated with the Nazis in the early 30s, he did not actually join the Party.


274. Fellmann, *Lebensphilosophie*, 166. Lessing, a childhood friend of Klages, was a Jewish biocentric Marxist.

275. Bramwell shows that National Socialism was unique among Fascist parties in this respect. She also points out that Hitler, though a vegetarian and an animal rights supporter, was not an environmentalist. See Bramwell, *Ecology in the 20th Century*, 173.


285. Günter Hecht, spokesman for the Nazi Party's Department of Race Politics, quoted in Harrington, *Reenchanted Science*, 194. See Dale Riepe's Introduction to de Grood, *Haeckel's Theory of the Unity of Nature*, 10 and Gasman, *The Scientific Origins of National Socialism*. Gasman's anachronistic and ahistorical view of Haeckel is largely reproduced in Hans-Walter Schmuhl, *Rassenhygiene, Nationalsozialismus, Euthanasie* (Göttingen: Vandenhoeck & Ruprecht, 1987). Schmuhl's argument, that Haeckel, who was along with many other prominent intellectuals throughout the Western world (including inter alia, Magnus Hirschfeld, Carl and Gerhard Hauptmann, see Schmuhl, 90), a eugenicist, was the forrunner of Nazi euthanasia policies, is contradicted by his own conclusion that "Das Euthanasie programm war kein genuin nationalsozialistisches Phänomen," and that "Die Genesis der 'Euthanasie' war nicht auf einen zentral gesteuerten, planrationalen Entscheidungsprozess zurückzuführen, sondern auf die spontane Improvisation, die sich im Spannungsfeld von Kompetenzkonflikten zwischen konkurrierenden Herrschaftsträgern entwickelten." (pp. 369-70; on this question, see especially Proctor, *Racial Hygiene*. As Proctor notes, "I do not want to leave the impression that 'racial hygiene' [i.e. eugenics] was a movement that wholly endorsed the rise of Nazism. As it is true in the case of American eugenics, there were important figures within the German movement who rejected Nordic supremacy, and these people suffered to some extent under the Nazis.... [N]ot paying sufficient attention to the Nordic question [was] ... a common Nazi criticism of the eugenics movement .... Differences between racist and nonracist versions of racial hygiene continued to appear from time to time in both the medical and popular press, even after the rise of the Nazis." (p. 29) Presumably because of an unspoken defence of his own Marxist position, Schmuhl downplays the very strong relations of the Monistenbund to Social Democracy and the eugenicist component in Social Democracy and Marxism itself, indeed the powerful Soviet eugenics movement, (see Proctor, 58) and tends to see, like Gasman, the Monist movement as exclusively a rightist, proto-Nazi organization -- a position absurd in light of overwhelming evidence. "Die pseudosozialistische Phraseologie in den Schriften führender Rassenhygieniker darf nicht darüber hinwegtäuschen, dass der Sozialdarwinismus der Sozialdemokratie den 'Sozialaristokratismus' entgegengesetzt." (p. 75) The fact is that as part of the biologism of the time, the eugenics movement crossed all political boundaries, just as the push for euthanasia does today. One of Schmuhl's most obvious errors is the assumption which seems to underly his discourse, that all followers of the "bioorganismic" social metaphor were Social Darwinists, a movement which gave impetus to the eugenicist movement. (See, e.g., pp. 29-30. On Haeckel, Monism, eugenics and euthanasia, see pp. 31ff.) Schmuhl exaggerated Haeckel's role in the connection between eugenics and euthanasia, even though it was the Swiss doctor Alfred Ploetz
who first made it, and as Schmuhl himself notes, Haeckel barely addressed the issue: "Die Euthanasieidee stand also im Einklang mit der von Haeckel vertretenen naturalistischen Moralphilosophie. Dass er dennoch darauf verzichtete, die Freigabe 'erbpflegerisch begründeter Kindesstörun gen' expressis verbis zu verlangen, war auf ein spezifisches Desinteresse zurückzuführen, das auf seinem Vertrauen auf die regulativen Mechanismen innerhalb des Evolutionsprozesses beruhte." (p. 33) On this controversy, see also Bowler, The Non-Darwinian Revolution, 189.

286. In her dissertation, Gail Perez does not seem to be able to decide whether Lawrence was "progressive" or "fascist" and argues for even his seemingly "progressive" early political stances as being at base "reactionary," while concluding that "he fits into the broader tradition of anti-materialist assaults on bourgeois culture, a tradition that favors vital-ism and primitivism." Abstract, "Power and Alterity in D. H. Lawrence's Thought and Art: 1914-1925" (Ph.D. diss., Stanford University, 1992). Clearly her dissertation is badly in need of Bramwell's taxonomy. There are more examples like this. A dissertation that does not attempt to force Lawrence into the "progressive or reactionary" straightjacket is Helen Livaniou's "Threads of D. H. Lawrence's Philosophy of Vitalism in the Tapestry of Sons and Lovers," (M.A. thesis, Florida Atlantic University, 1993).

287. Harrington, Reenchanted Science, 177-8, 194.

288. Ibid., xxi.

289. On this see Kelly, The Descent of Darwin, 100-01, and Schmuhl, Rassenhygiene, 19.


292. Ibid., 114.

293. Ibid., 118.

294. Ibid., 119.

295. Schmuhl, Rassenhygiene, 362.

296. On the international popularity of eugenics before Nazism, see Bowler, The Non-Darwinian Revolution, 168. On the popularity of eugenics early in the century among American
social reformers and progressives, see Donna Jean Haraway, *Primate Vision: Gender, Race and Nature in the World of Modern Science* (New York: Routledge, 1989), 57-8. Since the mid 90s these countries -- such as Canada, Switzerland and Sweden -- have begun to pay for their eugenic policies, which entailed the forced sterilization of thousands of people.


301. C.f. David Pepper: "If we are to draw any conclusion from all this it must be that we have shown that ecocentrism is politically most ambiguous and that it has, as O'Riordan pointed out, distinctive and opposite political wings." In: *The Roots of Modern Environmentalism* (London: Croom Helm, 1984) See also T. O'Riordan, "Environmental Ideologies," *Environment and Planning*, Series A, no. 9: 3-14.


306. There are major omissions in her book, for example, not a single mention of France, one of the best-known environmentalists in interwar Germany. While most point out Bramwell's failings as an historian (see especially Donald Worster, *Isis* 81, no. 4, 1990: 800), some see her as being neutral, ambivalent, even supportive towards the environmental movement
(Ronald C. Tobey, *American Scientist* 78, March-April 1990: 186; Robert L. Burgess in *The Quarterly Review of Biology* 63, June 1990: 243; Rob Waller, *The Ecologist* 19, no. 5, September-October 1989: 201), others as opposing it (Worster in *Isis*; Paolo Palladini, *British Journal for the History of Science* 24, pt. 4, no 83, December 1994: 471-3). Actually, Bramwell states her support of environmentalism, but is ambivalent towards some views expressed by followers of "ecologism." It is interesting to note that the confusion among reviewers with respect to Bramwell's own politics is isomorphic with her subject matter, and I suspect, with her own politics as well. For a curious account of biocentric Nazis such as Darré and Hess, which reads at times almost like an apologia or rehabilitation, see her book *Blood and Soil*.


311. Note that though Harrington sees Driesch as the "father" of German Holism, she sees it principally as an interwar phenomenon. See *Reenchanted Science*, xx.

312. Fritz Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, Mark Jarzombek, trans. (Cambridge Mass.: The MIT Press, 1991), 357, 106 respectively. Neumeyer analyses Mies' library in Parts IV and V of his book. Though some items are retained by family members, most of the library is housed in the Special Collections Department of the University of Illinois in Chicago. (Information courtesy of the staff in Special Collections.)


317. On Dacqué, see above and also Chapter Five. Kandinsky’s library included Dacqué’s Leben als Symbol (Munich: R. Oldenbourg, 1928) as well as Urwelt, Sage und Menschheit. (Kandinsky Library, Centre Georges Pompidou, Fonds Kandinsky) On his library see Chapter Three.

318. Scheerer is discussed by Harrington in Reenchanted Science, 61.

319. On this, see Fellmann, Lebensphilosophie, 167-8. See Lessing, Untergang der Erde am Geist.

320. On Spengler and Lissitzky, see Nisbet, El Lissitzky, 29. Hausmann was a biocentric firmly on the Left, however.

321. Jakob von Uexküll, Staatsbiologie (Berlin: Gebrüder Pätel, 1920), Oscar Hertwig, Der Staat als Organismus. Gedanken zur Entwicklung der Menschheit (Jena: Gustav Fischer,


323. Haustein wrote for Sozialistische Monatshefte from at least 1925 on. See, e.g., his history of Neo-Vitalism in Sozialistische Monatshefte 63, no. 3 (March 1926): 100, and his article on Neo-Darwinism in Sozialistische Monatshefte 64, no. 6 (June 1927): 490-1. Haustein discusses Haeckel, Lamarck, evolution, Dacqué, Driesch, von Uexküll, Darwin, genetics, etc. during the mid to late 20s. Kállai also wrote for this journal, and he seems to have garnered much of his knowledge on the biocentric discourse from this column.


325. Francé, Die Pflanze als Erfinder. On this book inspiring the "biocentric Constructivist discourse," see Chapter Four. Other works by Francé on the accomplishments of plants and animals owned by Mies included Das Liebesleben der Pflanzen (Stuttgart: Kosmos, 1921); Das Sinnesleben der Pflanzen (Stuttgart: Kosmos, 1905); Denkmäler der Natur; Der Bildungswert der Kleinwelt (Stuttgart: Franck, 1908); Das Leben im Ackerboden (Stuttgart: Kosmos, 1923); Die Lichtsinnenorganen der Algen (Stuttgart: Kosmos, 1908); Die Seele der Pflanze (Berlin: Ullstein, 1924); Die Technischen Leistungen der Pflanzen (Leipzig: Veit, 1919), Die Welt der Pflanze (Berlin: Ullstein, 1912); and Urwald (Stuttgart: Franck'sche Verlags-handlung, 1928).

Hans André, Das Wesensunterschied von Pflanze, Tier und Mensch (Habelschwerdt: Francke, 1924). André seemed to be connected with this publisher, as he introduced the books by Buytendijk and von Brandenstein, both published by Francke. Theodor Zell (Leopold Bauke), Werkzeuge der Tiere (Leipzig: Bios-Bücherei/R. Voigtländer, 1924). This book was the realization of a project Francé had initiated. See Francé-Harrar, Mein fin de siècle, 141. Also: Leopold Bauke, Strefzüge durch...


327. Hermann Kranichfeld, Das teleologische Prinzip in der biologischen Forschung (Habelschwerdt: Francke, c. 1925). Remigius Stölzle, Der Ursprung des Lebens (Habelschwerdt: Francke, 1925) and Die Finalität in der Natur (Habelschwerdt: Francke, c. 1925). In this connection, Mies was missing Adolf Wagner's important Geschichte des Lamarckismus, however.


330. On Wundt's psychology in the context of Neo-Romanticism, see Schall, "Rhythm and Art in Germany," 44-46.

331. Ibid., 44.

332. Biographical information on Klages is from Müller, Das verzwistete Ich, 14-16 and Ernst Hoferichter, "Ein Erforscher und Kühner des Lebens." On Ricarda von Huch, see Monika Fick, Sinnenwelt und Weltseele. Der psychophysische Monismus in der Literatur der Jahrhundertwende (Tübingen: Max Niemeyer, 1993). On Oskar Schlemmer and Huch, see Chapter Five. On the Kosmische Runde, see Schall, "Rhythm and Art in Germany, 1900-1930," (Ph.D. dissertation, University of Texas at Austin, 1989), 21-5. See also Chapter Three on George's circle, and on Ricarda Huch and Oskar Schlemmer.

333. Wiedmann, Romantic Roots in Modern Art, 37ff. Wiedmann draws parallels, for example, between the thinking of Hans Arp and Klages.


335. Von Uexküll, Bausteine zu einer biologischen Weltanschauung. This project was taken up in the aesthetic sphere by figures such as Theo van Doesburg, Adolf Behne and Karl Ernst Osthaus. On this, see below and Chapters Three and Four.

336. On the remarkable importance of von Uexküll’s thinking to that of his scientific contemporaries, and his relative obscurity today, see Harrington, Reenchanted Science, 34.

338. Schall, "Rhythm and Art in Germany, 34. See also Bramwell, Ecology in the 20th Century, 178-9. In book form, this speech was published as Mensch und Erde (Jena: Eugen Diedrichs, 1933).

339. Reported by Fellmann in Lebensphilosophie, 157. If Sulloway is correct, and there was a concerted effort on the part of Freud and his colleagues to suppress the biologic origins of psychoanalysis, then this might account for Freud's relative absence from the interwar biocentric discourse. See Freud, Biologist of the Mind.

340. Ibid. On the importance of images, see 161-2.


344. Francé, Der Weg zu mir, 22-3.

345. Ibid., 46.

346. Ibid., 81-3.


348. Ibid., 170 and Roth, "The Foundation of Bionics," 236.


350. Ibid., 204.

351. Ibid., 205 and Francé-Harrar, Mein fin de siècle, 25.


354. This was a society founded to publish inexpensive and easy-to-understand books on nature and science from a Monist perspective. It was operational until at least the late 1920s. See the notice for its publications in Francé, Harmonie in der Natur, back cover. The Journal for the Theory of Evolution, renamed the Archiv für Psychobiologie have been referred to below. In 1907 Francé started Mikrokosmos, a journal of microbiology. In 1909 he founded Die Kleinwelt, official organ of the Deutsche Mikrobiologischen Gesellschaft. That same year he also founded the Deutsche Naturwissenschaftlichen Gesellschaft, and Natur, its official journal; the Yearbook for Microbiologists; the Microbiological Library and he collaborated on the publication of a guide to scientific photography! (Roth, "The Foundation of Bionics," 237) See: Francé and M. Gambera, Einführung in die wissenschaftliche Photographie (Stuttgart: Franckh'sche Verlagshandlung, 1909).

355. Francé-Harrar, Mein fin de siécle, 141.

356. On his publishers: Von Bronsart, Die Lebenslehre der Gegenwart, 185-6. He worked with at least fifteen German publishing houses. The dearth of post-war literature on Francé is apparent from a glance at the list of publications on him in the Bibliography.


358. Peter Nisbet has commented to me on this privately. Francé-Harrar, Mein fin de siécle, 141.


360. Francé, Der Organismus, VII.

361. Wagner, Die Geschichte des Lamarckismus als Einführung in die Psycho-Biologische Bewegung der Gegenwart, IV. See also Francé Zoesis, 19.

362. Wagner does not even mention Monism and the Bund in his 1908 book.

364. On Landauer, his role in the Soviet and his death in Munich in 1919, see George Woodcock, Anarchism: A History of Libertarian Ideas and Movements (New York: Meridian Books, 1962), 432. To determine whether this was a random act rather than one motivated by some factor connected to Francé is yet to be determined by research.


366. Francé, Der Weg zu mir, 177.

367. Francé, Das Buch des Lebens, 24-5. Von Bronsart, Die Lebenslehre der Gegenwart, 75; Fischer, Raoul H. Francé. Das Buch eines Lebens, 166. See also his description of Biozentrik as a Monist project, in Francé, Die technische Leistungen der Pflanzen, p. III.

368. Francé, Die Welt als Erleben, 15. On the introduction of this philosophy, see Zoësis, 10.


375. Ibid.


379. Hausmann, "Der Häusserbund bekommt 22,800 Stimmen!," 89.


381. Francé, Die Kultur von Morgen, 114.

382. Francé, Plasmatik, 18-19.

383. Francé's biographer Fischer lists Dinkelsbühl, Weimar, Salzburg and Berlin as the cities he loved. (In: Raoul H. Francé, 183) Francé would likely have added Budapest to this shortlist. (See Francé, Der Weg zu mir, x)

384. Hitler, Mein Kampf, 123 and Francé, München.

385. See Francé, Bios, vol. 1, 225-6. Francé's valorization of social insect societies contrasts with, for example, Maurice Maeterlinck's position, which recognized the inherent cruelty of that system. See, e.g., La Vie des termites (Paris: Charpentier, 1927) and La Vie des fourmis (Paris: Charpentier, 1930). On Maeterlinck and his view of insect societies, see Bettina Knapp, Maurice Maeterlinck (Boston: Twayne, 1975), 161-2. This pessimistic view of insect societies is echoed by Winnipeg artist Aganeatha Dyck, who employs bees in the production of
her artworks. Like Maeterlinck, whose father was a bee-keeper, Dyck’s husband is an apiarist, and so she has more direct contact with the insects than Francé had. (Personal communication with Dyck, February 1997.) Thanks to Serena Keshavjee for pointing out the relevant passages in Knapp’s book to me.

386. On "racialism" as not necessarily a "racist" or right-wing phenomenon, see Bramwell, Blood and Soil, 206. Also: Francé, Das Buch des Lebens, 159.

387. Francé-Harrar, Mein fin de siécle, 220, On Spengler, see 190-7. Of course it is also possible that Francé-Harrar opposed her husband’s National Socialist affiliation. Gudrun von Uexküll also plays down her late husband’s flirtation with the Nazis around 1933, choosing to highlight his (genuine) concern at the treatment of Jews in the Nazi state. (See her Jakob von Uexküll and the note above dealing with this question.)

388. Francé, Das Buch des Lebens, 250.

389. Fischer, Raoul H. Francé, 189.

390. On Zweig’s praise for Francé, see below. I have not come across anti-Semitic statements in Francé’s writings.

391. At least five of his books were published by Ullstein. See the National Union Catalogue Pre-1956 Imprints, vol. 180, 226-30.


395. Francé, Der Weg zu mir, 53.

396. Roth, "The Foundation of Bionics," 236. Given Cohn’s name, I think it safe to assume his Jewish origins.

397. See Fischer, Raoul H. Francé, 189.

398. Ibid.

399. Wolschke-Bulmahn presents evidence for this in Auf der Suche nach Arkadien, 85, 88-9.


404. Wolschke-Bulmahn, Auf der Suche nach Arkadien, 84.

405. Ibid.

406. Ibid., 85.


408. Prinzhorn is another example of a Nazi-sympathiser in the early thirties who was not anti-Semitic. See Geinitz, "Hans Prinzhorn": 60-1.


411. Wolschke-Bulmahn, Auf der Suche nach Arkadien, 84.

412. See Harrington, Reenchanted Science, and Bramwell, Blood and Soil on the anti-Organicist backlash.

413. On the Francés' life in Dubrovnik at this time, see Raoul H. Francé and Annie Francé-Harrar, Sehnsucht nach dem Süden (Leipzig: Julius Kittls Nachfolger, 1938), 5.

414. Bud intuits the ambiguities of Francé’s reception. While he notes that Fritz Neumeyer held that "Francé’s thoughts provided the solace that the Bauhaus spirit would live on in the wake of Hitler’s victory," Bud is also aware of Giessler’s Nazi appreciation of Francé’s Biotechnik in 1938. The Uses of Life, 62-3.
Tragedy irradiates ... a Dionysiac condition, tending toward the shattering of the individual and his fusion with the original Oneness. (Nietzsche 1872)¹

Monism ... recognizes one sole substance in the universe, which is at once "God and nature"; body and spirit (or matter and energy) it holds to be inseparable. (Haeckel 1899)²

Auf die Epoche physikalisch-chemischer Weltbetrachtung, die zum Materialismus führte, folgt jetzt naturgemäss die biologische Weltbetrachtung. (Behne 1916)³

In all the arts, the notion of "nature" has never had any other meaning except that the artist and his work are themselves part of nature. (Taut 1916)⁴

Die grosse Errungenschaft des neuen Zeitgeistes ist das biologische Denken. (Stadelmann 1916)⁵

Im Kosmos der Einheit ist der Leib nicht mehr Tempel der Gottheit, sondern ihr Körper. Leib und Seele sind gleichen Grundes Wurzel, sind eins. Wir kennen nicht einen geisteshafoten Inbegriff einer leibhaftigen Welt .... Wir sind Gott.... Der ruhende, zuständliche Mensch lebt seine Einheit mit dem Kosmos. (Lucia Schulz 1919)⁶

Was ist neu auf dieser Erde? Die Antwort: Ausschliesslich die Erde selbst, die über alle, angeblich unumstösslichen Wahrheiten der Menschen hinaus, uns zwingt, ihrer Atmosphäre zu folgen. Der Mensch ist eine Form der Erd-Atmosphäre, die er weder mit dem Logos noch mit dem ethischen Gesetz zu zwingen vermag, sich vor ihm selbst aufzuschliessen. (Hausmann 1921)⁷

The unity of a work of art is manifest in its wholeness and in the total interdependence of its 'form and content.' That is to say, this 'dependence' is merely a Dualist fiction, because for me 'form and content' are one. (Moholy-Nagy 1922)⁸

The artist cannot do without his dialogue with nature, for he is a man, himself of nature, a piece of nature and within the space of nature. (Klee 1923)⁹
Die Natur ist eine schöne Sache. (Hausmann 1921)

Es gibt nur eine, in sich gegensätzliche Einheit der Natur. Ein neues einheitliches großes Weltbild muss daher allen Dualismus beseitigen. (Hausmann 1924)

If you can see the essence of a work of art then it appears to you ... as a unity ... as a thing that grows out of itself ... and which does not differ in essence from other ... entities in Nature. (Schwitters 1927)

Our work is not ... a system for acquiring cognition of nature, it is a limb of nature... (Lissitzky 1924)

...even lemons fall to their knees before the beauty of nature. (Arp 1925-26)

i pump nature, you pump art. (Arp 1931)

The view of the utopian avant-garde as always being antithetical to the "natural" is persistent in the literature. As Patricia Railing notes, "To claim nature as the source of art ... and machine no more than a tool is unusual in the writings of the avant-garde." Stephen Mansbach articulates this view:

Mondrian's [antipathy to green] though idiosyncratic and hyperbolic, was representative of the disdain in which progressive artists held nature .... This rejection of nature was ... two-fold: as artists, they felt that nature (physis) was impotent as an inspiration and a model for creative production, and as individuals ... they rejected nature as an irrational force lying outside man's control.... Nature seemed to foster an irresponsible cult of the individual and it appeared to sanction an indefensible belief in a natural social hierarchy. This ... resulted inexorably in war, class stratification and alienation.... [N]eeded to redress these prevailing tragic conditions was an anti-natural art that would prepare mankind for future integration with society, environment and self.

Mansbach cites Naum Gabo as an artist whose "rejection of nature and naturalism was, like that of his contemporaries [Lissitzky, Moholy-Nagy, Gropius], seemingly absolute." Focus-
Mansbach continues: "Like so many others, Moholy turned to the machine as both model, and inspiration for a non-natural art that would lead men inevitably to a sublime social and spiritual harmony." Mansbach, part of whose difficulty lies in his conflation of "nature" and "naturalism," intuits the contradictory character of his argument when he writes that "[f]or Moholy, as for most of the utopian artists early in the century, abstract art was perceived, paradoxically, as leading to the fulfillment of man's deepest biological and social nature, once abstraction had overcome the tragedy of nature...." Complicating Andreas Haus' critique of positions such as Mansbach's, that "die technikbewusste Avantgarde keineswegs die Natur hasste, sondern nur die sentimentale bourgeois Naturromantik," I solve Mansbach's paradox by arguing that rather than "abjuring nature," some of these artists sought its authority in realizing their aims. Mansbach's work is emblematic of a shortcoming in art history, which by virtually ignoring the early 20th century biocentric discourse has failed to contextualize modernist culture. While his arguments are pertinent to Mondrian and Van Doesburg, they are incorrect with respect to Moholy-Nagy and El Lissitzky. In the case of artists such as Paul Klee, Franz Marc and Wassily Kandinsky, who employ a conventional vocabulary when discussing nature, their biocentrism marks them as tangential to the mainstream. Since the contemporary context is unknown, this interest is explained as an anomaly, as a direct outgrowth of Romanticism, or as an "occult" phenomenon. Thus it is the science historian Peter Bowler who recognized what art historian Mark Roskill has not: their writing demonstrates that Klee and Kandinsky were not mere nature enthusiasts or occultists, rather, they were "influenced by the mystical aspects of monism." Education historian Eleanor Jain has put together a list of artists, including Marc, Klee and Kandinsky, who exhibited the concerns and vocabulary of Lebensphilosophie in their texts. As for artists such as
Moholy-Nagy, Mies van der Rohe and El Lissitzky, whose language concerning nature is unfamiliar and whose styles of artistic production are orthogonal, their concerns with nature and the organic have been ignored or denied. It is a rare occurrence that art historian Timothy Benson should recognize that "monists made science more palatable to artists like [Johannes] Baader and [Raoul] Hausmann by seeking to reintegrate the apparently displaced man described in mechanistic doctrines of nature." While unfamiliar with biocentrism, Railing is unique in pointing out the pervasiveness of organic discourse to the avant-garde, which "runs, sometimes like a trickle, sometimes like a torrent, through [it] ... from the early Cubo-Futurist days to the late 1920s." Someone as close to Moholy-Nagy as his wife Sibyl, however, unequivocally recognized him to be a vitalist, and Moholy's friend, the art critic Ernö Kállai, interpreted the history of Modernist art in 1931 as a reaction to technology and a retreat into "nature."

In this chapter I take strategic soundings of early 20th century German culture and find that biocentrism was inherent to the Jugendbewegung, to Activism, to Berlin Dada, to the Gläserne Kette, to the communard movement and to the Bauhaus. These having formed the contexts in which Moholy-Nagy operated, it becomes less eccentric to suggest that Moholy-Nagy's pedagogical project was at base biocentric. In Chapter Four I argue that his New Vision, which aestheticized scientific photography, making it accessible, was itself a resultant of the biocentric Constructivist discourse inspired by Raoul France's biocentric philosophy.

1. Biocentrism, the Jugendbewegung and the Weimar Avant-garde

a. The Youth Movement and Biocentrism

In his anti-Haeckel polemic, Daniel Gasman argues that Haeckelian Monism was an important component of the German
Youth Movement. Jürgen Wolschke-Bulmahn has drawn attention to the environmental consciousness central to this Jugendbewegung. For example at the "Hohe Meissner," the 1913 founding meeting of the Wandervogel offspring, the Freideutsche Jugend, one of the most acclaimed speeches was Ludwig Klages' "Mensch und Erde," an early call for ecological balance and environmental preservation. Ulrich Linse holds that this talk must be considered as "einer der ganz grossen Manifeste der radikalen Ökopax-Bewegung in Deutschland." Klages railed against the ones who "in blinder Wut die eigene Mutter, die Erde, verheeren ..., bis alles Leben und schliesslich sie selbst dem Nichts überliefert [sind]." Anna Bramwell has observed that Klages' text "contains most of the themes of today's ecologists; that matriarchy is better than patriarchy, that numberless animal species have been exterminated by man, that the fur and feather trade is wicked, that civilisation and Kultur kills the spirit, that economics is opposed to real values." Crucial here is that the Youth Movement did not consist merely of hikers imbued with a nationalistic sense of the depths of Natur and Wald; of Blut und Boden.

Already the first Wandervogel generation was strongly affected both by Nietzsche's anti-anthropocentrism and by Haeckel's populist nature-centric Monist manifesto Die Welträtsel, first published in 1899. While the writings of Darwin, Haeckel, and other natural scientists produced the medium within which Nietzsche's mutating radicalism could coagulate, his powerful, poetic articulation of the consequences of positivist science's disenchantment of the world in turn affected Haeckel's thought, or at least the way in which Haeckel's "natural" morality -- his opposition to religion and later to the concept of "God," his focus on the earth and its life -- were received. Some of the keener of the Wandervogel would then have followed the emergence of the Monistenbund in 1906. In the teens and early twenties, as the Jugendbewegung coalesced, there emerged a genuine environmentalist conscious-
ness out of the Nietzschean, nature-centric neo-Romanticism of the Monist movement and the Wandervogel wave.

b. Youth Movement and Avant-Garde
i. Nietzsche and Marc

This Youth Movement was linked to the German avant-garde, whose great pre-war hope, Franz Marc, was thoroughly -- and famously biocentric. Because of his anti-anthropocentrism, interest in the natural sciences, his critique of bourgeois morals, and his affirmation of the importance of art, furthermore, Nietzsche was another common denominator:

What Nietzsche sowed, Expressionism reaped. Like him, Expressionist artists participated in the scientific learning of their age and yet opposed its materialism and its positivism.... [They] ... not only read Nietzsche, but also followed the latest developments in the sciences ... and pseudo-sciences of their day.12

Charles Kessler has demonstrated the (Dionysian) "yearning for a deeper emotional bond with the wellsprings of nature" among the Expressionists and has detailed their links with the Reformbewegung, including the Youth Movement, Freikörperkultur, and the Naturheilbewegung.12 August Wiedmann has pointed out that "Expressionist art and literature were permeated by [a] titanic striving for wholeness."13 Corona Hepp, Janice Schall, Eleanor Jain, Donald Gordon, and Werner Kindt have referred to the parallels and links between Nietzschean thinking, the Bauhaus, Lebensphilosophie, Expressionism, and the Reformbewegung, including the Youth Movement and the Wandervogel. As with Henry van de Velde, Marc, Edvard Munch, Max Beckmann, Otto Dix, Adolf Behne and Bruno Taut, such ties are evident in the cases of the future Bauhaus professors Klee, Kandinsky, Herbert Bayer, Oscar Schlemmer and Johannes Itten.14 Salomo Friedländer, Hausmann and Baader's 1915 plans to entitle a journal "Erde" echoed Klages' "Mensch und Erde" speech of 1913.15

Marc's affinity to the nature-centric aspect of the
Reformbewegung is particularly evident. He wrote of his desire to heighten his "feelings for the organic rhythm of all things, to achieve pantheistic empathy with the throbbing and flowing of nature's bloodstream." Soon after his death in 1916 Klee wrote that "He responds to animals as if they were human. He raises them to his level.... In Marc, the bond with the earth takes precedence over the bond with the universe." As Goldwater articulates it, "Marc’s purpose ... is to express a pantheistic conviction, to convey the underlying harmony of the universe, lost by modern man, in symbolic canvases ‘that belong on the altars of the coming spiritual religion.’ That this "religion" -- like Haeckel’s "Monistic Religion" -- had Natur as its focus, is made evident through Marc’s iconography in which animals function both as guardians of our deep connection to the natural realm, and as potential victims of this realm’s violation by our technologized society.

Writing of Marc’s 1911 painting Der Stier, Kállai states that the animal "scheint erst im Keime seines Wesens zu leben, in jenen Naturgründen, in denen alle Geschöpfe verwandschaftlich beisammen liegen." (Fig. 3-1) The curvilinear forms and their tendency towards central compositions and abstraction, were among the most important premonitions of the biomorphic Modernist style of the 20s and 30s.

Neo-Vitalist ideas were so widespread that when discussing the content of the Berlin Dadaist periodical Die freie Strasse, Timothy Benson refers to "the usual Bohemian staples of Nietzsche, Bergson, Simmel, Strindberg, Whitman, Dostoevsky...." But after Die Welträtsel and the founding of the Monistenbund, it is insufficient to characterize this yearning for "life" and "unity" as merely romantic. At that time the yearning for wholeness and the revival of the vitalist/pantheist idea of a universal force in nature were related to the neue Naturphilosophie, to Monism and Neo-Vitalism; to fin-de-siècle biocentrism.
ii. Haeckel

More direct links can be pointed to between Haeckel and the avant-garde. Haeckel's publication of the album *Kunstformen der Natur* in 1899 was intended to offer artists the hitherto largely untapped *Formenwelt* of the microscopic and the undersea as inspiration or as model, one which would result in art that would induce a moral appreciation in the viewer of the value of nature:

The remarkable expansion of our knowledge of nature, and the discovery of countless beautiful forms of life ... have awakened ... a new aesthetic sense ... and thus given a new tone to painting and sculpture.... [E]xpeditions ... brought to light an undreamed abundance of new organic forms... **42**

*Kunstformen der Natur* had a profound effect on *fin-de-siècle* artists and architects -- particularly in Munich -- such as the Swiss Hermann Obrist and the German August Endell.**13**

iii. Hausmann and Berlin Dada

Less recognized is the influence exercised on avant-garde artists by Haeckel's Monism during and after the First World War. For example, among the Berlin Dadaists both Hausmann and Baader were enthusiastic Haeckelians. As Benson explains Hausmann's position at the time, he attempted what the *Monistenbund* itself essayed, that is "a consistent pursuit of a synthesis of the conflicting tendencies associated generally with reconciling *Lebensphilosophie* and Positivism.... Hausmann's anti-anthropocentrism is in accord with many of the Idealist and Romantic responses to Kant's exploration of experience..."**44** Indeed Hausmann acted as a conduit between Monism and the Berlin avant-garde scene of the early 1920s, as his biocentric Anarchist attack on Raoul Francé in 1923-24 demonstrates.**45** By 1922, as is evident from the passage quoted at the start of this chapter, for Hausmann's friend Moholy-Nagy, "Dualism" was a bad word.
iv. Gläserne Kette

A particularly salient example of relations between Monism, emergent interwar biocentrism, and the avant-garde, is that of the Gläserne Kette architects: Bruno Taut, Hermann Finsterlin, Wenzel Hablik, the Luckhardt brothers, Hausmann’s friend Jefim Golyscheff, and their supporter Adolf Behne were deeply biocentric. Like his friend Rudolf Steiner, Taut combined occultism with his biocentric ideas, which were expressed through both vitalmystisch writings and an adherence to Kropotkinian anarchism. In the passage of 1916 quoted above we witness Taut’s view of humanity as part of nature. That same year Behne cried that "Kunst ist niemals etwas anderes als Natur!" and Finsterlin said simply that "the architecture of man is a biogenetic phenomenon." In his critical writings Behne’s obsessive concern with "unity" is typically Monist, while in his Glass Chain letters Wassily Luckhart expressed an Ostwaldian Monist Weltanschauung: "The striking thing in ... natural phenomena is the consciousness of that great unity in nature, which reveals itself to the eye as the sum of all those infinitely many single motifs of homogenous or similar type, which are all subject to one and the same perceptible law of movement." Taut begins his 1919 manifesto with the Monist-Vitalist declaration that he and his group are "Suchende nach der Kunst; denn die Kunst, die eins ist mit dem Leben, diese Kunst gibt es nicht."

One can understand how the crystal, a central metaphor of the Gläserne Kette, could be seen as organic, since for Haeckel and the Monists, crystals -- ensouled like plants and animals -- linked the animate and inanimate orders of unified Being. Thus Wassili Luckhardt, anticipating Francé’s "technical Grundformen" of nature writes, "In going back to original forms [Urformen] is it not possible to reach basic architectural elements, which in their invisible power of expression could convey the impression of earthgrown creation? After all, stones, plants, etc., are built up out of primeval
crystals. For Finsterlin, however, it was not the crystal that was the Urform, but Haeckel's primeval slime, out of which life generated itself spontaneously. In the design of Wenzel Hablik, the biotic and the crystalline merged into an indivisible, stylistic whole. In Finsterlin and Wassili's brother Hans, there were direct links between Monism and Taut's circle: while Hans discussed Mach's theory with Ostwald, Haeckel's son Walter was Finsterlin's friend. In fact Finsterlin was retained to paint a portrait of the father for the museum established in 1920 in the "Villa Medusa," Haeckel's house in Jena, after his death in 1919.

v. Adolf Behne

The Heinrich Wölflin-trained art historian Behne was the theorist and critical supporter of the Gläserne Kette. He was involved in the biocentric discourse, well-versed in Haeckelian/Ostwaldian Monism, as well as in the emergent biocentric critique of it. He was unequivocal concerning the biocentrism of Hermann Finsterlin, even in the mid twenties, during the period of the "Ring": "Wollen wir ... sehen, bis zu welcher letzten Konsequenz ein romantisch-pantheistisch gefärbter Funktionalismus führt, so betrachten wir am besten die Entwürfe Hermann Finsterlins ... die Annäherung des Hauses an Formen der organischen, der wachsenden Natur." In an article of 1916 entitled "Biologie und Kubismus" and published in the Activist journal Die Tat, Behne argued that the biocentric theorist Jakob von Uexküll's model concerning organic development in nature should be applicable to artistic production even if von Uexküll himself opposed Expressionism, and that with the decline in authority of the Monistenbund due to its "materialism," artists should turn from Haeckel and Ostwald to von Uexküll and his book Bausteine zu einer biologischen Weltanschauung for guidance: "Besonders bei der jungen Generation, die sich heute um eine Erneuerung der Kunst und der Kultur bemüht, sollte das schöne Buch begeisterte Aufnahme
finden." A similar scenario would play itself out in the case of Weimar avant-gardists who came to champion Raoul Francé’s post-Monistenbund biocentrism, despite Francé’s dislike of avant-garde art.

Later Behne added Das Problem der exzentrischen Empfindung to his list of recommended books, in which Ernst Marcus developed the psychovitalist (i.e. psychobiological) views of Kant, Gustav Fechner, Ernst Mach and Richard Avenarius (whence Raoul Francé’s position derived) to an extreme conclusion similar to that of Jakob von Uexküll, whereby the perceiving subject was actively involved in the constitution of reality. In Marcus’ view, light itself was an organic product of the brain, rather than an emanation from, or reflection of, the perceived object. To understand the full effect that this position had on the Berlin avant-garde, it is worth looking at its reception by another of its members. Marcus’ psychobiology was understood in a radical manner by his student, Hausmann’s and Baader’s associate, Salomo Friedländer,


Thus, in his book Die Wiederkehr der Kunst, a von Uexküllian-biocentric and Marcusian-psychovitalist manifesto, Behne refined his definition of nature:

The organicism of the Gläserne Kette is made clear by Behne, who -- echoing Kandinsky -- maintained that "das Kunstwerk ist ein geistiger Organismus," and that "[t]he contemplation of the roots is especially important for us. Our works must grow organically out of the simple primitive cell." This organicism is also evident in Hans Luckhardt’s statement that "The building must be so formed that it creates the same inner unity with the earth and sky that the tree does." Hablik commanded simply "Glaubt nur an die Natur! Ehret ihre Gesetze!" Indeed Klages’ critique of human Geist is present in the writings of the Gläserne Kette. In 1918, echoing Franca and Klages, Behne wrote:


Given Behne’s and Taut’s role in the "Ring," the Modernist architects’ group emergent from Mies’ and Häring’s studio in 1923-24, it seems reasonable to suggest that the move from the Expressionist biomorphism of the Glass Chain to the orthogonal Modernism of the Ring was a stylistic shift which -- like the analogous transformation occurring within the biocentric discourse -- left the architects’ nature-centrism intact. With Behne and Taut in the leadership of the Arbeitsrat für Kunst, the Novembergruppe, and the Glass Chain; and with Hausmann and Baader at the core of Berlin Dada; biocentrism was endemic to the German post-war, post-Expressionist avant-garde.

2. Moholy-Nagy, Lebensreform and Biocentrism

Out there -- war. Here its thunder dully thuds.
A bird chirps and the myriad sounds and
Fleeting hues of gossamer life rise.
The swallow flies, the fork-tailed swallow!
The shadow’s violet silk spreads out.
A thrush’s whistling like gurgling gold
Honey flows from the rotten rind
And the delicate seed bursts
Fruitful and happy.

Clouds, those marvellous plants of my life,
Float in blue froth and flower
Their wispy petals on high,
As if on a velvet gown of some maiden's dream.
(Moholy-Nagy, "Forest. May. War." 1918)\(^\text{66}\)

As we shall see, Moholy-Nagy continued Haeckel's -- and France's -- project of making the natural imagery of scientific research available to artists. In the late 20s, through his New Vision, he effected the aestheticization of this scientific imagery in Weimar Germany. This process made the biomorphic Formenwelt -- an important factor for the development of biomorphic Modernism as a style -- readily available to interwar artists. I argue that like Haeckel's and France's aesthetics, Moholy's New Vision was rooted in his biocentrism.

We have seen that International Constructivists such as Moholy-Nagy have been characterized to be "anti-natural" and "technocentric." As we shall see in Chapter Four, however, there was in Russia an "Organic Constructivism" present most strongly in the work of Vladimir Tatlin and Lazar El Lissitzky. By introducing Moholy-Nagy into the discussion, I wish to initiate thorough treatment of the work of an International Constructivist within the context of biocentrism. I will argue that Moholy's oeuvre -- like Hausmann's -- drew from a wide range of intellectual and artistic sources, but was both formed and directed by a normative biocentrism. As Floris Neusüss has written (without employing the requisite terminology): "Moholy-Nagy war ein spiritueller Materialist, der grösstmögliche Gegensätze in Harmonie zusammenzufügen such-te."\(^\text{67}\) I wish to expand on the view Haus expressed in his 1978 study of Moholy's photography:

Überspitzt lasse sich ausdrücken, dass Moholys praktische wie theoretische Arbeit komplementäre Aspekte eines Dritten sind, das als metakünstlerische, pädagogisch orientierte "Lebensphilosophie" mit dem Ziel erscheint, den Menschen zu einem be-
While I take Haus’s punning use of "Lebensphilosophie" more literally than he does, and while our approaches differ, our agreement (along with Alain Findeli) that the core of Moholy-Nagy’s project was a normative-pedagogical one, forms the basis for this line of research on him. As Sibyl Moholy-Nagy wrote in her biography of László, "The most important contribution the Bauhaus years made to Moholy’s development was his acceptance of teaching as a life task.... He discovered the unity of doing and being, the organic oneness of living soundly and producing creatively. This became the keynote of his teaching program." And in a direct reference to one of Moholy’s most important sources, Raoul Francé, she wrote, "He accepted the sharing of his life as biological law because it was bios -- the interaction of vital impulses, that stimulated man to work for his emotional fulfillment." Accordingly, I begin this discussion by placing Moholy’s early émigré years in Germany, those he spent with his first wife Lucia Schulz, into their proper context of the German Youth Movement, specifically the Freideutsche Jugend, which as we have seen had a biocentric component. An exposition of the biocentric basis of Moholy’s pedagogy and aesthetics of New Vision follows.

a. The Hungarian Background

As is evident in Moholy’s poem "Forest. May. War.", not only was he a Pacifist by the waning months of his military service in 1918, he was also a keen observer of nature. Also, as his review that same year of the Budapest poet Árpád Garami’s poems about a boy’s sexual awakening illustrates, Moholy was familiar with the discourses of Bergsonisme and Naturromantik: "Employing a cosmic vision [Garami] transforms the sterile lover into the purposive, creative Earth, that the curse might finally be lifted. This self-redemptive and self-consoling feeling is manifest little by little in the desire
for a mythic union with nature.\textsuperscript{70} Moholy's familiarity with German and American nature romanticism would have derived from his education in the German classics -- he won a German translation prize in high school -- and his close friendship with the critic Iván Hevesy, an early translator of Walt Whitman's poetry.\textsuperscript{71} Moholy's acquaintance -- rather than familiarity -- with Bergson's ideas, would have originated in at least two sources.\textsuperscript{72} First, Moholy's literary mentor during his early creative years (when his ambitions were more literary than artistic) was the important Modernist poet Mihály Babits, who was among the first to write about Bergson in Hungary.\textsuperscript{73} Second, during the war, Moholy was, along with many others of his generation of Budapest intellectuals, a participant in the Galilei Kör [Galileo Circle], a kind of open intellectual forum at Budapest University. Not only was Valéria Dienes -- Bergson's student in Paris and the translator of his works into Hungarian -- a member of the Circle, but Bergson was a frequent topic of conversation in it.\textsuperscript{74} Indeed historian István Hermann sees the influence of Bergson as having been second only to that of Nietzsche in early-20th-century Hungarian philosophy.\textsuperscript{75}

Furthermore, through his involvement with Lajos Kassák's Budapest "Activist" movement in 1918-19, Moholy-Nagy was exposed to Monism and the Anarcho-Pacifism of German Activism, a movement founded by Kurt Hiller.\textsuperscript{76} Counting among its supporters the writer Kurt Pinthus, the editor Franz Pfemfert and the education reformer Gustav Wyneken, German Activism was part of the Reformbewegung, which was just then having a decisive effect on the Budapest avant-garde.\textsuperscript{77} Júlia Szabó refers to Wolfgang Paulsen's 1934 dissertation in which he held that Activism was in general an outgrowth of Expressionism, and that its ideological roots lay in turn-of-the-century Lebensphilosophie, particularly in the thinking of Nietzsche and Bergson.\textsuperscript{78} Whyte points out that Hiller's main source in his Activist program was his professor Georg Simmel's Lebens-
philosophie. The links between Anarcho-Pacifism and Activism were strong. Whyte specifies the effect German and Russian Anarchists and Pacifists such as Gustav Landauer, Peter Kropotkin and Mikhail Bakunin had on it. Szabó has also written of the direct influence that Monist scientists such as Ostwald and Mach exercised on Hungarian Activism. Moholy's "Light Visions" text -- supposedly a product of his convalescence in 1917 -- displays an awareness of Ostwaldian "Energeticist" Monism. If his notebook entry of 15 May 1919 is accurately dated and translated, then his references in it to "biological happiness," the projection of his own "vitality," and his project to "give life as a painter," constitute further evidence of a grounding in the Vitalist discourse. Like the Budapest Activists around Kassák and his journals A Tett [The deed] and Ma [Today], with whom Moholy was associated, the German Activists combined Leftist politics, Pacifism, Lebensphilosophie, Monism and Vitalism with an enthusiasm for Whitman and Expressionist aesthetics. As we have seen, by 1922, "Dualism" was for Moholy, a Schimpfwort.

b. Freideutsche Jugend

Thus when Moholy landed in Berlin in mid-March of 1920, and encountered Quakers and members of the German Youth Movement such as Hans Harmsen, Reinhold Schairer, Friedrich Vorwerk and Lucia Schulz, he was receptive to or familiar with the utopian Activism, the Lebensreformisch practices, and the biocentrism he encountered in their circles. Hans Harmsen, a young medical student quartered at St. Joseph’s Hospital in Berlin found Moholy-Nagy soon after his arrival in Berlin at the Hospital’s porter’s lodge, suffering from pneumonia. Harmsen nursed Moholy back to health. But not only was Harmsen a Good Samaritan; he was an aesthete, who -- along with his medical studies -- had attended Heinrich Wölfflin’s last lectures in Munich. He was happy to receive artworks as gifts of thanks, and one of Moholy’s largest and most impressive
portraits can now be identified as being of the young Harmsen. (Fig. 3-2) Later Harmsen, who became an internationally-respected specialist in public health, population, and family planning policy, built up a significant collection of works by artists such as Ferdinand Hodler, Käthe Kollwitz, Christian Rohlfs, and particularly Ernst Barlach.45

In addition to his medical and artistic interests, Harmsen -- a former Wandervogel -- was active during 1920 in the Bündische Jugend, the movement which developed out of the Freideutsche Jugend in the late teens, and he was in the student parliament as well.66 It is therefore safe to assume that it was Harmsen who put Moholy-Nagy in touch with the lawyer Reinhold Schairer (1887-1971), economic director of the Deutsche Studentenschaft, a student aid organization emergent from the Jugendbewegung.47

In March of 1920 Schairer had recently come to Berlin from Copenhagen, where he had acted as director of the Deutsche Sonderausschuss für Kriegsgefangenhilfe in association with the German Red Cross.88 Schairer continued his relief work in Berlin through the Studentenschaft by assisting with feeding and housing the students who had returned from the front. As he did not have the material means to help needy students himself, Schairer enlisted a group of English Quakers in Berlin to help set up a soup kitchen in association with the Studentenschaft's club on Breitstrasse in the city centre. Starting in May of 1920, 125 students were served daily there, and with the help of the municipal authorities, the daily capacity increased to 750.89 Moholy must have eaten at this centre after its establishment; these were the "Quaker rations" Sibyl Moholy-Nagy refers to in her biography of László.90 Such rations would have been crucial to Moholy during his first months in Berlin, before Lucia Schulz moved in with him and provided for their basic needs.91

The first official meeting of the Berlin Quaker Group was on 17 April 1920, soon after Moholy would have come into
contact with them. Had he attended their meetings, or during meals at the Quaker canteen, he would have encountered -- along with the German, English, American and Canadian Quakers -- a wide variety of non-conformists such as non-Quaker Pacifists, members of Christian sects, religious Socialists, revolutionaries, Communists, German Youth Movement adherents, and assorted occultists. Here Moholy would have had the opportunity to deepen his acquaintance with Pacifists and members of the Lebensreform movement which he had begun in Activist circles in Budapest.

As with Harmsen, Moholy's association with the Schairers went beyond their philanthropy towards him. Like Moholy, the Schairers were Leftist Pacifists associated with the Youth Movement. It was likely these common interests which encouraged Moholy to keep up his friendship with them at least until their move to Dresden in April 1921, where they became members of the circle of the Christian Socialist Paul Tillich, a key figure in the "Neuwerk" group which supported the founding of communes.

The Schairers entrusted Moholy to the care of their associate in the Studentenschaft, Friedrich Vorwerk, who helped Moholy find a place to stay in his own boarding house. Vorwerk had been an artist at the Worpswede artists' colony, and was at the time a radical Leftist Freideutsche Jugend activist. The Freideutsche Jugend had grown out of the Wandervogel movement. Its left wing was inspired by the writings of Pacifist Anarchists such as Gustav Landauer, Count Tolstoy, and the Worpswede artist Heinrich Vogeler. Both Vogeler and the Freideutsche Jugend were closely associated with German Activism. Vogeler was allied to Franz Pfemfert's Activist journal Die Aktion, and some members of the Freideutsche Jugend published Der Aufbruch during the war, an organ of German Activism which included in its circle Pacifists such as Hiller, Landauer, Wieland Herzfelde and the young Walter Benjamin. Vorwerk is quoted in 1919 as having said that he
felt himself as belonging "menschlich der linksradikalsten Gruppe der Arbeiter." Given this radicalism and his presence at Worpswede in 1919, there is little doubt that he took an active part in the short-lived Bremen Soviet Republic between 10 January and 4 February 1919. He is noted in the literature on the Youth Movement for the speech he gave at Jena in April 1919 to a general meeting of all the factions, Left, Right and "third way," of the Freideutsche Jugend. Vorwerk's "religious Bolshevism" was essentially an anarchist stance typical of Vogeler's circle, calling for the destruction of bourgeois society in order to prepare the way for the construction of a new one: "Communism will come, whether we want it or not; there remains nothing but one thing for us to do -- to go under with this world."

c. Lucia Schulz and Ernst Fuhrmann

It was through Vorwerk that Moholy met Lucia Schulz, the cultivated daughter of a Prague Jewish family. Schulz had been involved with the Youth Movement from an early age, so it was natural that after her move to Germany she should gravitate towards the same milieu. She had also been educated at the German University in Prague, where she remembers having studied science and philosophy with Ernst Mach and Richard Avenarius, whose biologicist and Monistic Empiriokritizismus would affect both her and her future husband László’s thinking. Schulz and Vorwerk probably met in Barkenhoff at Worpswede, Vogeler’s Kropotkinian biocentric Anarchist commune, where Schulz had spent time in 1918 and 1919. The Barkenhoff commune was part of what Ulrich Linse has referred to as the second wave of the German communard movement, the one dominated by members of the Freideutsche Jugend from about 1918 to 1923. A major inspiration on the anarchist commune movement was Landauer, who had translated Kropotkin’s Mutual Assistance in Nature into German in 1908, and who was one of the leaders of the Bavarian Soviet of April 1919. At Bar-
kenhoff Lucia was one of the "Pastors, sculptors, artists... and many women [who had] come to hear about Communism first hand," as Vogeler put it. She participated in the commune's intellectual life through her contributions under the pseudonym "Ulrich Steffen" to Neubau, the Barkenhoff newsletter. Besides Schulz and Vogeler, the only author who contributed to this first issue of Neubau was Ernst Fuhrmann, the self-described Biosoph and anarchist theorist of biocentrism. As we have seen, Francé and Klages exercised strong influences on the ecological, nature-centric ideas of the Freideutsche Jugend, and on the German Youth Movement in general. Fuhrmann's contact with Barkenhoff represented a direct channel to contemporary biocentric thinking. Both Vogeler and Fuhrmann were members of the Hamburg poet Richard Dehmel's circle, which may be how they came into contact, and Franz Jung implies that Fuhrmann spent time at Barkenhoff "immediately after the war," in the same circle Lucia Schulz was in at that time. Vogeler's letter to Fuhrmann implies that he came to value Fuhrmann's Biosophie highly.

Vogeler's close friend, the collector and Folkwang-Museum founder Karl Ernst Osthaus, hired Fuhrmann to head the anthropology department of his museum in 1919, and appointed him director of the Folkwang-Museum in 1920. Fuhrmann founded the Auriga-Verlag there, hired Albert Renger-Patzsch as his photographer, and published a series of books in conjunction with the Folkwang-Museum's collections whose stated purpose was to promote "organische Richtungen für unsere gegenwärtige Kultur." One of these publications, Der Sinn im Gegenstand, propounded a Monist, organicist aesthetic based on a study of ornament in ancient and "primitive" art. "Von dieser ... Basis aus mag untersucht werden," writes Furhmann in an evident reference to Ernst Haeckel's project for a Monist "religion," "wie eine Erneuerung der Kunst im Werke möglich wäre, und sie sich bereit machen kann, den Geist einer
Evidence of Lucia Schulz's awareness of Vitalmystik is her article "Symbole" (published in Freideutsche Jugend in 1919), in which -- as we saw at the start of this Chapter -- she evinces a Monist kosmovitalen Weltanschauung that assumed the unity of body and soul, and of the body and soul in turn with the cosmos. Her ideas may reflect not only Vogeler's nature mysticism and Fuhrman's Biosophie, but also Klages' Biozentrik, so influential on the Freideutsche Jugend. In any case, it is probable that László Moholy-Nagy was in contact with Fuhrmann during the twenties, for he was the first to publish the work of Albert Renger-Patzsch within an avant-garde artistic context.

In addition to accommodating what we could term "New Age," Lebensreform and biocentric communard ideas, Barkenhoff was a centre of the left-wing of the Freideutsche Jugend, and Schulz, like Vorwerk, was its active participant. Like some members of Barkenhoff, Schulz was involved in the fighting at the time of the suppression of the Bremen Soviet on 4 February 1919. Heinrich Vogeler recalls that Schulz and her "active Communist" friend Klara Möller, both Barkenhofferinnen at the time, assisted the wounded in the battles in which thirty people were killed. He also suggests that they were engaged in intelligence gathering and information transfers among the radical groups: "They were in the midst of the battle and they were able to shelter some threatened and many wounded comrades in the Bremen City Hall. They became able Party workers [tüchtige Parteiarbeiterinnen]." A further manifestation of her engagement with the fallen of Bremen was her publication -- again under the pseudonym Ulrich Steffen -- of an Expressionist-style poem calling for donations to help build a monument for the heroes in a 1919 brochure published for the purpose. Indeed, of the Moholy-Nagys Lucia was politically the braver and more committed of the two. While he never joined the Communist Party, László's political sympath-
ies are indicated by his friendships of the time with Commu-
nists and Linksradikalen. Moholy was close to Communist Party
politics, but eschewed membership and commitment, content with
being the sort of idealistic "fellow-traveller" that hard-line
figures within the Party regarded with contempt. 119

During the winter of 1919-20, after she left Barkenhoff,
Schulz worked for the Hamburg bookstore and publishing house
of the Freideutsche Jugendverlag publisher Adolf Saal. 120 As
publisher of Freideutsche Jugend since the Hamburg journal’s
inception soon after the movement was founded in December
1914, Saal had been at its core. 121 We have seen that Schulz
published in Freideutsche Jugend, and given her skills, it is
likely that she did editorial work for the journal and
publishing house in addition to work in the bookstore. Through
her connections with Barkenhoff and the radical publishing
sector, Lucia might also have come into contact with Kurt
Schwitters. Schwitters shared the Hannover publisher Paul
Steegemann with Vogeler and his wife Martha’s lover Ludwig
Bäumer. As a consequence Schwitters visited Worpswede repeat-
edly in 1919-20. 122

Thus, during her time at Barkenhoff Lucia would have, in
addition to participating in communal agricultural activities,
acquired an education in anarcho-Communist, Lebensreform and
biocentric ideas. As this array was analogous to the scene at
the Berlin Quaker centre in 1920, 123 at the time of their
meeting László and Lucia would have had much in common: assim-
ilated Jewish backgrounds, an awareness of biocentrism, 124 a
commitment to Pacifism, to Expressionist avant-garde art and
aesthetics, and to a radical left-wing, indeed Communist,
politics; and first-hand experience of Soviet republics -- he
in Budapest and she in Bremen. What is crucial for our argu-
ment here is that László, eating at the Quaker Centre, and
living first with Vorwerk and then Schulz, was exposed to the
core of the Youth Movement and Lebensreform. As Sibyl Moholy-
Nagy phrased it, "[t]hrough [Lucia] and a circle of friends,
Moholy became part of the movement for psychobiological reform that spread through Germany after the First World War." Sibyl pins this connection to the Mazdaznan cult, a view which Veit Loers accepts uncritically. While Lucia and László were likely exposed to Mazdaznan, I know of no evidence apart from Sibyl's text that they were its -- much less the Theosophists' -- followers. What they were involved in was the Leftist biocentric camp of the Freideutsche Jugend. By late 1920, they also came into touch with Berlin avant-garde circles, through which László befriended biocentric avant-gardists such as Hausmann and Behne. In fact Moholy's oeuvre reverberates with biocentric ideas culled from Lebensreform more so than it does with Marxism or occultism. As he wrote in 1928,

[dass] der klassenkampf letzten endes nicht um das kapital ... sondern ... um das recht auf eine be
friedigende beschäftigung, ... gesunde lebensführung und erlösende kräfte-auswirkung geht. utopie? nein, aber eine unermüdliche pionierarbeit. alles ein
setzen für das ziel -- oberste pflicht für jene, die bereits zu der erkenntnis einer organischen lebens-
führung gekommen sind.... hier stösst das erzieh-
erische problem ins politische.

Sibyl's reference to "psychobiological reform" alludes to László's origins in the biocentric wing of the Freideutsche Jugend, as she may have conflated the early Freideutsche Jugend contacts with Moholy's later interest in Raoul Francé's biocentrism, an interest she was well aware of. As we have seen in Chapter Two, "psychobiology" was a term employed in connection with Francé's pre-World War One thinking. The clearest expressions of Moholy-Nagy's biocentrism were in his pedagogical writings, the thinking for which was forged within the German Schulreformbewegung and the communard movement of the early 1920s.
"A tongue of fire to expound his happiness": The Communes and Moholy-Nagy’s Biocentric Pedagogy

The nineteenth century has not only opened our eyes to the aesthetic enjoyment of the microscopic world; it has shown us the beauty of the greater objects in nature.... All this progress in the aesthetic enjoyment of nature -- and, proportionately, in the scientific enjoyment of nature -- implies an equal advance in higher mental development and, consequently, in the direction of our monistic religion. (Haeckel 1899):12

Wir verlassen die grauen Städte und betreten den Wald. Auch hier erschüttert und erhebt uns die Lebenseinheit des Gemeinschaftswillens, den die Natur in der beispielgebenden aufstrebenden Kraft der Baumsäulen zum Ausdruck bringt. ... Wir liegen am Strand des Meeres; eine unbegreifliche Sehnsucht erwacht in uns, eins zu sein mit den ewigen naturhaften Rhythmen, die Wandlung zur Einheit bedeuten. (Heinrich Vogeler)13

From his biological being every man derives energies which he can develop into creative work. Everyone is talented. ... One has to live "right" to retain the alertness of these native abilities. But only art -- creation through the senses -- can develop these dormant, native faculties toward creative action. Art is the grindstone of the senses, the coordinating psycho-biological factor. The teacher who has come to a full realization of the organic oneness and the harmonious sense rhythm of life should have a tongue of fire to expound his happiness. (Moholy-Nagy 1928):14

In Dresden Reinhold Schairer became a member of the circle of the Christian Socialist philosopher Paul Tillich, a key figure in the "Neuwerk" group, which established two agricultural communes with Quaker support. One of these, the "Bruderhof," was founded in the Rhön, the central German mountain range southeast of the city of Fulda.15 This area subsequently became a favoured location for communes related to the German Youth Movement.

After their marriage in January 1921, Lucia and László spent their vacations at or near one of the communes in the Rhön which had their origins in the Freideutsche Jugend. The
Moholy-Nagy's production of the Ackerfelderbilder during what must have been the summer of 1921, perhaps in August, after Lucia's job at Rowohlt Verlag ended. Moholy-Nagy recalled "Spending a holiday in the country, where from the hilltops I could see hundreds of small strips of land, I painted pictures with coloured stripes in juxtaposition and called them 'acres.'" While clearly affected by the mechano-Dada style of Picabia and Schwitters, these works reflect László's fascination with the colour rhythms of the mountainous land depicted, as well as with the trains, tractors and power lines in it, an inscription of the "technological" on the "natural" -- a synthesis of the two -- untypical of postwar avant-garde art, but, as we shall see, characteristic of the postwar biocentric Constructivist perspective. (Figs. 3-3, 3-4)

As they did the following summer, the Moholy-Nagys may have stayed in the Rhön mountains on the Ackerfelderbild vacation, close to the Schule für Körperbildung Loheland, an Anthroposophical, holistically oriented women's commune and gymnastics school founded by Hedwig von Rohden and Louise Langgaard near Fulda in 1919. Lucia might have first met von Rohden and Langgaard on their visits to Barkenhoff, or she may have heard of Loheland from the Freideutsche Jugend activist Paul Vogler, who became her friend while she was in Hamburg, and whose sister Elizabeth was a dancer. This
school spawned the Loheländerin, a liberated and ecologically aware female type famous in Weimar Germany. The Moholy-Nagys certainly spent their vacation of July 1922 at Loheland, for Weyhers, the village in which we know they roomed, is a mere three-kilometre walk southeast of the school. According to Lucia it is here that they developed their photogram practice and formulated the ideas published as "Produktion Reproduktion" in the September De Stijl. Moholy-Nagy later wrote that he adapted the idea of the photogram from a Loheländerin who was making photograms using translucent plants, and his photograms of plants of around 1922 were probably inspired by this practice.

The organic-functionalist core idea of "Produktion Reproduktion" -- emphasizing the development of the innate creativity of each individual -- was typical of kunsterzieherisch and reformpädagogisch ideas current at the time:

The human construct is the synthesis of all its functional apparatuses, i.e. man will be most perfect in his own time if the functional apparatuses of which he is composed -- his cells as well as the most sophisticated organs -- are conscious and trained to the limit of their capacity. Art effects such a training... Andreas Haus points to the ultimate origin of the idea concerning the desirability of sensory education in the late 19th-century Empiriokritizismus of Ernst Mach and Richard Avenarius, who proposed individual subjectivity as the source of perception:


Haus points out that these positivist Monist ideas were promulgated by Robert Müller-Freienfels after the war, whose book Psychologie der Kunst was published in 1922, the year the article was written. He does not offer evidence that Lucia
or László would have seen the book, but he does point out the diffused transmission of Empiriocritical theories through the Russian and Hungarian avant-gardes, on whom Alexander Bogdanov -- a student of Avenarius in Zurich -- exercised an influence via his Proletkult movement, as well as through Moholy-Nagy's friends Hausmann, Rudolf Blümner and Adolf Behne, and their interest in the psychovitalist perceptual theories of Ernst Marcus.\(^{149}\)

Another source for the Moholy-Nagy's biocentric pedagogy is the kunsterzieherisch concept of the Schulreformbewegung as it was dispersed through the Youth Movement, its communes and its schools.\(^{150}\) Lucia Schulz was likely aware of the holistic pedagogy of the Schulreformbewegung through experience with her Hamburg employer Adolf Saal, who published basic documents of this movement, and whose bookshop, where she worked, would have carried its other publications.\(^{151}\) Lucia was also exposed to the Gustav Wyneken-inspired pedagogical ideas of Heinrich Vogeler during her stay at Barkenhof. Vogeler put his holistic kunsterzieherisch pedagogical ideas into practice at the Barkenhoff School.\(^{152}\) It is conceivable that László met Vogeler or heard him speak, for the Bund Entschiedener Schulreformer (BES) of the Entschiedener Jugend (an outgrowth of the Freideutsche Jugend founded in September 1919) held a series of lectures and conferences on the subject of pedagogical reform during the twenties.\(^{153}\) As a recent Barkenhoffer-in, Lucia might have wished to meet Vogeler when he came to Berlin, and had she done so it is conceivable that she would have taken her new lover László. Thus László might have met or heard Vogeler around 11-19 June 1920, when Vogeler took part as a delegate at the Freie Reichsschulkonferenz of the BES in Berlin, or when in October 1920 there was a meeting in Berlin of the BES at which Vogeler gave a lecture.\(^{154}\) As well as from Lucia, László might have heard of the events from Harmsen -- also a member of the BES -- or from Kállai, a teacher interested in the new pedagogy.\(^{155}\) Given that Klages' and
Benjamin’s friend Gustav Wyneken -- the first theorist of "youth culture" -- taught at the Barkenhoff School before it was closed in 1921, it is likely that Lucia was exposed to his John Dewey-inspired Arbeitsschule methods as well.\textsuperscript{56}

The Moholy-Nagys’ pedagogy was affected by the ideas of the Freideutsche Jugend pedagogical reformer Marie Buchhold and the music teacher Heinrich Jacoby. Buchhold was closely associated with Paul Vogler’s sister, the Freideutsche Jugend pedagogue and Wyneken-disciple Elisabeth Vogler. Elisabeth had been at Loheland in 1919-20, and the Moholy-Nagys had met her in the Rhön by 1922, perhaps at her and Buchhold’s home.\textsuperscript{57} In the fall of 1923, again with financial help from Quakers, Buchhold and Vogler founded a women’s commune and school at Schwarzerden, 10.5 km east of Loheland.\textsuperscript{58} László and Lucia might have taken a rest in the Rhön mountains after the end of the Bauhaus-Woche on 19 August 1923 while Buchhold and Vogler were working on their new commune. The Moholys certainly vacationed at Neuwart, a hilltop site two kilometres west of Schwarzerden and eight kilometres southeast of Loheland during the summers of 1924 and 1926.\textsuperscript{59} Lucia would have participated in the Ferienkurs of Schwarzerden, a veritable smorgasbord of Lebensreform practices. There were lectures, workshops and demonstrations in gymnastics, massage, holistic health, breathing, pedagogy, music, literature and psychology, and László might have joined her on occasion, as Elisabeth remembers.\textsuperscript{60} That László enjoyed these stays at Schwarzerden is indicated by his 26 July 1924 letter to the Van Doesburgs, which he opened with "wir sind wieder in der rhön bei unseren wirklich-schönen bergen ... gelandet, da wir kein geld hatten an die see zu fahren..... es regnet fast dauernd, aber fern von allem betrieb fühlen wur uns ganz ausgezeichnet."\textsuperscript{61} It is affirmed by Lucia, who remembered that

Aber nicht nur auf dem Wege menschlich-pädagogischen Austausches, auch zur Anregung und Erneuerung eigener Denk- und Arbeitsprozesse hat in die Klima und Landschaft der Rhön gebotene Lebensqualität wesent-

László’s commitment to the women’s commune is indicated by his colour scheme for the Gymnastics Hall, its most important structure. In fact, he is the only prominent artist mentioned by Elisabeth Vogler in connection with the commune.

At Loheland in the early 20s, and at Schwarzerden in 1924 and 1926, Moholy was exposed to Buchhold’s biocentric Feminist pedagogy. This pedagogy indicates that she is an unrecognized pioneer of eco-Feminism. Evidently affected by J.J. Bachofen’s hypothesis of Mutterrecht -- the matriarchal structure of ancient society -- which circulated in the Stefan George circle of which she was a member, as well as by Klages’ environmentalism, Buchhold’s diary of 1924 contains passages such as: "Unter Körperlehre ... ist gemeint die Erkenntnis des menschlichen Organismus innerhalb des Organismus der Welt" and "Die Frau ... braucht eine von sich aus gefundene frauenhafte ... Naturlehre als Weltanschauung." The biocentric aspect of Buchhold’s thinking is echoed in László’s own pedagogical writings of the time (which Lucia helped him formulate), for example: "Der Mensch ist der Mikrokosmos. Über ihm und in ihm walten universelle Gesetze. Sein ganzes Wesen und Schaffen ist ein einziger Versuch, diese Gesetze auszudrücken, ihnen ein Form zu verleihen." In his 1928 pedagogical treatise Von Material zu Architektur, László acknowledged his debt to the Reformschulbewegung and the German Youth Movement, to Wyneken and Vogeler, as well as, indirectly, to the Freideutsche Jugend and its communes.

A decisive source for László’s pedagogy was the work of the biocentric music teacher Heinrich Jacoby, whose thoughts on "schöpferische Musikerziehung" he planned to publish in the Bauhausbücher series, and whose article he planned to publish in i10 in 1927. Though neither of these projects were real-
ized, Moholy praised Jacoby's project as "eine der wichtigsten geistigen leistungen unserer Zeit" and as belonging "to the most valuable sources from which our present and future pedagogy can draw." Moholy might have learned of Jacoby by attending his lecture at the Berlin Kunsttag of the BES on 5 May 1921, or he might have learned of him at Loheland, whose founders von Rohden and Langgaard were well-versed in Jacoby's employer Émile-Jacques Dalcroze's method of rythmic dance education. In any case, as Lucia pointed out, and as László himself acknowledged, it is from Jacoby that László adapted the idea that "everyone is talented," and that the job of the teacher is to draw out this talent in each student.

This makes it clear not only that the basis for Moholy's pedagogy was biocentrism, but that it was -- like Haeckel's and Francé's -- a normative biocentrism. At the start of this section I included a passage from The New Vision, the American edition of Von Material zu Architektur, which Sibyl Moholy-Nagy chose to quote in her biography of László. We can now recognize this passage as an amalgam of Empiriokritizismus, Jacoby's pedagogy, concepts of Kunsterziehung emerging from the Schulreformbewegung, Francé's biologic and normative Objektive Philosophie, Vitalism, and Monism. László begins Von Material zu Architektur with a statement of pure biology: "jede handlung und jeder ausdruck des menschen setzt sich aus verschiedenen komponenten zusammen, die im biologischen aufbau begründet sind." An equally clear statement of László's "biological" approach to education is in The New Vision, into which he inserted a section entitled "Biological needs," probably because he felt he had to explain these terms to an American readership:

In this book the word "biological" stands generally for laws of life which guarantee an organic development. If the meaning of "biological" were a conscious possession, it would prevent many people from activities of damaging influence.... The oncoming generation has to create a culture which ... strengthens the genuine biological functions.
Moholy-Nagy’s biocentric pedagogy was a project he continued to develop after his move to the United States. Indeed, in America he had the opportunity to correspond with John Dewey, whose pragmatist concept of "learning by doing" inspired the same Schulreformbewegung Moholy had been inspired by.3

3. Biozentrik at the Gropius Bauhaus

The Bauhaus strives to bring together all creative effort into one whole, to reunify all the disciplines of practical art.... (Gropius 1919)74

Welt/Materie - Geist/Stoff - Unstoffliches Stoffliches/Sein - Unseidend Seiendes/Einheit - ewig verket- tete zwiespältige Zweihheit, Erlöst im Formwerk des formenden Menschen zu einfältiger Einheit. (Itten 1920)75

Our times lack a great unifying idea or religion. The artists are striving to create one, and the way to it appears to lead via absolute individual subjectivity. Like the mystics today’s artists hope to pass through total self-absorption to oneness with God and the universe. All is part of nature, part of the fabric of the universe ... everything functions together to express the essence of the universe. (Schlemmer 1918)76

The aim of our theoretical work is always, in one form or another, the organisation of differences into unity, the combination of organs into an organism.... Like a man, a picture has skeleton, muscles, and skin. We may speak of a specific pictorial anatomy. (Klee 1922)77

The artist of today ... is a creature on the earth and a creature within the whole.... Accordingly a sense of totality has gradually entered into the artist’s conception of the natural object, whether this object be plant, animal, or man. (Klee 1923)78

Es scheint mir, dass eine ... Einstellung zur ‘Na- tur’ und zum ‘Mensch’, als Teil der ‘Natur’, auch in den positiven Wissenschaften heute an der Zeit wä- re.... Auf diesem Wege kommt die Kunst und die Wiss- enschaft von der einseitig entwickelten Spezialisie- rung ab, die eine fatale Zerstreuung mit sich brin-
gen musste.... Der verlorene Zusammenhang des Innen in allen Welten... wird sich in ein Zusammen schmelzen verwandeln -- äussere Unterschiede, innere Einheit. (Kandinsky 1925)

A specialized education becomes meaningful only if a man of integration is developed along the lines of his biological functions, so he will achieve a natural balance of his intellectual and emotional power .... The future needs the whole man. (Moholy-Nagy 1929)

Yes, I agree that essentially or eventually everything is one unity. (Wassily Kandinsky)

Le changement fondamental de notre conception du monde, transmutation profonde d'ou résulte la grande révolution formelle des arts, réside dans l'absolue négation du matérialisme et du spiritualisme pur. Le résultat de ce changement est l'avènement de l'idée synthétique dans laquelle esprit et matière forment un seul processus. En art l'esprit et la source, la matière ... est l'expression. (Kandinsky 1936)

It is not necessary to rewrite the history of the Bauhaus in light of the foregoing discussion. Its reexamination however, is required given this thesis' premise of the importance of biocentrism. The standard narrative of the institution (early romantic/expressionist/occult "Itten" phase; sachlich "Moholy-Nagy" period from 1923 to 1928; functionalist/Marxist era under Meyer) is accurate as far as it goes, but if it is understood simplistically it can also be misleading. As early as 1968 Joseph Rykwert wrote of "The Dark Side of the Bauhaus," that is its "esoteric" component being more integral to Gropius' thinking than hitherto believed. As Franciscono observed in 1971:

If ... it is ... convenient to speak of the "Itten years" and the "Moholy-Nagy ... years" of the Weimar Bauhaus as a shorthand for the differences of philosophy in the two periods, we should not make the mistake of dividing them into neatly separated phases.... It is not merely that the Bauhaus was in continuous process of change, but that from the beginning it was a tangled skein of various and even conflicting motives and tendencies, nowhere more in
Scholarship since Francisco has proven him right. Sara Lynn Henry, Schall, Findeli and others have shown that the Bauhaus was a multifaceted institution, one which was more than the bastion of scientistic, dualistic, technocentric, sachlich positivism it is popularly conceived to be. As Henry noted in 1976, it was one to which neo-Romantic Monistic, organic and nature-centric -- as well as esoteric -- attitudes were innate, and not merely during the first three years. Central components of biocentrism such as Lebensphilosophie, Organicism, Holism, Monism, and Neo-Vitalism were threads which extended throughout all of the Bauhaus periods.* The Monist/Holist/Organicist topos of the "unity" and/or "integration" of the arts, of the cosmos, of humanity and nature, of humans with their surroundings, of what we would since fractal theory term the "self-similarity" of microcosm and macrocosm, was a leitmotif of Bauhaus thinking, just as it was of the first Romanticism.* Also, prominent Bauhäusler such as Klee and Kandinsky were Vitalist and Monist Organicists, who saw the world and its components as nested hierarchies of organisms animated by an ineffable life-force. While the early 19th-century Romantic heritage is by and large acknowledged in the historical literature on the Bauhaus, a crucial dimension missing from the standard narrative -- one which demonstrates both the temporal continuities and discontinuities in it -- is the way in which Biozentrik was manifest among Bauhäusler.*

Moholy-Nagy's biocentrism was part of a discourse on nature, "life" and "unity" carried on within the Bauhaus, which reflected prevailing currents of thought in Weimar Germany: the Romantic nature-centrism of the Youth Movement, i.e. the Reformbewegung; Haeckelian/Ostwaldian Monism; Goethean Organicism; Vitalmystik, Holism; Empiriokritizismus, Gestalt psychology, Klages' and Prinzhorn's Biozentrik; von Uexküll's biologische Weltauffassung, and Francé's Objektive Erkenntnislehre, which legitimized the International Construc-
tivists' interest in nature. Moholy-Nagy's replacement of Itten did not merely signal the displacement of a "romantic Expressionism" by its Constructivist Other at the Bauhaus. Rather, this shift towards the "sachlich" and away from the "occult" mirrored the shift within the discourse of Biozentrik itself described in Chapter Two; from a Romantically based pre-war neo-Vitalist Monism towards its more functionalist variant as propounded by Francé. The objection -- implicit or otherwise -- of other nature-centric Bauhäusler such as Kállai, Klee, Kandinsky, and Schlemmer, to Moholy's and later Hannes Meyer's project and approach reflects the uneasy cohabitation of a retardé pre-war Monism with Francé's and von Uexküll's post-war sachlich revision of it. The neo-Romantic kosmisches Einheitsgefühl of Vitalmystik had in some cases evolved by the late 20s into its Klages- and Prinzhorn-inspired doppelgänger, the notion of the "demonic" in nature. As Kállai wrote: "Die Bioromantik scheut es nicht, mit offenen Augen in diese Abgründe unserer Kreatürlichkeit zu blicken. Sie wagt es, unsere Zivilisation mit Gleichmut, ja mit Pessimismus zu betrachten. Sie wagt es ... sich einer bösen Lust am Chaos, am gefährlich Unterirdischen hinzugeben." Those like Kállai, Klee and Hausmann who espoused this complex, even pessimistic view of nature were annoyed by what they saw as the naive optimism of Francé's biologism. As seen in Chapter Two, history proved the pessimists right.

a. Gropius

The pre-history of the Weimar Bauhaus indicates how firmly rooted Gropius' re-founded institution was in fin-de-siècle biocentrism. Henry van de Velde, the Belgian director of the Bauhaus' predecessor, the Weimar Kunstgewerbeschule (1908-1914), was along with August Endell and Hermann Obrist, a leading figure of nature-centric European Jugendstil, what Robert Schmutzler has referred to as "Biological Romanticism." Furthermore it was the close friends Van de Velde,
Obrist and Endell, who were most affected by Haeckel's Monist program of the normative aestheticization of scientifically derived undersea and microscopic imagery. In nominating Obrist and Endell as candidates to replace him when he had to resign in July 1915, van de Velde seems to have meant for the school to continue in an aesthetically Monist, Haeckelian direction. Van de Velde's inclusion of the young Gropius on this slate was an indication, furthermore, of what he might have perceived to be Gropius' own organicism. We have also seen how Bauhaus masters such as Herbert Bayer, Paul Klee, Wassily Kandinsky, Oscar Schlemmer, Moholy-Nagy and Johannes Itten -- as well as Bauhaus students -- had links to or roots in the Jugendbewegung, in which the question of nature was so central. While Gropius had been neither a Jugendbewegte, nor a member of the Monistenbund, his participation in the Deutsche Werkbund (founded in 1907) and his association with van de Velde and Karl Ernst Osthaus, brought him into close contact with pre-War biocentric aesthetic thought, whose organicist vocabulary he adopted. Thus, in a prewar lecture given for Osthaus he stated that "Modern living [requires] new building organisms expressing the life forms of our times," while in a letter to Fritz Mackensen concerning his plans for the Bauhaus-to-be, he spoke of an "autonomous teaching organism." Furthermore, his participation, with van de Velde, Taut, Obrist, Endell, Osthaus and others in the pre-war German Werkbund; and with Taut and Behne in the leadership of the Arbeitsrat für Kunst, the Gläserne Kette, and the Novembergruppe (in effect, the German Reformbewegung in its artistic-political cast), brought him into close contact with aspects of biocentrism in their various manifestations, with neo-romantic Haeckelian Monism as well as with its von Uexküllian biologistic reform. Though he was not vitalmystisch as Taut was at the time, the Monist organicism of the Glass Chain clearly had an effect on Gropius. In early 1919, at the time of his appointment to the Bauhaus, he wrote, "Beweglichkeit,
dem Akademischen werfe ich den Fehdehandschuh hin, kein mechana-

cischer Aufbau, sondern lebendiger, organischer."196 Gropius' 

"Programm des Staatlichen Bauhauses" of later that same year -

- in addition to the Nietzschen overtones observed by Schall

-- is both Monist and organicist: "The Bauhaus strives to

bring together all creative effort into one whole, to reunify

all the disciplines of practical art..." while aiming for

"organic forms developed from manual skills."197

Hence it is not surprising that Gropius should correspond

with Gustav Wyneken and that he should invite him and the Leb-

ensphilosoph Hermann Keyserling to lecture at the Bauhaus

early in 1920, even if he did veto a lecture by Heinrich

Vogeler for political reasons.198 Indeed, no lesser figures

of biocentrism than Driesch and Ostwald were recruited as

members of the Governing Board of the "Circle of Friends of

the Bauhaus," formed in 1924 to support the school in the face

of mounting attacks in the Thuringian parliament, and both

lectured there as well.199

While Klages did not become an active Bauhaus supporter,

two of his disciples did: The art historian Josef Strzygowski

was another member of the original Board of the Friends of the

Bauhaus,200 and in 1932, during the final struggle to save

the Dessau Bauhaus, Hans Prinzhorn -- a friend of Mies van der

Rohe's since 1910-11 -- helped Ludwig Grote organize to save

the school.201 Klages' ideas and Prinzhorn's adaptation of

them affected the school throughout its existence. Prinzhorn's

analysis of outsider art impressed the future Bauhaus faculty

as early as 1920, when Schlemmer and Klee first heard the

psychiatrist lecture about the art of mentally ill people. In

the months following the publication of Prinzhorn's Bildnerei

der Geisteskranken in June 1922, the book "kursierte ... im

Bauhaus" according to Lothar Schreyer.202 During 1923

Prinzhorn would have been aware of the dance experiments being

carried out by Schreyer and Schlemmer at the Bauhaus through

his then lover Mary Wigman, with whom he lived in Dresden.203
In 1929 Prinzhorn lectured at the Bauhaus on his Monist "Body-Soul-Unity" psychology and his explicitly biocentric "psychology of the personality," while Kállai praised his thinking as editor of bauhaus, and Prinzhorn lectured again on 3 February 1932, on "Trieb und Wille im künstlerischen Gestaltungsvorgang." Schlemmer taught Klages' psychological theories in his course on "Man" in 1928-29, while the two Gestalt psychologists, Felix Krüger and his follower, Karlfried Count von Dürckheim lectured in 1930-31, the latter discussing Klages' Der Geist als Widersacher der Seele, according to Howard Dearstyne's notes. Strzygowski, Driesch and Ostwald continued to be members of the Circle of Friends of the Bauhaus at least until 1929.

Raoul Francé and his wife, the writer Annie Harrar, who were spending their winters in Weimar at the time, tended towards the neo-conservative elite social circle of the town, headed by Elisabeth Förster-Nietzsche, whom Gropius is known to have disliked but with whom he strove to maintain cordial relations. Indeed beyond an illustration of Weimar's vitality there is a critical undertone to Francé's words in the introduction to Plasmatik, written in Weimar in 1923. Taking the reader on an imaginary walk through the town he remarks, "Aber neben dem stillen Weimar gibt es eines voll lautem Vorwärtsdrängen, voll von 'Bauhausgedanken'..." Their ambivalence is indicated by the fact that in the midst of strong anti-Bauhaus feelings in 1923, the Francés not only visited the Bauhausausstellung but they spent an evening with the busy Gropius, who patiently explained to them the Bauhaus and its pedagogical principles. It is possible that -- as with Förster-Nietzsche -- Gropius was looking for support from the Francés and that he would have tried to recruit them to the Circle of Friends of the Bauhaus the following year, but whether they would have accepted such an invitation or not (for they were not impressed with the exhibition), the Francés had left Germany for Austria by 1924, and did not
become the Bauhaus' active supporters. Nevertheless, Francé’s effect on pedagogy and design practice was stronger than any other biocentric thinker’s at the school apart perhaps from Klages. As we shall see, his ideas, particularly on Biotechnik, were important for the pedagogy of Moholy-Nagy, Hannes Meyer and Mies van der Rohe, as well for the architecture theorist Siegfried Ebeling while he was a Bauhaus student during the mid-20s.

b. Itten

It is in this light that we must consider Gropius’ decision to take Behnel’s advice in deciding on Moholy as Itten’s replacement. It is also in this light that we should see Gropius’ hiring of a holist and organicist Monist such as Johannes Itten to teach the crucial introductory course, even if Itten’s ideology was suffused with an occult sensibility. Itten is usually seen as simply an occultist, opposed to Gropius’ sachlich tendencies. But Das frühe Bauhaus und Johannes Itten, a reexamination of Itten’s oeuvre in the context of the early Bauhaus, has shown otherwise. It is as much an oversimplification to label Itten as having been merely an occultist as it is to do so with Steiner, Taut, Maeterlinck, Kandinsky, or others whose "kosmovitalen Einfühlung," whose "Vitalmystik," straddles the boundary between the epistemological fields of Biozentrik and the Esoteric.

Peter Hahn has concluded that Itten’s impulse was "ganzheitlich," i.e. holistic. Hans Christoph von Tavel agrees: "In all seinen Tätigkeiten am Bauhaus liess sich Itten, reagierend auf die Erkenntnis der Widersprüchlichkeiten in der Realität, vom Ideal einer umfassenden, harmonischen Ganzheit im Einklang mit dem ganzheitlichen Wirken des Kosmos. Itten sucht für sich und fördert von seinen Schülern im Tun, im Denken und im Fühlen den möglichst reinen Ausdruck für diese Ganzheit." Identifying Goethe as a source for this vitalmystisch holism, and referring to Itten’s text quoted at
the start of this section, Von Tavel identifies the artist's essential Monism: "Itten suchte seit seiner Stuttgarter Zeit nach der Überwindung des Dualismus und nach Erlösung von diesem durch eine übergeordnete Einheit." Von Tavel interprets Itten's growing involvement with the Mazdaznan discipline during his Bauhaus period as symptomatic of his Monism, as this "boten ihm in gewissen Sinne einen Schlüssel zur Lösung des Grundproblems vom Zwiespalt zwischen Materie und Geist," an issue which also concerned Schlemmer.215

Like Moholy-Nagy's, Itten's pedagogy has been shown to have been organicist, and like Moholy's it was informed by the ideas of John Dewey and Jacoby among others.216 Itten's concept of artistic formation on the physical, seelisch and geistig levels, as articulated in his 1921 publication Analy sen alter Meister, is an amalgam of Anthroposophy, Klages' Ausdruckskunde and Francé's theory of formation in nature propounded in his book Die Pflanze als Erfinder: "Everything vital reveals itself to man through movement. Everything vital reveals itself in forms. Thus all form is movement and all movement is manifest in form. Forms are receptacles of movement and movements the essence of form."217 Itten's art reflects his Monist and organicist holism. One of his decorative plaster panel relief sculptures of 1920 is entitled Organisch. Concerning his spiral Tower of Fire model, which he realized with the cooperation of his students, Itten wrote on 15 December 1920, "Bauhaus bauen, aufbauen, zusammenfügen -- verschiedene Kräfte ... zum einheitlichen Organismus zusam menbauen."218 Von Tavel accounts for Itten's stylistic eclecticism with this holist Monism, which he sees as having included "einen sowohl naturwissenschaftlich wie romantisch ausgerichteten Naturalismus."219 For all these reasons von Tafel argues against labeling Itten and his period at the Bauhaus "expressionist" though he stops short of suggesting that they would more accurately be referred to as holist, Monist or organicist.220 Granted, relations between the haut-
bourgeois Gropius and the charismatic counterculture-figure Itten deteriorated over time. Still, given his friendship with the biocentric Anthroposophist Taut, and his attendance at a Mazdaznan Congress with Itten in the summer of 1921, Gropius may not have been as alienated from the content of Itten's teaching as he was from the form it took.  

C. Schlemmer

It was not only Itten and Moholy-Nagy who embodied biocentric views at the Bauhaus. Even after his arrival at the Bauhaus to replace Itten in April of 1923, Moholy-Nagy would have been able to share such views with his colleagues Oskar Schlemmer, Paul Klee and Wassily Kandinsky. Not only had Schlemmer been part of the Youth Movement, his wife Helena Tutein (Tut) had studied dance at Dresden-Hellerau under Dalcroze. His wartime diaries give evidence of an awareness of Haeckel's ideological and aesthetic programs, as well as of a deep Monism:

Why does one need nature? Because nature offers forms which the imagination cannot create, or because the imagination is enriched, stimulated by the forms perceived in nature. Let us ... depict things which are only obscurely sensed ... The boundaries of awareness will be expanded, and our progress towards solution of the great riddle [grosse Rätsel] hastened. Everything should merge into one great current. Through nature ... this handclasp with the universe ... nature's vitality flows into the work of art.

By 1920, at home in Stuttgart, Schlemmer was not only becoming involved -- like his fellow Adolf-Hoelzel-pupil Itten -- with Mazdaznan, he was reading the popular biocentric and lebensphilosophisch writers of the time: Oswald Spengler, Hermann Keyserling, Walt Whitman and the Norwegian novelist Knut Hamsun. In a letter to Tut Schlemmer, he notes, "Hamsun ... would strengthen your existential sense of merging with the universe; you find the same thing in Walt Whitman ...." A couple of months later he was fascinated with a
lecture given by Prinzhorn, soon to become the disciple of Klages. Schlemmer was so taken with the writings of the popular Lebensphilosoph Keyserling that he considered going to Darmstadt to study at Keyserling’s newly established "Schule der Weisheit."  

At the Bauhaus Schlemmer espoused a Monist stage theory, "that the human body forms a vital continuum with the space surrounding it. By uniting the planimetric and stereometric aspects of external space with the internal metaphysics of the body, he hoped to arrive at a ‘mystical synthesis’."

d. Klee and Kandinsky

For the most part, the literature treats Paul Klee and Wassily Kandinsky analogously to Schlemmer and Itten. Klee’s fascination with nature and science has been investigated in great detail and need not be rehearsed here. As Sarah Henry put it, "nature and man’s relation to nature" were Klee’s "central obsession." While agreeing that "the most important theme of Klee’s art was nature," Richard Verdi also states that "Klee’s understanding of the living world was unequaled by that of any other painter of his time." It is usually assumed that Kandinsky’s interests lay more in the realm of the "supernatural" than in the "natural," or rather more in the "metaphysical" or "spiritual," than the "physical" or the "material." Nevertheless -- as we can see from the quotations above -- like Rudolf Steiner, he was interested in nature and modern science, particularly physics and biology, and the balance between the "material" and "spiritual," indeed their Monist "unity." Henry has written of "the great interest at the Bauhaus in the sciences and technology," as well as in scientific imaging, especially microscopy. As Carola Giedion-Welcker phrased it, Klee "was interested in everything created, in the organic growth of nature, as well as the mechanical products of man." Given the organic ideas circulating around Vladimir Tatlin, Vladimir
Khlebnikov, Mikhail Matiushin and Pavel Filonov in Russia, there is little doubt that Kandinsky would have become aware of them in Russia during the war and after the Revolution.\(^{236}\)

In any case, Clark Poling has shown the extent to which Kandinsky adapted his own teaching to the Bauhaus' program of a synthesis of science, technology and art after his arrival there in 1921.\(^{237}\) Zweite explains this shift from his earlier, predominantly Occultist, position as follows:

Now that it was no longer quite enough to cite the "great spiritual" ... Kandinsky looked for another authoritative sanction that would permit him to rise above sordid materiality.... In the light of his basic (antimaterialist and antipositivist) convictions, one of his trains of thought might surprise us, even though it was sanctioned by tradition: ultimately the references to science and engineering that run through \textit{Point and Line to Plane} serve only to underline the idea of the morphological identity of art and nature.\(^{238}\)

Zweite sees this adaptation as an "idealist's obeisance to the Bauhaus ideology, and to its program of putting art to practical use." We can now see, however, that Kandinsky -- commensurate with the Zeitgeist -- engaged in an adaptation of the biocentric elements already present in his pre-war thinking. While deemphasizing the "spiritual," Kandinsky highlighted the "scientific." A marker of this adaptation was his increasing emphasis on the naturamorphic analogy.

In 1932 Kandinsky remembered about 1912 that "my immediate plans for the next volume of \textit{Blaue Reiter} were to put art and science next to one another: origins, realization through various work processes, purpose."\(^{239}\) In 1915 Oskar Schlemmer reported in his diary that "Kandinsky: mentions the appeal of every unconscious arrangement of lines, reminiscent of microscopic enlargements, similar to Pankok's sensational discoveries."\(^{240}\) But by the mid-20s he would go on to a clear statement of the naturamorphic analogy in his pedagogical treatise \textit{Punkt und Linie zu Fläche}.\(^{241}\) Through his juxtaposition of scientific photographs and his own abstract
sketches, Kandinsky was one of the first to invoke the scientific image analogy. As in nature, "both [organic and linear/geometric] forms of construction occur in abstract painting." At the Bauhaus "Klee possessed a collection of natural objects that he used in studying nature, appearance and structure of the most diverse organisms." As we know from Point and Line to Plane, Kandinsky illustrated his lectures with scientific images such as microscopic cross sections of organic tissue, telescopic images, crystalline structures, x-ray images, and close-up nature photographs. He also assembled a collection of clippings and printed images. As Vivian Barnett notes, this collection consisted of "subjects generally characterized as technology and nature. In his Bauhaus teaching notes for the second or summer semester of 1931, Kandinsky compared art, science, technology and nature...." The clippings include images by well-known close-up nature photographers such as Ernst Fuhrmann, Karl Blossfeldt and Albert Leon. Just as Haeckel held that "in our microscopic knowledge of the little and in our telescopic investigation of the great we have attained an invaluable insight that seemed inconceivable a hundred years ago," Kandinsky wrote that "only by a process of microscopic analysis will the science of art lead to an all-embracing synthesis, which will ultimately extend far beyond the boundaries of art, into the realm of 'union' of the 'human' and the 'divine.'" In 1936, in a Haeckelian vein, he intoned:

The experience of the "hidden soul" in all things, seen either by the unaided eye or through microscopes or binoculars, is what I call the "internal eye." This eye penetrates the hard shell, the external "form," goes deep into the object and lets us feel with all our senses its internal "pulse."

But Kandinsky did not only employ scientific imagery in his teaching. Henry points out Kandinsky's use of the Neo-Vitalist crystallographer Otto Lehmann's illustrations as sources for his own imagery, while Barnett discusses how Kandinsky's copy
of the encyclopedia Die Kultur der Gegenwart was the source of the biological imagery in his paintings of the 1930s.\textsuperscript{249}

The shift in emphasis to the scientific image at the Bauhaus was not accompanied by an evacuation of metaphysical content from Kandinsky's Weltanschauung. Kandinsky's kosmovitalen Einsfühlung blended comfortably with that of contemporary Bioromantic artists such as Klee and Arp.\textsuperscript{250} That the combination of Kandinsky's "scientific" and "mystic" interests is not unusual for the time, is indicated by the other examples of such a synthesis mentioned above. Rudolf Steiner -- so highly regarded by Kandinsky -- was the editor of the official edition of Goethe's scientific writings, a supporter of Haeckel and his theories, and the author of a book on Haeckel.\textsuperscript{251} The Belgian poet Maurice Maeterlinck and the German palaeontologist Edgar Dacqué, along with Steiner, two of Kandinsky's favoured authors, were -- like Kandinsky -- Neo-Vitalists who in synthesizing the scientific and the "spiritual" tended towards the latter.\textsuperscript{252} Biocentrism provides a framework within which we can more fully understand such hybrids and Kandinsky's interest in them.

Klee and Kandinsky were steeped in a Naturphilosophisch approach to nature. As critics from Leopold Zahn, through Robert Goldwater, Carola Giedion-Welcker, Daniel-Henry Kahnweiler and Werner Hofmann, to Sixten Ringbom, Volker Harlan, August Wiedmann, Armin Zweite, Richard Verdi, Harriet Watt, and others have noted from 1920 to the present, Klee's and Kandinsky's theories of art were grounded in the 19th century morphological/biological discourse of Romantic organicism rooted in Naturphilosophie and Goethe's theory of plant metamorphosis.\textsuperscript{253} Wiedmann has demonstrated that both Klee and Kandinsky acknowledged themselves as artists working in the Romantic tradition, while Roskill has shown that both were Nietzscheans.\textsuperscript{254} What is missing in the literature is a more thorough contextualization of the artists' aesthetic theories within contemporary neo-Romantic, neue Naturphilosophisch,
i.e. biocentric discourses. At issue are their contemporary intellectual affinities and parallels. What is needed is a historical contextualization of their respective Weltanschauungen. Evelin Priebe has pointed out [dass] "Kandinsky ... in den lebensmystischen Strömungen seiner Zeit wurzelt," and as Eleanor Jain contends, "bei Marc, Kandinsky und Klee wird die lebensphilosophische Gedanke der Verbindung des Geistigen mit dem Leben besonders deutlich." 255

Even when discussing Klee's famous "Ich Kristall" statement made in his diary of 1915, Charles Haxthausen cites only Worringer as a source, ignoring Haeckel, who was -- along with Otto Lehmann -- the neue Naturphilosoph to declare crystals organic, i.e. related to a human subject such as Klee. 256 While Werner Haftman acknowledged the importance of Endell's and Van de Velde's "Biological Romanticism" to Klee's work, and Ringbom expands on Hofmann's discussion of the contemporary morphological tradition -- including Haeckel -- in relation to his aesthetics, only Sarah Lynn Henry has discussed turn-of-the-century biocentrism in her account of Klee's intellectual origins. 257 The way in which biocentric views, particularly Vitalism and Monism, revealed themselves in Kandinsky's thinking throughout his life has barely been touched upon in the literature. Only Jain, and Priebe, building on hints by Giedion-Welcker and Zweite, have begun to place Kandinsky into his proper biocentric context in relation to Lebensphilosophie, Bergson and Klages. 258 Yet both Klee and Kandinsky were dyed-in-the-wool Monist Vitalists.

Already in his 1920 discussion of Klee, Leopold Zahn wrote that "Jeder Dualismus ist überwunden, der heimische Kampf mit dem Materiellen beendet..." 259 As we have seen Klee state at the start of this section, "The aim of our theoretical work is always, in one form or another, the organisation of differences into unity, the combination of organs into an organism...." 260 Klee's Monistic worldview is best summarized by Christof Hertel in an account of his teach-
Klee ... zeigte uns die grosse synthese, die alles umfasst, das organismische wie das anorganische. die gleichen phänomene, die wir im biologischen und sozialen zu sehen gewahnt waren, wurden hier in der gestaltung auf einmal wieder aktuell. alles: zoologie, biologie, chemie, physik, astronomie, literatur, typografie trug dazu bei uns klar zu machen ... wie wir mit allem unseren sein und tun in der menschheit und im kosmischen rhythmus stehen und verankert sind.261

Klee’s former Bauhaus colleague Willi Baumeister wrote that "Ein Beispiel für eine grosse Synthese von Absoluten und Metamorphose ist Paul Klee, in dessen Werk sich die beiden Urkräfte zum ‘Organischen’ verbunden."262

Klee’s texts resound with statements revealing his belief in a vital force animating nature, a Vitalism that in equating matter and energy is as Ostwaldian as it is Einsteinian:

Creative power [Kraft] is ineffable. It remains ultimately mysterious ... We are ourselves charged with this power, down to our subtlest parts. We may not be able to utter its essence, but we can move towards its source.... [I]t is up to us to manifest this power in its functions, just as it becomes manifest within ourselves. In all likelihood, it is itself a form of matter, although it cannot be perceived with the same sense as the more familiar kinds of matter.... Permeated with matter, it must take on living, actual form. It is thence that matter derives its life, acquiring order from its minutest particles and most subordinate rhythms all the way to its higher articulations.263

This force is sometimes articulated in a Bergsonian manner:

The inner impulse is the urge that leads to production. ... Nature is creative, and we are creative. Nature is creative down to the minutest scale and since the briefest scrutiny suffices to discern that, we too have begun on a small scale, emulating nature, it has been easy, under nature’s guidance, to recognise our own creativity.264

As well as the élan vital, Klee affirms Bergsonian Becoming. As Jim Jordan put it, "One of Klee’s key tenets ... is that art should be read in terms of formal genesis, with shape
growing out of shape as an expression of a 'Bergsonian' life force,"265 or as Giedion-Welcker did: "Living organisms and man-conceived structures are ... combined in homogenous blends swept along by a powerful current of life."266

We have seen that Kandinsky agreed with Gabrielle Münter "that essentially or eventually everything is one unity."267

The quotations at the start of this section illustrate Kandinsky’s Monist kosmovitale Einsfühlung, and in an addendum to Charles Sirató’s 1936 Manifeste Dimensioniste -- hitherto unnoticed in the Kandinsky literature -- the importance he placed on a Monistic synthesis of "matter" and "spirit."268

Arp highlighted Kandinsky’s Vitalist impulse when he wrote of him in 1948: "Il évoque les forces des hauteurs et des profondeurs, les forces de la création pure. Il conjurait des forces originelles, impérissables, et les forçait d'affluer dans sa peinture et dans sa poésie."269 Paul Overy, when writing of Kandinsky’s work of the thirties, is just as eloquent concerning his Vitalism:

It is the swarming, pulsating vitality of their outlines that suggests so emphatically that they are living organisms.... Here Kandinsky suggests the energy of life rather than, as in the Bauhaus works, the structure of life... In the Paris works a rich and vital life now inhabits the structures.270

Kandinsky’s conclusion to Point and Line to Plane makes evident his Neo-Vitalist epistemology: "The aim of a theoretical examination is 1. to discover the living, 2. to make perceptible its pulsation, and 3. to establish the law-governed nature of life."271 Focusing on a search for life, these words are incomprehensible without the biocentric discourse.

Closely related to Klee’s and Kandinsky’s Monism and Vitalism were their organicist aesthetics. Klee’s organicist conception of the artwork is so well known that it need not be reiterated here, but while scholars have written of Kandinsky’s organic theory of art, he is still not typically thought of as an organicist.272 Already during his Munich years,
however, Kandinsky espoused an organic metaphor of art, seeing "painting as a kind of spiritual organism, made up -- like every material organism -- of many parts." At the Bauhaus, in keeping with the general shift in interwar Biozentrik, his organismic tended towards the more purely biological rather than the spiritual:

Die allgemeine Bewegung der Kunstgeschichte ... ist ein langsamer vor sich gehender Vorgang, der im Ausgangspunkt rein äußerlich-praktisch-zweckmässige Gründe hat, wobei das 'rein Künstlerische' bloss als kaum sichtbarer Embryo zu beobachten ist, und der sich weiter zum ständigen Wachsen dieses Embryos entwickelt, bis sich daraus eine reine Gestalt des rein Künstlerischen ausbildet.

Indeed, in *Point and Line to Plane*, Kandinsky was one of the earliest writers to employ the organic metaphor in relation to the development of abstract art: "Abstract art, despite its emancipation, is subject ... also to 'natural laws,' and is obliged to proceed [as] nature did previously, when it started in a modest way with protoplasm and cells, progressing very gradually to increasingly complex organisms. Today abstract art creates also primary art-organisms, whose further development the artist today can predict only in uncertain outline...." Kandinsky's organicism is also reflected in his interest in gestalt psychology, as the souvenirs of his encounter with Felix Krüger during Krüger's visit to the Bauhaus in 1931 demonstrate. Kandinsky's Vitalism, Monism and Organicism, i.e. his biocentrism, is important to emphasize because his ties to Theosophy and Anthroposophy, as well as Shamanism and Sufism -- repressed during the period of high Modernist art history before the 70s -- have now come to overshadow his other affinities. But while his and Klee's biocentrism is evident from their writings, the question arises as to the direct sources of their biocentrism.

The portion of Kandinsky's library now in Paris, despite its small size, contains an interesting selection of biocentric and related publications by Bergson, Dacqué, Krüger and
Ostwald. Apart from key naturromantisch classics such as Goethe, Schiller and Novalis, however, neither the part of Klee’s library available to me, nor his writings, yield much information on the sources of his biocentrism. But this is also the case with Klee’s much-vaunted scientific interests. Apart from two school science texts, we know little of either the literature he employed in his voluminous writings on nature and its processes, or those he used for his many artworks on the subject.278 As Henry, who has examined Klee’s sources on physics notes, he “seems to have worked ... from a patchwork of information and concepts that helped to satisfy his inquisitive mind and that gave him the material to fashion his own theoretical and visual structures.”279

What are we to make of this lack of information concerning Klee’s philosophical sources? Though Klee was an avid reader, he was primarily interested in belle-lettres, particularly the classics of a wide range of periods and cultures. Still, K. Porter Aichele has demonstrated that, like Kandinsky, Klee was an enthusiastic reader of the Monist scientist Ostwald since 1904, and that -- as we have seen -- he adopted aspects of Ostwald’s energeticist Monism.280 Klee also owned a 1914 edition of the most popular Monist writer, Wilhelm Bölsche’s, best-seller Das Liebesleben in der Natur.281 Bölsche’s biologicist, vitalmystisch aesthetics were expressed in pithy statements such as "Rafael und Beethoven beginnen schon im Schneekristall."282 In light of this, one must consider the possibility that Klee’s works of the late teens dealing with the sexual life of plants such as Pflanzenliebe of 1915, were inspired by Bölsche’s book.283

A former economist, legal scholar and ethnographer, Kandinsky, like many intellectuals of his generation, rejected the prevailing positivistic and materialistic ideology of the second half of the 19th century. In his "Autobiographical Note" Kandinsky wrote: "As ‘assistant’ at the University of Moscow ... I began to notice that my earlier belief in the
beneficial value of the social sciences, and, ultimately, in the absolute rightness of positivistic methods had seriously diminished." While Kandinsky was not as steeped in the German Romantic tradition as were Klee, Marc, Arp, Gropius or Schlemmer, once he was in Germany, his rejection of Positivism manifested itself through the forging of links to the brilliant Neo-Romantic revival of fin-de-siècle Munich. Thus -- like Klee and Marc -- Kandinsky became a member of Stefan George's and Karl Wolfskehl's circle, which included Vitalmysteriker, Monists and Reformbewegung figures such as Klages, Hermann Obrist, Ricarda Huch, Marie Buchhold and Raoul Françoise's later admirer Stefan Zweig. Kandinsky had particularly close contacts with Obrist -- Haeckel's principle artistic disciple -- starting around 1902. Though Kandinsky would have heard of the circle by 1902, he participated probably only after 1903, once Klages had broken with George and Wolfskehl. Like Klee, Kandinsky would have heard of Klages from others in the circle, and in any case Lebensphilosophie was "in the air" in turn-of-the-century Munich. What is important to note in this connection is that rather than being merely a hotbed of occultism, as some Kandinsky scholars have been eager to demonstrate, the "Kosmische Runde" was above all a centre of aesthetic Lebensphilosophie, Neo-Vitalism and Monism, i.e. of a Nietzschean biocentrism.

While Klee, like Kandinsky, became part of the Wolfskehl circle after Klages' departure, he had another indirect channel to Klages' thought, Alfred Kubin. Kubin approached Klee in 1910 after seeing an exhibition of Klee's prints and drawings in Switzerland. The next January Kubin payed Klee a visit, and out of this developed a somewhat uneasy friendship. While Kubin had not met Klages at this point, he had been in the Wolfskehl circle early on, and had admired Klages and his ideas from afar. Haftmann quotes from Kubin's novel Die Andere Seite of 1908-09 on the contemplation of nature and the realization of its unity: "For hours on end I now tried to
contemplate stones, flowers, animals and men in the mass. In this way my eye sharpened.... More and more, I felt that there is a common bond between everything." In 1911, after a chance meeting on the train, Kubin and Klages became friends. As Klee’s and Kubin’s friendship developed, Kubin would surely have spoken to the younger man of his enthusiasm for Klages’ writings on cosmic rhythms, on human products such as writing and art as expressions of these rhythms, on the necessity for the preservation of nature, and on the destruction of nature as a manifestation of the opposition between Geist and Seele. The material proof of Klee’s interest in Klages is his copy of Klages’ 1922 book *Vom kosmogonischen Eros.* Indeed, the term "cosmogenetic" recurs in Klee’s oeuvre: in *Unendliche Naturgeschichte* he writes of a "cosmogenetic moment," and Klee’s well-known 1923 watercolour *Eros* might constitute a commentary on Klages’ book.

Haeckel and Driesch -- and possibly Franèse -- were also sources for Klee’s and Kandinsky’s biocentrism. As Grohmann notes, Klee was an avid reader from early in this century on, and given Klee’s interest in nature and his reading habits, it is hard to imagine that he would not have read Haeckel’s enormously popular *Die Welträtsel* after it was first published in 1899. While, as far as I can tell, Klee’s library did not contain a copy of this book at the time of his death, we do know that he owned a copy of Haeckel’s *Kunstformen der Natur.* Indeed this book by Driesch’s teacher might account for Klee’s visit on his first Italian trip to a scientific institute closely associated with Driesch. At Easter in 1902 Klee was at the German-founded Zoologisches Station (Stazione zoologica) in Naples, where Driesch, just a couple of seasons earlier, had made his observations of the regenerative capabilities of dissected sea-urchin blastomeres, which led him to revive Aristotle’s Vitalist concept of the "entelechy," and so to launch Neo-Vitalism as a movement. Klee was very impressed by the unusual marine forms at the Station, and he enjoyed its
excellent library with Hans von Mareës' frescos, as much as he did its sea creatures.\textsuperscript{297}

There is little doubt that Klee would have heard of Driesch at the Station even though the scientist was not in residence, since a controversy over Driesch's sea-urchin research was then raging.\textsuperscript{298} If not in Naples, Klee had the chance to meet Driesch on the occasion of his 1925 lecture on "Das Unbewusste" at Weimar. According to Will Grohmann, Klee "found himself arguing on all sorts of subjects, scientific as well as artistic," after Bauhaus events, including Driesch's lecture.\textsuperscript{299} As we have seen in Chapter Two, Driesch's science, along with Goethe's, inspired the rise of the Holist/Organicist complex, the thinking of which was so close to Klee's organicist conception of nature. This science would have appealed to Klee as much as did Driesch's Neo-Vitalist neue Naturphilosophie, the biocentric philosophy which Driesch focussed his energies on after 1909. Klee's interest in Driesch (at least by 1925), and in Haeckel's scientific imagery; both his and Kandinsky's fascination with scientific imagery at the Bauhaus; and Kandinsky's early knowledge of Darwinism and Kropotkin\textsuperscript{100}, all this puts into a more coherent framework Barnet's -- I think -- correct speculation concerning the ultimately Haeckelian nature of the biological imagery in Kandinsky's work of the 1930s. But, as Hofmann has suggested, Kandinsky's morphological discussion in Point and Line to Plane already reveals his awareness of Haeckel's writings, if not those of the -- in Germany -- less accessible D'Arcy Wentworth Thomson.\textsuperscript{301} Though Kandinsky does not refer directly to Haeckel in his writings, like Klee neither does he refer to the other scientific source which Barnet has demonstrated he used, i.e. his encyclopedia. Barnet speculates on the possibility of Kandinsky's sources being the Darwinian aspect of theosophy and Steiner's writing on Haeckel, but it should be sufficient to refer to Kandinsky's friendship with the deeply-Haeckelian Obrist during the early years of his
Munich period in order to account for his knowledge of the German biologist. As Barnet writes, "Kandinsky’s images of amoebas, embryos and marine invertebrates convey a spiritual meaning of beginning, regeneration and a common origin of all life," that is, they produce a meaning which is intelligible only with a knowledge of the interwar biocentric discourse. As in the cases of the other Bauhaus masters, Barnet comes to the correct conclusions, but without employing the requisite terminology, a terminology which would properly contextualize him.

Klee’s biocentric Weltanschauung, his organicist aesthetic, his large corpus of biomorphic Modernist art, and his interest in scientific imagery, all render him one of the most paradigmatically Bioromantic of artists. Kandinsky’s early abstract work is a principal inspiration for biomorphic Modernism as a style and he is one of its great practitioners in the 1930s. But because of his mysticism his case is more complex than Klee’s. Kandinsky underwent a change during his Bauhaus years from a metaphysical position to one infused by the naturamorphic analogy, one more typical of the Biozentrik so pervasive at the Bauhaus and in Weimar Germany, after it. Thus, in the interwar period, Kandinsky can also be seen to be an important Bioromantic artist.

The presence of Klee, Kandinsky, Gropius, Itten, Schlemmer, Moholy-Nagy, Hannes Meyer, and Mies; Gropius' friendship with Behne and Taut; as well as the school's contacts with major figures of interwar biocentrism such as Driesch, Oswald, Klages, Keyserling, Prinzhorn, and Francé, resulted not only in an atmosphere suffused with biocentric ideas, but one which actively participated in interwar biocentric intellectual life. It is within this context that one should regard Gropius’ 1922-23 shifting of the Bauhaus' gears. As Karin Hirdina points out, this shift was related to the discourse around function, itself informed by ideas of social and biological utility. Its groundwork was laid earlier, how-
ever. As Franciscono writes:

By 1921 modern architectural thinking almost everywhere was moving from an emphasis upon personal inspiration, the expression of emotion, and in Germany upon utopian projects, toward geometry, 'objective laws' of formal construction, and strict accommodation to utilitarian, especially industrial requirements. This process can be traced in Gropius' speeches of 1922 through 1924, the language of which reflects accurately the changing aesthetic assumptions of the period.

But in the context of the Bauhaus and of Weimar Germany in general during the early 1920s, this process was necessarily one informed by biocentrism. Just as an awareness of the biocentrism inherent to the Jugendbewegung and the Reformbewegung in general is necessary for a full understanding of Moholy-Nagy's origins, the biocentrism of the Bauhaus is also the proper context for understanding the development of Moholy-Nagy's New Vision, the hiring of the Left-wing biocentric Constructivist Hannes Meyer, and the development of Kállai's formulation of Bioromantik at the Meyer Bauhaus, topics I examine in the next two chapters.
Endnotes


8. László Moholy-Nagy, Contribution to "Vita az új tartalom és az új forma problémájáról" [Argument on the problem concerning the new content and the new form]; a series of articles in Akasztott Ember [Hanged Man] no. 2 (31 December 1922).


adapted by me.


18. Ibid., 87, 89, 90.

19. Haus is refering here to Moholy-Nagy and Van Doesburg. Andreas Haus, Moholy-Nagy: Fotos und Fotogramme, (Munich: Schirmer/Mosel, 1978), 48. Note that Railing’s remark is made within the context of an article which demonstrates El Lissitzky’s organicism.


23. Railing, "'The Machine is no More than a Brush'," 50.


26. Janice Schall, "Rhythm and Art in Germany, 1900-1930" (Ph.D. dissertation, University of Texas at Austin, 1989), 34. See also Winfried Mogge and Jürgen Reulecke, Hohe Meissner 1913. Der Erste Freideutsche Jugendtag in Dokumenten und Bildern (Cologne: Verlag Wissenschaft und Politik, 1988), 39-41 and 74.


28. Quoted in ibid.


33. Wiedmann, Romantic Roots in Modern Art, 21.

35. On this unsuccessful project, see Benson, "Raoul Hausmann and Berlin Dada," 10. Given Baader's background in the Garden City Movement (p. 8), Friedländer's presence on the Berlin Activist art and cabaret scene (pp. 10-11), the Haeckelian Monism of the trio, Friedländer's radical anti-anthropocentrism (pp. 11-12) and the fame of Klages' speech in Activist circles, it is conceivable that it was an inspiration for this -- in Expressionist circles -- highly unusual title, unusual because so much Expressionism of the time was "man"- rather than earth-centric. Walther Rilla eventually published a journal entitled Die Erde. Das Kamporgan des revolutionären Geistes in Breslau (now Wroclaw), in 1919-20, and Hausmann contributed. See the ad in Der Gegner, 1, no. 2-3 (May 1919): 33 and the bibliographical description in Hannah Höch, Eine Lebenscollage. Volume 1. (Berlin: Argon, 1995), 532-33.

36. Quoted in Wiedmann, Romantic Roots in Modern Art, 245. See also Schall, "Rhythm and Art in Germany," 41 and Jain, Das Prinzip Leben, 142.


40. Benson, Raoul Hausmann and Berlin Dada, 67.

41. Wiedmann does not even mention Haeckel, Monism or Ostwald. Neither does Jürgen Glaesemer in his "Klee and German Romanticism," in which no mention is made of Monism, even in a discussion of Klee's tendency to treat binaries as "forces working together to create the whole." In: Caroline Lanchner, ed., Paul Klee (New York: MOMA, 1995): 65-81. Glaeser quotes Klee on p. 76.
42. Haeckel, The Riddle of the Universe, 341 and Haeckel, Kunstformen der Natur (Leipzig/Vienna: Bibliographisches Institut, 1899)


44. Benson, Raoul Hausmann and Berlin Dada, 80-81. Hausmann would have become aware of the turn of the century biocentric literature through his work between 1909 and 1914 as a designer for the Eugen Diederichs Verlag in Jena, one of the chief publishers of such literature in Germany. His readings of the time reflect an interest in the vitalistic-anarchistic writings of figures such as Stefan George, Walt Whitman, Maurice Maeterlinck, and Nietzsche. See Eva Züchner, ed., Der Deutsche Spiesser ärgert sich: Raoul Hausmann 1886-1971 (Stuttgart: Hatje, 1994), 16-21, 280.


is demonstrated by their Siedlungen of the 1920s. See Fritz Neumeyer, "Metropolis or the Dissolution of the City? The Struggle of the 1920s Against the Big City," in Jean Clair, ed., The 1920s: Age of the Metropolis (Montreal: MMFA, 1991), 314.


49. See Behne, Die Wiederkehr der Kunst (Berlin: Kurt Wolff, 1919), e.g. 24. See also Whyte, Bruno Taut, 61. Luckhardt is quoted in Whyte, The Crystal Chain Letters, 31.


51. Benson intimates this in "Fantasy and Functionality," 37. Haeckel was preceded by Spencer, who in 1898 held that "the growth of crystals and organisms was 'an essentially similar process.'" Peter Collins quotes Spencer in his Changing Ideals of Modern Architecture 1750-1950 (Montreal: McGill University Press, 1965), 151.


53. Whyte, Bruno Taut, 198 and Döhl, Hermann Finsterlin, 64. That Haeckel's views on crystals were fairly well-known by the mid-teens is demonstrated by ghost researcher Baron von Schrenk Notzing's employment of Haeckel's teaching of the unity of nature as part of his explanation of the ecotplasmic phenomenon: "...as Haeckel pointed out, in his General Morphology of Organisms, there is no hard and fast separation between the building of regular crystals and that of organic structures, so that geometrical forms are ultimately the foundation of both." (p. 281) As we shall see, Francé's elaboration of this idea exercised the greatest influence on the development of a biocentric Constructivist discourse. Baron von Schrenk Notzing, Phenomena of Materialization: A Contribution to the Investigation of Mediumistic Teleplastics [1913-14] trans. E.E. Fournier d'Albe (London: Kegan Paul, Trench, Trubner, 1920). C.f. also: "Result of the Microscopic Examinations," 246-50.

54. Whyte, Bruno Taut, 196-7.


56. See "Biologie und Kubismus" and Die Wiederkehr der Kunst, in which Haeckel is characterized as "vielleicht" der "letzter Vertreter" "der Rationalismus und Positivismus." (p. 58)


64. Inscribed on the work Cliffs, Lightening, Fire, Tower of Glass (1920), on display at the "Crystalizing-Engineering-Delirium" exhibition curated by Detlef Mertens, and held at the Design Exchange, Toronto, January-April 1997. C.f. also Hablik's work Triumph der Gesetze in der Natur of 1924 in that
same exhibition.


66. Selection from László Moholy-Nagy, "Erdő, Május, Háború" [Forest, May, War], first published in Jelenkor [The present age], no. 6 (September 1918). This translation by Oliver Botar was published in Hungarian Studies Review 21, nos. 1-2 (Spring-Fall 1994): 108-9.


68. Haus, Moholy-Nagy, 16. Thanks to Alain Findeli for alerting me to the differences between the English and German versions of Haus.


70. László Moholy-Nagy, Review of Árpád Garami, Gyótródó, szerelmes tavasz [Anguished loving spring], Jelenkor no. 5 (April 1918), 159.

71. See Iván Hevesy's translation of Whitman's poem about male-female sexuality as an expression of the forces of nature published under the title "Walt Whitman verseiből" [From the poems of Walt Whitman], Ma [Today] (1 June 1918): 74; and of "Teérted ó demokrácia!" [For you, oh democracy!], Ma (20 November 1918): 134.

72. Sibyl Moholy-Nagy expressed doubt that her late husband had read Bergson, though she correctly recognized Bergsonian elements in his thought. See: Experiment in Totality, xvi.

73. Babits published a review article on Bergson's work in Nyugat [Occident] in 1910. The article is reprinted as the preface to Bergson's Teremtő fejlődés [Creative evolution]. Translated by Valéria Dienes. (Budapest: Magyar Tudományos Akadémia, 1930), I-XXII. On Babits and Moholy-Nagy, see Ferenc Apró, "Babits Szegeden" [Babits in Szeged] (Szeged: Somogyi Könyvtár, 1983): 141-2. While the two might have met when Babits taught at Moholy's high school in Szeged in 1906, Apró holds that they certainly became friends in Budapest around 1913. In any case, Moholy would have read Babits' article in Nyugat, since Moholy's "intellectual development was first influenced decisively by Nyugat," as he put it himself in his letter to Antal Németh of 18 July 1924. In: Krisztina Passuth, Moholy-Nagy (London: Thames and Hudson, 1985), 396. See also Bodri, "Moholy-Nagy László levelei Babits Mihályhoz" [László Moholy-Nagy's letters to Mihály Babits], Tiszatáj [The Tisza region] 26, no. 8 (1972).


76. This was the case even if the Germans' attitude towards Haeckel was complicated: early in the century Kurt Hiller and his friends were reacting against Haeckelian Monism, which they saw as outdated though they agreed with it. Some, such as Hiller's closest friend Arthur Kronfeld were openly Monist. See Hiller, *Leben gegen die Zeit* [Logos] (Reinbeck bei Hamburg: Rowohlt, 1969), 37, 56-7, 64.

77. On German Activism, see Whyte, Bruno Taut, and Júlia Szabó, *A magyar Aktivizmus művészete* [The art of Hungarian Activism] (Budapest: Corvina, 1981), 15-31. On the connections between German and Hungarian Activism, see Szabó, 26-7.


79. Whyte, Bruno Taut, 65.

80. Ibid.


82. Quoted in Sibyl Moholy-Nagy, *Experiment in Totality*, 11-12. Unfortunately, the Hungarian original of these texts has been lost, and so it is not possible to check for their provenance or for the accuracy of their translations. Accordingly, they must be employed with caution. (Information courtesy of Hattula Moholy-Nagy.)


85. Botar, "An Activist-Expressionist in Exile," 74-5. In addition to the portrait, Harmsen received several watercolours from Moholy-Nagy, which were auctioned in Munich in the early 1980s. Information courtesy of Hattula Moholy-Nagy.

86. Ibid.


88. Unless otherwise noted, biographical information on Schairer is from the entries under his name in the Deutsches Biographisches Archiv. Neue Folge (Munich: K.G.Sauer, 1982), fiche FF1130.


92. Among the occult groups popular at the time were the Anthroposophists and Otmar Zar-Adusht Ha’nish’s neo-Zoroastrian and health-conscious "Mazdaznan" creed. Botar, "An Activist-Expressionist in Exile," 76.

93. Ibid., 77.

94. Ibid., 78.

96. On the direct connection between Pfemfert’s circle around Die Aktion and Vogeler’s Barkenhoff commune through the presence in 1919 of Vogeler’s wife’s then lover Ludwig Bäumer (who was a member of the Bremen council during the revolution early in 1919), see Bernd Stenzig, "'Von einem Auferstehenden, der nicht mehr zu beirren ist," in Heinrich Vogeler. Vom Romantiker zum Revolutionär. Ölbilder, Zeichnungen, Grafik, Dokumente von 1895-1924 (Bonn: Bonner Kunstverein, 1982), 108. Vogeler designed at least one cover (Ekstase or Vision) for Die Aktion, 30, no. 5 (May 1914). (p. 136)

97. Schenk, Die Freideutsche Jugend, 117.

98. Heinrich Vogeler and other members of Barkenhoff such as Johann Kneif, for example, played active roles. On the Bremen Soviet and Vogeler’s role in it, see David Erlay, Worpswede - Bremen - Moskau. Der Weg des Heinrich Vogeler (Bremen: Schümann Universitätsverlag, 1972), 94-102.

99. Reinhard Preuss, Verlorene Söhne des Bürgertums. Linke Strömungen in der deutschen Jugendarbeit 1913-1919 (Cologne: Wissenschaft und Politik, 1991), 210. This was evidently a more radical version of Schairer’s "religious Socialism."

100. Quoted in Laqueur, Young Germany, 114. On this meeting, see also Schenk, Die Freideutsche Jugend, 112-17. Not untypically, Vorwerk soon turned towards the right in his political views, "reappearing several years later as the secretary of Germany’s most influential and fashionable right-wing political club, the "Herren-klub," (Laqueur, Young Germany, 103), and writing for Rightist periodicals such as Ring and Deutsches Volkstum. (Schenk, Die Freideutsche Jugend, 122, 307). Oswald Spengler was also a member of the Herrenklub. See Anton Kies, Martin Jay, Edward Dimendberg, eds., The Weimar Republic Sourcebook (Berkeley: University of California Press, 1994), 330. There was an F. Vorwerk operating a publishing house in Stuttgart after the Second World War who published works on the German Right. See, e.g., Armin Mohler, Die konservative Revolution in Deutschland (Stuttgart: F. Vorwerk, 1950).


102. On Schulz and Vorwerk at Barkenhof, see Botar, "An Activist-Expressionist in Exile," 78.
On Vogeler’s nature mysticism, see Bernd Stenzig’s After-
word to Walter Hundt, *Bei Heinrich Vogeler in Worpswede. Erinnerungen* (Fischerhude: Worpsweder Verlag, 1981), 208-210 and Stenzig, "'Von einer Auferstehenden,'" 127. On Kropotkin’s importance at Barkenhoff, see Hundt, *Bei Heinrich Vogeler in Worpswede*, 67. On Kropotkin as a nature-centric, ecological anarchist, see Bramwell, *Ecology in the Twentieth Century*, 70-71. That Vogeler was an Anarchist in 1919, heavily influenced by the ideas of Kropotkin, rather than the Communist he later remembered himself as being; i.e. that Kropotkin, rather than Marx, was the most important ideological influence on the commune, is repeatedly stated in the literature. See, e.g., Ulrich Linse, *Die Kommune der deutschen Jugendbewegung* (Munich: C.H. Beck'sche Verlagsbuchhandlung, 1973), 52; Bernd Stenzig, "'Von einer Auferstehenden,'" 127 and Heinrich Wie- gand Petzet, *Von Worpswede nach Moskau. Heinrich Vogeler. Ein Künstler zwischen den Zeiten* (Schauberg: DuMont Verlag, 1972), 127-28. Petzet emphasizes this influence and that of Tolstoy and Bakunin, during the commune period of Barkenhoff (1918-1922). He also points out that Vogeler does not mention these names in his memoirs *Wenden, Erinnerungen* because of the contemporary pressures of Stalinism. See also Vogeler’s portrait of Kropotkin, the frontispiece for the German edition of Kropotkin’s *Landwirtschaft, Industrie und Handwerk* (Berlin: Verlag "Der Syndikalist", 1921). The copy I have seen of this book was in the library of Mies van der Rohe, now deposited in the Department of Special Collections of the Library of the University of Illinois at Chicago. On Vogeler as a religious-anarchist artist, see Ulrich Linse, *Barfüssige Propheten. Erlöser der zwanziger Jahre* (Berlin: Siedler Verlag, 1983), 130. See also Ulrich Linse, *Entschiedene Jugend, 1919-1921* (Frankfurt/Main: dipa, 1981), 135, 183, 191-2, 221 and David Erlay, *Heinrich Vogeler. Ein Maler und seine Zeit* (Fischerhude: Verlag Atelier im Bauernhaus, 1981).


106. Neubau appeared in June 1919. Sachsse in Lucia Moholy (1985), 8-9. Her use of this male alias is less likely because she was a woman, as Sachsse suggests, than because she was a foreign national engaging in radical activities during a period when police raids on the Barkenhoff commune were commonplace. (See David Erlay, Vogeler, 176-181.) On the complicated and contradictory status of women in the German Youth Movement, see Elisabeth Büsse-Wilson, Die Frau und die Jugendbewegung. Ein Beitrag zur weiblichen Charakterologie und zur Kritik des Anti-feminismus (1920) (Münster: Lit, 1989); Irmgard Klonne, "Ich spring‘in diesem Ringe" Mädchen und Frauen in der Deutschen Jugendbewegung (Pfaffenweiler: Centaurus-Verlagsgesellschaft, 1990); and Marion E. P. de Ras, Körper, Eros und weibliche Kultur. Mädchen im Wandervogel und in der Bündischen Jugend, 1900-1933 (Pfaffenweiler: Centaurus-Verlagsgesellschaft, 1988).

107. On Fuhrmann as politically anarchist, see Gert Mattenklott, Vorwort in: Ernst Fuhrmann, Neue Wege, The collected works volume 10. (Hamburg: Ernst Fuhrmann Archiv, 1983), V, VIII.

108. For a summary of Fuhrmann’s unsystematic, biological and poetic philosophy, see Volker Kahmen, "Ernst Fuhrmann — Photographs of Plants" in Ernst Fuhrmann (Rolandseck: Bahnhof Rolandseck, 1979). Fuhrmann’s writings were not published for the most part until the 1930s and after, and so he was not as well known as von Uexküll or Francé were. Still, the list of the "Gesellschaft der Freunde Ernst Fuhrmann“ founded in 1931 to aid the publication of his writings included, in addition to artists such as Emil Nolde and Edvard Munch, and writers such as Alfred Döblin and Karl Wolfskehl, no less a figure of biocentric thinking than Hans Prinzhorn. See: Hugo Hertwig, "Revolutionär des Geistes," typescript in Mappe 12 of the Fuhrmann-Archiv of the Staats- und Universitäts-Bibliothek Hamburg. Fuhrmann was familiar with Francé’s conception of Biotechnik: "Wie Francé richtig sagte, gibt es in der kompliziertesten Industrie keinen Vorgang, der nicht längst im Menschen- und Tierleben oder in den Pflanzen ohne Unterbrechung in Betrieb wäre." Fuhrmann, Der Sinn im Gegenstand (Munich: Georg Müller, 1923), 29. See Wolfgang Kemp, Theorie der Fotografie II, 1912-1945 (Munich: Schirmer/Mosel, 1979), 21, 36, no. 31. On Biotechnik, see Chapter Four.

109. Franz Jung, Nachwort in: Ernst Fuhrmann, Grundformen des Lebens (Heidelberg: Lambert Schneider, 1962), 251-52. On Vogeler and Dehmel, see Hundt, Bei Heinrich Vogeler in Worpswede, 13, 38. On page 163 we note that Dehmel’s daughter Liselotte spent time at Barkenhoff. On further connections between Liselotte and Ursula Dehmel and Barkenhoff, see Vogeler, Werden, Erinnerungen. On Fuhrmann and Dehmel, see Hugo Hertwig, "Der grosse Einzelne: Ernst Fuhrmann," typescript in
Mappe 12 of the Fuhrmann-Archiv of the Staats- und Universitäts-Bibliothek Hamburg; Kahmen, "Ernst Fuhrmann -- Photographer of Plants," unpag.; Jung, Nachwort, Grundformen des Lebens, 251, and Mattenklott, Vorwort in: Fuhrmann, Neue Wege, V. Mattenklott notes that Ida Coblenz, Richard Dehmel’s later wife, was Fuhrmann’s wife at the time.

110. Cited by Mattenklott’s Vorwort in: Fuhrmann, Neue Wege, III.

111. Fuhrmann had known Osthaus since 1915. See Mattenklott, Vorwort in: Fuhrmann, Neue Wege, V. Kahmen gives the 1920 date in: Ernst Fuhrmann, 8. For the more credible 1919 date see: Karl Ernst Osthaus. Leben und Werk (Rechlinghausen: Verlag Aurel Bongers, 1971), 98. A document quoted on p. 228 proves that Fuhrmann was director of the Folkwang-Museum by 1 January 1920. According to this publication Osthaus and Fuhrmann probably met through Professor Botho Graef in Jena. (p. 98) Vogeler’s relationship with Osthaus and his family was close. In the summer of 1920 Osthaus’ son Eberhard moved to Barkenhoff and joined the commune, in preparation for the founding of the Osthaus’ own "Osthaus-Siedlung” at Hohenhagen near Hagen. (See Hundt, Bei Heinrich Vogeler in Worpswede, 89-90.) The elder Osthaus died in 1921, after which the museum moved from Hagen to Essen. Later Mrs. Osthaus had a house built which was designed by Vogeler and decorated by Barkenhoff artists. (p. 90) Henry van de Velde had designed the main house, "Hohenhof,” built in 1907-8. Van de Velde, Geschichte meines Lebens, 282-4.

112. Fuhrmann, Der Sinn im Gegenstand, 20.

113. Fuhrmann, Der Sinn im Gegenstand, 2. This book was owned by Mies van der Rohe. (Mies van der Rohe Archive, Special Collections, University of Illinois at Chicago)


115. In: László Moholy-Nagy, Malerei, Photographie, Film (Munich: Albert Langen Verlag, 1925). Renger-Patzsch was Fuhrmann’s employee at the Folkwang-Auriga Verlag between 1922 and 1925. It is safe to presume that Renger-Patzsch’s Monistic imaging of the world, his biocentric representation of plants "as living beings," and of technology as analogous to the natural world, was indebted to Fuhrmann’s Biosophie. Note the Monist overtones in Renger-Patzsch’s Die Welt ist schön (Munich: Kurt Wolff, 1928). This Monism is suggested by the sequencing and grouping of the photographs which imply that there is beauty to be found in all of nature, artifact and
not. For contemporary biocentric readings of Renger-Patzsch's work, see Carl Georg Heise's Introduction to Renger-Patzsch, Die Welt ist schön; Ernő Kállai's review of it in bauhaus 3, no. 2 (April-June 1929), 27; and especially Willy Rietzler's review in Die Form (4 November 1924): 24. Renger-Patzsch maintained contact with biocentric thinkers of both the Left and Right such as Hermann Hesse and Ernst Jünger. On this, see Donald Kuspit, "Albert Renger-Patzsch," in: Renger-Patzsch, Joy Before the Object (San Francisco: Aperture, 1993), 6-7. On the importance of Fuhrmann to Renger-Patzsch's development, see Ann and Jürgen Wilde, Albert Renger-Patzsch: Ruhrgebiet Landschaften, 170, and Mattenklott, Vorwort, Neue Wege, VI. Ingeborg Güssow has pointed out that the book's signet, representing a branching tree juxtaposed with a high-tension power stack signals his intention to analogize nature and technology, seeing the latter as a subset of the former. "Die neusachliche Photographie" in: Helmut Friedel, ed., Kunst und Technik den 20er Jahren: Neue Sachlichkeit und Gegenständlicher Konstruktivismus (Munich: Lenbachhaus, 1980), 100-01.

It would have been Fuhrmann who was responsible (after Osthauß's death) for the Folkwang-Museum's extremely early purchase in 1922 of four "farbige Zeichungen" from Moholy-Nagy. (See Walter Erben in: Karl Ernst Osthauß. Leben und Werk. Recklinghausen: Aurel Bongers, 1971, 217.) Also, the Moholy-Nagys owned books by Fuhrmann. See the postcard from Lucia Moholy to Hannah Höch written from Dessau on 7.6.1926 asking Höch to send the "Fuhrmann-Bücher" which they had "vergessen," published in Hannah Höch: Eine Lebenscollage volume 2 (Berlin: Berlinische Galerie and Stuttgart: Gerd Hatje, 1995), 258-9.

It was only in 1925, the year Moholy's Malerei, Photographie, Film was published, that Renger-Patzsch began work as an independent photographer, that his first book of photographs Das Chorgestühl von Cappenberg was published, and that he had his first exhibition, at his new home of Bad Harzburg. For these biographical details, and for a discussion of the relationship between Moholy and Renger-Patzsch, see Fritz Kempe, "Albert Renger-Patzsch, Mensch und Werk," in Albert Renger-Patzsch. Der Fotograf der Dinge (Essen: Ruhrland- und Heimatmuseum Essen, 1967), unpag. Even if Moholy did not encounter it through Fuhrmann, it is possible that he first saw Renger-Patzsch's work in his earliest publication in Deutsche Camera-Almanach: "Pflanzenaufnahmen," (volume 14, 1924: 49-53).


118. Sachsse, Lucia Moholy (1985), 8-9. For a reproduction of the completed monument, see Erlay, Vogeler, 204. The monument, designed by Bernhard Hoetger (the Worpswede artist who had
produced Paula Modersohn-Becker's memorial), was eventually built, and was later destroyed by the National Socialists. Note that Albert Steffen, Vogeler's friend and the man after whom Lucia presumably coined her pseudonym, was a friend of Rudolf Steiner's. See Petzet, Von Worpswede nach Moskau, 164.


Many of his closest friends were Communist, however. One of his best friends was the Communist Hungarian playwright Lajos Barta, and soon after Moholy's arrival in Berlin he was friendly with the Spartacist members of the Malik-Verlag circle. Moholy's sympathy with the Spartacists is clear from his description of the Kapp-Putzsch in his letter to Iván Hevesy of 5 April 1920, in Krisztina Passuth, Moholy-Nagy, (London: Thames and Hudson, 1985), 388. On Moholy, Barta and the Malik-Verlag circle, see Botar, "An Activist-Expressionist in Exile," 79.

Moholy's Communist sympathies are documented by his portraits. His likeness of Baron Lajos Hatvany, the Social Democratic financial backer of Hungarian avant-garde literature, probably executed during Moholy's first stay in Vienna in 1919, is dedicated to the Communist journalist László (Laci) Tölgy, former assistant editor of Vörös Újság [Red Journal], the first Communist newspaper in Hungary. (For a reproduction, see Passuth, Moholy-Nagy, figure 12.) While this picture is usually assumed to have been executed before Moholy left Budapest in early August 1919, I believe it to be a product of Moholy's first Viennese stay during the fall of 1919. My reasons are (1). Both Hatvany and Tölgy were in Vienna at the time and the poverty experienced by all the émigrés -- including Baron Hatvany -- would have had a levelling effect giving Moholy easier access to the Baron than in Budapest. (2). As Moholy-Nagy's nephew Levente Nagy has pointed out Moholy typically employed the dash between the two components of his name only in emigration. "Képek aláírása Magyarországon a kezdettől 1919 novemberéig" [The signature of works in Hungary from the start to November of 1919], September 1985, typescript in the archive of Hattula Moholy-Nagy, Ann Arbor, Michigan.) While Nagy cites this portrait of Hatvany as the exception, I think it is simpler to date this work to Moholy's Viennese stay.) On László Tölgy leaving Budapest for Vienna before December of 1919, see Tanuságtévők. Vissza-
emlékezések a magyarországi munkásmozgalom történetéből, 1919-1933 [Bearers of witness: Memories from the history of the Hungarian working class movement] (Budapest: Kossuth, 1981), 38. Among Tölgy’s aliases were: László Fekete, László Glück (his original name?) and Peter Koester. Moholy may have known Tölgy from his own days in the Budapest Galileo Circle where, like so many others of their generation, Tölgy was educated politically. (Robert Whelen, Robert Capa. A Biography, New York: Ballantine, 1985, 42) On 15 January 1920 Tölgy was expelled from the Hungarian Journalists’ Association for his political involvement during the Hungarian Soviet of 1919. (Agnes Szabó and Róbert Vértés, eds., Négyedszázados harc [Quarter-century struggle], Budapest: Akadémiai Kiadó, 1975, 32) Vörös Újság appeared just before and during the Soviet of 1919. (Sándor Ék, Mába éró tegnapok [Yesterdays extending into today] [Budapest: Kossuth, 1968], 159; and Tánuságtevők, 479.) Note, however, that Tölgy is not mentioned in the section of Vörös Újság in Henrik Vass, ed., Fejezetek a magyar munkásmozgalom történetéből [Chapters from the history of the Hungarian working class movement] (Budapest: TánCsics, 1975), 101-03.

Most significantly, Moholy’s February 1921 portrait of Lipót Katz, a journalist writing for the Viennese Hungarian Communist periodical Proletár [Proletarian], the official Hungarian journal of the Third Internationale (published 30 June 1920 to 26 January 1922), bears a dedication to Katz as Moholy’s elvtárs [comrade]. (Éva Bajkay identifies the sitter as Lipót Katz in Bajkay, A magyar grafika külföldön. Bécs 1919-1933 [Hungarian graphic art abroad: Vienna 1919-1933] (Budapest: Petőfi Irodalmi Múzeum, 1982), 41. On Proletár, see: Szabó and Vértés, Négyedszázados harc, 658.)

120. Sachsse, Lucia Moholy (1985), 9; and Moholy, Marginal Notes, 51. According to Sachsse her exact term of employment with Saal was from 1 December 1919 to 21 March 1920. Note that the bookshop was due to move to Lauenburg an der Elbe from Hamburg on 1 July 1920, so she may have left her employment in anticipation of the move. See Messer, Die freideutsche Jugendbewegung, 99.


respect for Bäumer and Martha Vogeler is his collage *Das Bau-
merbild* of 1920, in which fragments of a printed discussion of
the post-war peace process are combined with images of Bäumer
and Martha. See Dorothea Dietrich, *The Collages of Kurt Schwi-

123. Indeed Barkenhoff enjoyed the occasional support of the
Quakers, and as thanks, Vogeler wrote them an essay entitled
"Friede." The references to Quaker support occur throughout
the Barkenhoff and Vogeler literature. On Vogeler's "Friede,"
see Petzet, *Von Worpswede nach Moskau*, 124.

124. János Brendel has pointed to Monist founder Wilhelm
Ostwald's effect on Moholy's thinking after his arrival in
Berlin in 1920. János Brendel, "Der deutsche Einfluss von
Scheerbart und Wilhelm Ostwald auf die ungarische Konstruk-
tivistentheorie," in Hubertus Gassner, ed., *Wechselwirkungen:
Ungarische Avantgarde in der weimarer Republik* (Marburg:


126. Veit Loers, "Moholy-Nagys 'Raum und Gegenwart' und die
Utopie vom dynamisch-konstruktiven Lichtraum" in László Mo-
holy-Nagy (Stuttgart: Gerd Hatje, 1991), 41.

127. Because of his pedagogical endeavors and his efforts to
effect a synthesis of science and spirituality, Steiner would
have interested them to a greater degree. Loers' article, so
valuable in other ways, has had the unfortunate effect of
suggesting to some that Moholy-Nagy was somehow an "occult'
artist influenced by Theosophy and Anthroposophy, and that
"der 'psycho-biologischen Reform' ... eine Synthese zwischen
natuurwissenschappelijken Forschung en Vorstellungen der persi-
schen Mazda-znan-Lehre [bildet]." Roland Günter, "Der Industri-
alisierungs-Prozess und das Experiment der beiden Moholy-
Nagys" in Gottfried Jäger and Gudrun Wessing, eds., *Über Mo-
holy-Nagy: Ergebnisse aus dem Internationalen László Moholy-Nagy
Symposium, Bielefeld 1995, zum 100. Geburtstag des Künstlers
und Bauhauslehrers* (Bielefeld: Kerber Verlag, 1997), 125-6.

128. While no exact information has as yet come to light
concerning the time of Hausmann's or Behne's first meetings
with Moholy-Nagy, Hausmann's may have been as early as Septem-
ber of 1920, when Moholy's close friend Lajos Barta's play
*Russlands Tag* was produced by Erwin Piscator's Proletarian
Theatre in Berlin. As Hausmann was connected to the Malik-
Verlag circle of which Piscator and his theatre were a part,
Moholy may have encountered Hausmann there. (On this, see
Botar, "An Activist-Expressionist in Exile," 82.) Had he not
done so earlier, Moholy would certainly have met Hausmann in
1921 through his good friend Hannah Höch, and indeed, El Liss-
itzky remembers meeting Hausmann in the Moholy-Nagys' studio in "im Jahre 1921/1922, als ich nach Berlin kam," which would place such a meeting to about early 1921. (Lissitzky-Küppers, *El Lissitzky*, 64) The earliest document I know of concerning their contact is the "Aufruf zur elementaren Kunst," dated October 1921 and signed by Moholy-Nagy, Hausmann, Ivan Puni and Hans Arp. (De Stijl 4 no. 10, 1921) Moholy-Nagy and Hausmann would not only have had their interests in common, but Hausmann's origins as well: like Moholy-Nagy, Hausmann was Austro-Hungarian. Though born in Vienna, and raised in Vienna and Berlin, Hausmann's father Viktor was Hungarian by birth. Hausmann was a Czecho-Slovak citizen from after the First World War until 1946 (when this nationality was taken away from him due presumably to his Germanic ethnicity), probably because his father was born in northern Hungary, the part which became Slovakia. He himself claimed Czech, Slovak and Italian heritage, as well as Alsatian origins for his family. Broido-Cohn cited him as having been one-eighth Jewish, and therefore in danger due to his origins in Nazi Germany. Züchner, ed., Der Deutsche Spiesser argert sich, 280, interview with Broido-Cohn, 106, and Bartomeu Mari, "Keine Utopie: Ein ungefähres Portrait des Dadasophen," in Züchner, ed., 126.

While Moholy might have met Behne through his involvement with Arthur Segal's social circle as early as mid-1920, there are no exact data to confirm this. As Hausmann and Behne knew each other, furthermore, he might have encountered the art historian through Hausmann during the course of 1921. In any case, the earliest document I am aware of concerning Moholy's and Behne's friendship dates from December 1922, when Moholy-Nagy dedicated a watercolour to Behne: "Für Dr. Behne's Weihnachten 1922." (The transparency of this work is in Hattula Moholy-Nagy's archive, Ann Arbor.)


130. This awareness is particularly evident in the introduction to the second edition of *Experiment in Totality*, with its use of Francé's terms such as "Bios" and "Biotechnik," xvii-xviii.


136. Quoted in Sachsse, *Lucia Moholy* (1995), 108. Both Vogeler’s and Moholy’s texts may have been refering to Novalis’ statement that "away from the rhythm of the world, one is away from the world itself." Quoted in Schall, "Rhythm and Art in Germany," 34.

137. On Lucia’s job ending July 31 1921, see Sachsse, *Lucia Moholy* (1985), 9. 137. Kállai remembers that they were produced on vacation in "Technika és konstruktív művészet" [Technology and constructive art] Ma 7, no. 5-6 (1 May 1922): 7-9. Though we do not know its exact date the vacation must have taken place in 1921, the approximate date of the Ackerfelderbilder.


140. See Hundt, *Bei Heinrich Vogeler in Worpswede*, 104. Vogeler wrote: "Gestern tanzten die Biebersteiner (Loheländer) wieder in Bremen, unsere Leute waren nicht sehr davon angetan. Rohden und Langgaard, waren draussen bei uns und scheinbar sehr angetan von dieser aus dem Chaos gestaltenden neuen Welt." [i.e. Barkenhoff] No precise date is given, though it might have been as late as 1921. Note that Karl Ernst Osthaus invited Langaard and von Rohden (who were teaching at Bieberstein) to his school to teach rhythmic gymnastics as early as 1916. *Karl Ernst Osthaus. Leben und Werk*, 444.

142. Marion de Ras, Körper, Eros und weibliche Kultur, 163-169.

143. Lucia Moholy, Moholy-Nagy, Marginal Notes: Documentary Absurdities (Krefeld: Scherpe Verlag, 1972), 69.


145. On the Kunsterziehungsbewegung (whose founders were Julius Langbehn and Alfred Lichtwark) and Reformpädagogie, see Wolfgang Scheibe, Die Reformpädagogische Bewegung. Eine einführende Darstellung (Weinheim: Beltz, 1978), 139-48. On creativity: 142-3.

146. László and Lucia Moholy-Nagy, "Produktion -- Reproduktion" De Stijl 5, no. 7 (1922). The translation is adapted by me from the one in Passuth, Moholy-Nagy, 289.


149. Haus, Moholy-Nagy: Fotos und Fotogramme, 60ff. On Marcus and Behne (my addition to the list) see above. Another possible source is Raoul Francé, whose writings -- based on the psychovitalist/psychobiological theory of perception of Gustav Fechner, Mach and Avenarius -- László Moholy-Nagy might have had access to. We have documentary evidence of Moholy's awareness of Francé only when Moholy was at the Bauhaus after April 1923, however. On Francé's "psychovitalism," see Chapter Two. On Proletkult and the Hungarian avant-garde in exile, see Oliver Botar, "From Avant-Garde to 'Proletcult': Art and Politics in the Hungarian Journals Egység, Akasztott Ember and Ék, 1922-24," in: Virginia H. Marquardt, ed., Art on the Political Front: Political Journals and Art, 1910-1940, (University of Florida Press, 1997). On Marcus and Hausmann, see Züchner, ed., Der Deutsche Spiesser Ärgert sich, 22, 24-7.
150. Haus details the process by which Mach and Avenarius' ideas were dispersed in fin-de-siècle Germany through the pages of the art journal Kunstwart. Haus, Moholy-Nagy: Fotos und Fotogramme, 59. On art education reform, see Hans M. Wingler, ed., Kunstschulreform 1900-1933 (Berlin: Gebr. Mann, 1977).


153. On this Bund, see Scheibe, Die Reformpädagogische Bewegung, 208, 318-320 and Linse, Die Entschiedene Jugend.


156. See "Die Worpsweder Arbeitschule geschlossen." Educated as a theologian, Wyneken, the inventor of the term Jugendkultur, trained with the pioneer Reformpädagog Hermann Lietz at his school at Ilsenburg. Wynecken founded his own "Freie Schulgemeinde Wickersdorf" in 1906, a model for later Reformpädagogie. On Lietz and Wyneken, see Scheibe, Die Reformpädagogische Bewegung, 111-14. On Wyneken and the Wende-Kreis of Hamburg, see Linse, Entschiedene Jugend, 29ff, 34ff, 137. On Wyneken's important speech at the Hohe Meissner on Jugendkultur, and on his significance for the Youth Movement in general, see Hepp, Avantgarde, 38-41 and de Ras, Körper, Eros und weibliche Kultur, 31-2. On Wyneken and Bruno Taut, and on Wyneken's pedagogy and his school at Wickersdorf, see Whyte, Bruno Taut, 171-3. On Wyneken's correspondence with Gropius and his lecture at the Bauhaus in 1920, see Schall, "Rhythm and Art in Germany," 283-84. On Moholy-Nagy's acknowledgement of Wyneken's influence, see below.

157. On Elisabeth Vogler and Wyneken, see Linse, Zurück o Mensch, 160. Vogler and her students were at Loheland in 1919-1920 (the first academic year). See Linse, Zurück o Mensch, 159 and Marie Buchhold, "Frankenfeld, Schicksal einer Jugend-siedlung," in Werner Kindt, ed., Die deutsche Jugendbewegung, 1606. Lucia remembers being at Schwarzerden in the summer of 1922 already, before the commune was established, but when the women were living together there. Sachsse, Lucia Moholy (1985), 11; Sachsse, Lucia Moholy (1995), 108. See also Loers, "Moholy-Nagys 'Raum der Gegenwart',' 50. Subsequently, Lucia and Elisabeth became close friends and László designed Paul Vogler's clinic in Berlin in 1928. On her friendship with Elisabeth Vogler, see Lucia Moholy in Sachsse, Lucia Moholy (1995), 108. See also Lucia's 1927 photographs of Elisabeth Vogler in Sachsse, Lucia Moholy (1995), 125, and of the Paul Vogler project in Sachsse, Lucia Moholy (1985), 164-5. Sibyl Moholy-Nagy also maintained contact with Paul Vogler, sending her daughter Claudia to his clinic for treatment in 1955.
(Information courtesy of Hattula Moholy-Nagy.)

158. Laqueur, Young Germany, 120; Schenk, Die Freideutsche Jugend, 333; Loers, "Moholy-Nagys 'Raum der Gegenwart'," 41. Like Lucia, Buchhold had published writings in the journal Freideutsche Jugend. On Buchhold and her Socialism influenced by Eastern and Russian mysticism, see also Schenk, Freideutsche Jugend, 193, 195, 200-201.

159. Sachsse, (Lucia Moholy {1985}, 11) reports this as "Gut Schwarzerde" as opposed to Laqueur’s "Schwarzerde" but surely this is the identical commune. The proper spelling according to the relevant map is "Schwarzerden." See Marion E. P. de Ras, Körper, Eros und weibliche Kultur, 159-161. 1926 is indicated by the fact that of 1924 and 1926, 1926 is the year Moholy-Nagy was at Dessau, as he is remembered in de Ras, and in 1924 he was busy working on the manuscript for Painting, Photography, Film. Compare the Hamburg teacher Paule Domke, who spent all her vacations at Schwarzerden. (Linse, Zurück o Mensch, 174) On Gropius and Ise Frank’s vacation after 19 August 1923, see Reginald Isaacs, Gropius: An Illustrated Biography of the Creator of the Bauhaus (Boston: Little, Brown & Co., 1991), 108.

160. De Ras, Körper, Eros, und weibliche Kultur, 160 and Linse, Zurück o Mensch, 159. The courses seem to have been limited to the participation of women, but men were encouraged to visit. (Linse, Zurück o Mensch, 159) Elisabeth Vogler remembers the following concerning the summer courses: "Da waren junge Künstler und Pädagogen, vom Bauhaus in Dessau unsere Freunde Ladislaw und Lucia Moholy-Nagy, freideutsche Studenten verbrachten ihre Ferien bei uns. Arzt und Ärztin Paul und Paula Vogler und später Fritz Klatt und Ernst Duis hielten Kurse." Loers notes that the Voglers, Elisabeth’s brother and sister-in-law, were Gropius’ friends. See: Elisabeth Vogler, "Schwarzerden, ein Neubeginn mit klaren Zielen," in: Werner Kindt, ed., Die deutsche Jugendbewegung 1920 bis 1933. Die bündische Zeit (Düsseldorf: Eugen Diederichs Verlag, 1974), 1611.

161. Moholy-Nagy to Van Doesburg, 26 August 1924, in the Appendix to van Doesburg, Grondbegrippen van de nieuwe beeldende kunst, 107.

162. Lucia Moholy, "Erinnerungen von Freunden."

163. The gymnastics courses began at the end of 1926, so it may have been that summer that Moholy-Nagy prepared designs for the decoration of the gymnasium. See Christoph Conti, Abschied von Bürgertum. Alternative Bewegungen in Deutschland von 1890 bis heute (Hamburg: Rowohlt, 1984), 129. For a reproduction see Loers, "Moholy-Nagys 'Raum der Gegenwart'," 41.
The first quotation is in de Ras, Körper, Eros, und weibliche Kultur, 162, and is from Buchhold's diary of 11. 10.24. The second is from Linse, Zurück o Mensch, 185. On Buchhold's and Vogler's ecological awareness, see Linse, 184-186. On Bachofen, see Bramwell, Ecology in the 20th Century, 27.


On the planned Jacoby book, see Moholy-Nagy's letter to van Doesburg of 26 August 1924 (op. cit., 109); and the Bauhausbücher prospectus, which indicated that this (along with the other listed books) was "in preparation." Reprinted in Hans Wingler, ed., The Bauhaus (Cambridge Mass.: The Cambridge University Press, 1978), 130-1. The praise is contained in Moholy-Nagy's response to Kállai's article in i10 1, no. 6 (June 1927): 234, note; and in Moholy-Nagy, Von Material zu Architektur, 15. The i10 footnote also contains the reference to the planned Jacoby article, as does the footnote on page 156 of The New Vision (1938). I am assuming that Moholy, who was photography editor of i10, and who knew Jacoby's work, commissioned the article. On the biological bases of Jacoby's thinking, see Moholy's note on p. 156 of The New Vision (1938) in which he says that Jacoby article was to be entitled "The common biological basis of all creative work." Moholy writes that "The article was unfortunately never published but the title has been vindicated beyond doubt by Jacoby's previous work." On Jacoby's educational theories as biologically-based, see Heike Le Brün-Hölischer, Musikerziehung bei Heinrich Jacoby (Münster: Lit Verlag, 1987), esp. 14ff. 109ff. and 153ff.

169. Lucia Moholy, Marginal Notes, 57. Naturally Jacoby was not the only one to hold the view that "everyone is talented." Johannes Itten, based on his masters (Pestalozzi, Cizek, Montessori), saw everyone as inherently creative. However the specific articulation of Moholy-Nagy's version of this idea seems to derive from Jacoby, and is so credited by László in Von Material zu Architektur, 14-15 and its English edition The New Vision (1938), 15. (On Itten: Frank Whitford, Bauhaus [London: Thames and Hudson, 1984], 51-4.) Taking up Lucia's cue, Wulf Herzogenrath is one of the few authors to mention Jacoby in his writing on Moholy-Nagy. See: "Laszlo Moholy-Nagy (sic) professeur au Bauhaus" in: Laszlo Moholy-Nagy (sic) (Paris: Pompidou, 1976), 119.

The evidence concerning the Moholy-Nagys' personal relationship with Jacoby is sparse but decisive. That Jacoby, as the Moholys, had connections with German Quakers, suggests that they moved in similar circles. (On Jacoby's connections with the Quaker Elisabeth Rotten see Jenseits von begabt und unbegabt, 505-06.) The reference in László's letter to van Doesburg of 26 August 1924 concerning a planned Jacoby book in the Bauhausbücher series makes it certain that they were in contact by then, as does the planned article for i10 in 1927 discussed above. Lucia's 1927 portrait series of Jacoby is material evidence of their contact by that date. (Reproduced in Sachsse, Lucia Moholy [1995], 121.) Lucia's letter to Jacoby of 1 October 1947 in which she describes her partner Theodor Neubauer's arrest in 1933, and her subsequent emigration from Germany, implies that Lucia, Neubauer and Jacoby were part of a common circle of friends in Charlottenburg before 1933. (Lucia Moholy papers, Bauhaus-Archiv Berlin. (Thanks to Lloyd Engelbrecht for providing me with a copy of
the letter. It has been published in Sachsse, Lucia Moholy
(1996), 81-3. Also: Lucia Moholy, Marginal Notes, 57. On
Jacoby as resident in Berlin from 1928 to 1933, see Le Brün-
Hölscher, Musikerziehung bei Heinrich Jacoby, 4.) In a note-
book kept on her trip to London during the summer of 1925
Hannah Höch writes "Jacoby Moholy," and then crosses the text
out -- an enticing if cryptic (since neither of the Moholys
were in London that year) association of the two names. (Ha-

170. Terry Suhre implicitly recognized this Monism when he
wrote "Throughout his life Moholy wrote on an amazing variety
of subjects ... always emphasizing the inherent unity of all
things." Introduction to Moholy-Nagy: A New Vision for Chicago
(Chicago: University of Illinois Press and the Illinois State


173. On this, see Alain Findeli, Le Bauhaus de Chicago: L’oeu-
vre pédagogique de László Moholy-Nagy (Sillery, Qué.: Septen-
trion, 1995), 177-82. On Dewey and Germany, see Scheibe, Die
Reformpädagogische Bewegung, 171-210. Moholy-Nagy owned a copy
of Dewey’s Art as Experience, dedicated by the author to him
in 1938. (Information courtesy of Hattula Moholy-Nagy.)

174. Gropius, "Program of the Staatlichen Bauhaus in Weimar,"
in Wingler, ed., The Bauhaus, 32. See also Franciscono, Bau-
haus, 137.

175. Hans Christoph von Tavel, "Johannes Itten: Sein Denken,
Wirken und Schaffen am Bauhaus als Gesamtkunstwerk," in Das
frühe Bauhaus und Johannes Itten (Stuttgart: Gerd Hatje,
1994), 49.

176. Tut Schlemmer, ed., The Letters and Diaries of Oskar
Schlemmer Krishna Winston, trans. (Evanston: Northwestern
University Press, 1990), 53. These two passages were first
quoted together by Schall in her "Rhythm and Art In Germany,"
353. On esoteric and nature-centric references in Schlemmer’s
letters and diaries, and on what is in effect Schlemmer and
his colleague Lothar Schreyer’s biocentrism at the Bauhaus,
see Schall, 335-58.

177. Klee, Sixth excercize (Monday 3 July 1922). In: Paul
Klee, Notebooks. Volume 1. The Thinking Eye. Edited by Jürg
Spiller. Translated by Ralph Manheim. (Woodstock, N.Y.: The
Overlook Press, 1992), 449.


182. Wassily Kandinsky, contribution to "Mosaic": addendum to Charles Sirató, "Manifeste Dimensioniste" plastique no. 2 (Summer 1937): insert. This important statement by Kandinsky has been omitted from Kenneth C. Lindsay and Peter Vergo, eds., Kandinsky, Complete Writings on Art (New York: Ca Capo Press, 1994).

183. For this standard history, see e.g., Whitford, Bauhaus, Chapter 12 and Magdalena Droste, Bauhaus 1919-1933 (Cologne/Berlin: Benedikt Taschen Verlag/Bauhaus-Archiv, 1990).


185. On organic attitudes at the Bauhaus and on the Bauhaus as a synthesis of functionalist and non-functionalist views, see Alain Findeli, "The Bauhaus: Avant-Garde or Tradition?" The Structurist 29-30 (1989-90): 56-62 and Schall, "Rhythm and Art in Germany," Chapter V. On Monists such as Haeckel, Ostwald and Mach, and on Driesch at the Bauhaus, see Sarah Lynn Henry, "Paul Klee, Nature, and Modern Science: the 1920s" (Ph.D. dissertation, University of California, Berkeley, 1976), 76-77. See also her "Paul Klee's Pictorial Mechanics from Physics to the Picture Plane," Pantheon 47 (1989): 148-9. Henry was the first to point out the importance of the biocentric intellectual discourse to the Bauhaus. Though she of course did not employ this term, indications are that she would accept it. (Personal communication with Henry 1994-5.) For a synopsis of esoteric interests among Bauhaus masters, see Wolf Herzogenrath, Bauhaus-Utopien: Arbeiten auf Papier (Stuttgart: Edition Cantz, 1988), 29-30.

186. On concepts of unity as central to Romanticism, see Wiedmann, Romantic Roots in Modern Art, 3.

187. Schall has done a lot of work towards such a revision of Bauhaus history, but she has framed it within a discourse on "rhythm" rather than a more specifically geistesgeschichtlich one such as I am attempting. Still, Schall's work stands as the most important in this regard. See "Rhythm and Art in
Germany," Chapter V.


191. Kockerbeck, Ernst Haeckels "Kunstformen der Natur." On Endell and the educational reform movement, including Endell’s, Obrist’s and van de Velde’s activity, from which the Bauhaus emerged, see Ekehard Mai, "Von der hohen zur angewandten Kunst: Kunstgewerbebewegung und Reform der Künstlerausbildung um und nach 1900" in Peter Hahn and Christian Wolsdorff, eds., Bauhaus-Archiv Museum für Gestaltung: Sammlungs-Katalog (Berlin: Bauhaus-Archiv, 1981), 259-62. Van de Velde was well aware of Monism and Haeckel’s aesthetic project since not only was Haeckel his friend, he was a relation by marriage. See: van de Velde, Geschichte meines Lebens, 376. On van de Velde, Obrist, Endell, Gropius and Bruno Taut as forming an oppositional grouping at the Werkbund conference in Cologne in 1914, see Die Zwanziger Jahre des Deutschen Werkbunds (Berlin: Werkbund-Archiv/Anabas, 1982), 24-7.

192. On the hiring see Isaacs, Gropius, 44, van de Velde, Geschichte meines Lebens, 211. Van de Velde certainly saw himself as the Wegbereiter of Gropius’ Bauhaus. On van de Velde’s feelings on the fame of the Bauhaus, see page 428. Van de Velde’s letter to Gropius of 11 April 1915 inviting him to apply is reprinted on page 501.


195. As an admirer of Scheerbart’s writings, and as a member of Taut’s circle, Gropius had been invited to join the Glass Chain correspondence, had accepted, but had then not participated in the actual letter writing, though he did engage in the selection of works for the "Austellung unbekannte Architekten" in April 1919. See Franciscono, *Bauhaus*, 124, 144 and Whyte, *Introduction, The Glass Chain Letters*. See also Isaacs, *Gropius*, 64-6. On Behne and von Uexküll, see above. On the Arbeitsrat and Novembergruppe: Franciscono, *Bauhaus*, 123. See, e.g., Whitford, *Bauhaus*, Chapter 4. On Gropius in the pre-war Werkbund, see, e.g., Van de Velde, *Geschichte meines Lebens*, 354.

196. From an unpublished manuscript, dated by Peter Hahn to "Frühjahr, 1919," Peter Hahn, "Black Box Bauhaus: Ideen und Utopien der frühen Jahre" in *Das frühe Bauhaus und Johannes Itten*, 22.

197. Walter Gropius, "Program of the Staatlichen Bauhaus in Weimar," in Hans M. Wingler, ed., *The Bauhaus* (Cambridge, Mass.: The MIT Press, 1969), 32. See also Franciscono, *Bauhaus*, 137. While -- appropriately referring to Franciscono’s work -- Schall rightly points out the Romantic roots of this drive towards unity, she misses its immediate grounding in the pre-war Monist discourse. See "Rhythm and Art in Germany," 280. For her important paragraph on the Nietzschean elements in this program, see the same page.


202. The Letters and Diaries of Oskar Schlemmer, 83. Schlemmer heard Prinzhorn's slide-illustrated lecture around early July 1920 at the home of Hans and Lily Hildebrandt in Cannstadt, near Stuttgart, while Prinzhorn was working at the psychiatric clinic of Heidelberg University (1919-1921). He does not specify where and when Klee heard Prinzhorn speak. Schreyer's account of his conversation with Paul Klee, the source of this text on Prinzhorn, would have taken place after the book's publication in June 1922 but before Schreyer's departure in 1923. Lothar Schreyer, Erinnerungen an Sturm und Bauhaus (Munich: Langen-Müller, 1956), 169. For the month of the book's appearance, see Geinitz, "Hans Prinzhorn," 51. For an early account of Prinzhorn's work in Heidelberg on the art of mentally ill people (though Prinzhorn's name is not mentioned), see Klages' friend, Alfred Kubin's "Die Kunst der Irren" Das Kunstblatt 6, no. 5 (May 1922): 185-7. On Prinzhorn see also Chapters Two and Five.


204. See: Ernő Kállai, "bauen und leben," review of Hans Prinzhorn, Leib-Seele-Einheit (Potsdam and Zurich, 1927), bauhaus 3, no. 1 (January 1929): 12. Irene Blüh reports having studied psychology with Prinzhorn at the Bauhaus sometime between 1930 and 1933; she is probably referring to the 1932 lecture. See Wolf Herzogenrath, Bauhausfotografie, (Stuttgart: Insitut für Auslandsbeziehungen, 1983), 86. On Prinzhorn, Klee and Kállai at the Bauhaus see also Roskill, Klee, Kandinsky, and the Thought of Their Time, 142-3. See also Chapter Five on Prinzhorn at the Bauhaus. Prinzhorn's Bauhaus lecture "Grundlagen der neuen Persönlichkeitpsychologie" (16.3.29) seems to have been an early version of the ideas Prinzhorn later expressed in Persönlichkeitpsychologie. Entwurf einer biozentrischen Wirklichkeitslehre vom Menschen (Leipzig: Quelle & Meyer, 1932).


206. See the list in bauhaus 3, no. 2 (April-June 1929): 27.

207. On the Francés' social contacts, see Chapter Two. On Gropius and Förster-Nietzsche, see Isaacs, Gropius, 85. In 1919, Förster-Nietzsche campaigned for the provision of a house and studio space at the new Bauhaus for van de Velde, who had designed and furnished the Nietzsche-Archiv before the war. Later she supported the work of Hans Prinzhorn. See


209. Annie Francé-Harrar, So war’s um Neunzehnhundert: Mein fin de siècle (Munich and Vienna: Albert Langen and Georg Müller, 1962), 204-5. On the anti-Bauhaus feeling at the time in the town, see, e.g., Isaacs, Gropius, 81 and especially 116-17.


211. See Gropius’ letter to Behne of 3 January 1923 thanking him for introducing him to Moholy-Nagy and El Lissitzky in this connection. Reprinted in: Janos Frecot and Diethart Kerbs, eds., Werkbundarchiv: Erstes Jahrbuch (Berlin: Werkbund-Archiv, 1972), 148. As we will see, El Lissitzky was also interested in Raoul Francé and biocentrism by 1923.

212. Scheler, Wesen und Formen der Sympathie (1913; 1922) (Berne: Francke, 1973), 82-104. On Scheler, see Chapter Two and Eleanor Jain, Das Prinzip Leben: Lebensphilosophie und ästhetische Erziehung (Frankfurt/Main: Peter Lang, 1993), 120-21. For an example of a vitalmystisch definition of Theosophy and Anthroposophy, see the unsigned article "Theosophie und Philosophie" in Das Kunstblatt 7, no. 1 (January 1923): 21-4; in which Theosophy is characterized as "eine Theologie der Natur."


215. Ibid., 49 and 53 respectively. On Itten and Goethe see page 53.

216. Wick, "Zwischen Rationalität," 161. On Itten’s pedagogy, as organicist: Rainer Wick, "Zwischen Rationalität und Spiritualität: Johannes Ittens Vorkurs am Bauhaus," in Das frühe Bauhaus und Johannes Itten, 158-9. See also Franciscono, Bauhaus, 180ff, especially with respect to the Kunsterziehungsbewegung in Germany; and Herzogenrath and Kraus, Bauhaus-Utopien, 53-60. According to them -- though this is not documented -- Heinrich Jacoby was also one of Itten’s pedagogical sources. (p. 53). This would have been via Itten’s protegée Gertrud Grunow, whose assistant Hildegard Heitmeyer studied with Jacoby in Dresden-Hellerau. See Cornelius Steckner, "Die Musikpädagogin Gertrud Grunow als Meisterin der Formlehre am


218. Letter to Anna Höllering quoted by Rolf Bothe, "Der Turm des Feuers" in: Das frühe Bauhaus und Johannes Itten, 73. "Organische" is reproduced in Von Tavel, "Johannes Itten," 41.


220. Ibid., 39.

221. Hahn, "Black Box Bauhaus," 30. See also Rykwert, "The Dark Side of the Bauhaus."

222. Schall, "Rhythm and Art in Germany," 339.


225. The Letters and Diaries of Oskar Schlemmer, 35. The translation has been slightly altered by Oliver Botar. For the original German, see Hünke, ed., Oskar Schlemmer, Idealist der Form, 23.

226. Diary entry, Weimar, 28 July 1921, refering to "back in Stuttgart (i.e. ca. 1919-20). The Letters and Diaries of Oskar Schlemmer, 111-12.

227. Letter to Tut Schlemmer, Cannstadt, 9 May 1920, in Ibid., 79.

228. Letter to Otto Meyer, Cannstadt, 7 August 1920 in Ibid., 86. See also his 4 October 1920 and mid-December 1925 letters to Meyer (pp. 88-9; 183) and his diary entry of 25 June 1923 (p. 141). On Keyserling establishing the "Schule der Weisheit" in 1920, see Ute Gahlings, Sinn und Ursprung: Untersuchungen zum philosophischen Weg Hermann Graf Keyserlings (Sankt Augustin: Academia, 1992), vii. On Keyserling and Prinzhorn, see Geinitz, "Hans Prinzhorn."
229. Schall, "Rhythm and Art in Germany," 348.


234. Henry, "Paul Klee, Nature and Modern Science," xii. It comes as no surprise that Bauhaus graduate Karl-Peter Röhl should have his students at the Frankfurter Kunstschule (he taught there from 1926 to 1933) draw after nature not only the traditional themes of nudes, animals, and plants, but also patterns displayed in microscopic photographs, and close-up images of cut stones and shells. See Wingler, ed., Kunstschulreform 1900-1933, 148, 186.


239. Kandinsky, "The Blaue Reiter (Recollection)," *Das Kunstblatt* (1930), in Lindsay and Vergo, eds., *Kandinsky: Complete Writings on Art*, 748.


243. "[Klee] collected algae during his visits to the Baltic, pressed them between plates of glass, and entitled the arrangement 'Baltic forest'. He brought sea-urchins, sea-horses, corals, and molluscs from Sicily and other Mediterranean regions. He collected butterflies and stones -- crystals and petrified plants, amber, calcite crystals on coloured sandstone, quartzes and mica." Jürg Spiller, in Paul Klee, *The Thinking Eye*, 24. "Klee's natural history collection included sea and snail shells.... In the twenties he filled a portfolio with pictures and photographs of curious forms and shapes of the kind often published as 'wonders of nature.' A major part of this collection consisted of pictures, cross sections and x-rays of molluscs. *The Nature of Nature*, 289. See also Hart-
mann, "Die Spirale im bildnersichen Denken von Paul Klee."


245. Barnett, "Kandinsky and Science," 69. The file is in the Kandinsky Library (Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky, inv. 908). It contains many scientific images, including two photographs from what seems to have been a review of Ernst Fuhrmann's Die Pflanze als Lebewesen (1930): "Der Same vom Reih erschnabel (?) als Erdbohrer" and "Als ob die Kürbisblüte schon wüsste, wie schwer ein Kürbis ist"; two photos from Blossfeldt's Urformen der Kunst (Kandinsky owned the second edition of Urformen der Kunst [Berlin: Wasmuth, 1929]); Albert Leon's photograph Schildkröter from an unidentified journal; fragments from: G. von Borkow, "Leben unter Hochdruck. Die entschleierte Welt der Tiefsee" Die Koralle 6, no. 11 (February 1931): 495-9; and from the same issue, microscopic photographs of tongues. (Information on the last two items is from Barnett.)

246. Haeckel, The Riddle of the Universe, 2

247. Kandinsky, Point and Line to Plane, 537.


250. Arp is, along with Klee, a paradigmatic "Bioromantic" artist, i.e. one who combines biomorphic Modernist style with an unequivocal biocentric worldview.

251. As is well known, Steiner named the building at the centre of his anthroposophical headquarters in Dornach near Basel the "Goetheanum." On Haeckel and Steiner, see Bowler, The Non-Darwinian Revolution, 193; Barnett, "Kandinsky and Science," 86; Gordon, Expressionism, 22.

252. On Dacqué, see Chapter Two. Kandinsky owned two of his books: Leben als Symbol (Munich/Berlin: R. Oldenbourg, 1931), Urwelt, Sage und Menschheit (Munich/Berlin: R. Oldenbourg, 1928); (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky) On Maeterlinck's works in the Paris library, see Hahl-Koch, Kandinsky, 193. On Maeterlinck and Kandinsky, see also Kandinsky, On the Spiri-


254. Roskill, Klee, Kandinsky and the Thought of Their Time, 54-63. Wiedmann, Romantic Roots in Modern Art, 94-6. Jürgen Glaesemeeer's article on "Klee and German Romanticism" is the definitive one on the subject, however. In: Caroline Lanchner, ed., Paul Klee (New York: MOMA, 1995): 65-81. On the long-standing personal and professional relationship between Klee and Kandinsky, and on the close parallels between their aesthetic systems, see, e.g., Magdalene Droste, Klee und Kandinsky: Erinnerung an eine Künstlerfreundschaft (Stuttgart: Staatsgalerie, 1979), 9-22. See also Sabina Gmür, "Beuys und Klee: Ein Vergleich" (Lizentiatsarbeit, Zurich: Universität Zürich, 1985), in which she argues that German Romanticism, the poetry of Novalis in particular, was important to the development of Klee's theory of art. In his "Exakte Versuche im Bereiche der Kunst" (1928), Klee anticipates the accusations of "Romanticism! Cosmicism! Mysticism!" being leveled against his thought. See The Thinking Eye, 70. On Kandinsky and Nietzsche, see also Gordon, Expressionism, 15-16.


258. See Jain, *Das Prinzip Leben*, 142-7 and Priebe, *Angst und Abstraktion*, 25-6, 113-27. Jain is not an art historian, but has written on the history of art education. Priebe concludes that "eine intensivere Auseinandersetzung des Künstlers mit den Schriften Bergsons ist also um 1912 anzunehmen. (p. 123) Carola Gledion-Welcker, "Kandinsky’s Malerei als Ausdruck eines geistigen Universalismus," *Werk* 37 (April 1950): 119-23. On Kandinsky and anti-Positivism early in the century, and on Kandinsky’s relations to the writings of Fichte, Maeterlinck and Bergson, see Zweite, "Free the Line for the Inner Sound." Kandinsky owned Bergson’s *Essais sur les données immédiates de la conscience* (Paris: Félix Alcan, 1924), and *Zeit und Freiheit* (Jena: Eugen Diederichs, 1911). Kandinsky left his first German library with Gabrielle Münter, and received parts of it back from her in 1926. (Information courtesy of Jessica Boissel, Fonds Kandinsky.) I have not seen the part of the library preserved by Münter, now in the Lehnbachhaus in Munich, but Hahl-Koch reports that Bergson’s *Introduction to Metaphysics* (Jena 1912) is in that collection as well. (Kandinsky, 193) Kandinsky’s friend Will Grohmann asserted that the artist was acquainted with Bergson’s Creative Evolution. (Grohmann, "The Great Unity of a Great Work" in G. di San Lazzaro, ed., *Homage to Wassily Kandinsky*. New York: Leon Amiel, 1975, 14) Peter Selz remarked that Kandinsky’s "philosophy finds perhaps its


266. Giedion-Welcker, Paul Klee, 6. Cf. also: "All becoming is based on movement." (The Thinking Eye, 76-80) and: Everything (the world) is of a dynamic nature; static problems make their appearance only at certain parts of the universe, in "edifices", on the crust of the various cosmic bodies. Our faltering existence on the outer crust of the earth should not prevent us from recognising this. For we know that, strictly speaking, everything has potential energy directed towards the centre of the earth. If we reduce our perspective to microscopic dimensions, we come once more to the realm of the dynamic, to the egg and to the cell. Accordingly there is a macroscopic dynamic and a microscopic dynamic. Between them stands the static exception: our human existence and its forms. (The Thinking Eye, 5 [1940])


Jean Arp, "Kandinsky" (1948) in Michel Seuphor, L'art abstrait (Paris: Maeght, 1950), 100. Among the many Vitalistic and Monistic pronouncements made by Kandinsky, see, e.g., his letter to Galka Schreyer quoted in Hahl-Koch, Kandinsky, 355.


Kandinsky, Point and Line to Plane, 672.


Zweite, "Free the Line for the Inner Sound," 27.


Kandinsky, Point and Line to Plane, 275.

In Kandinsky's library we find Felix Krüger's Psychologische Optik (Munich: Beck'sche Verlagsbuchhandlung, 1930), as well as a dedicated offprint of one of Krüger's articles; (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky)

For a critique of the theosophical/anthroposophical as well as Shamanistic line of art history (but their apparent replacement by Sufism and Orthodox Christianity), see Hahl-Koch, Kandinsky, 28, 177-8.


Kandinsky owned Wilhelm Ostwald's Die Harmonie der Farben (Leipzig: Unesma, 1923) and a volume of his letters; (Kandinsky Library, Paris, Musée National d'Art Moderne, Centre Georges Pompidou, Fonds Kandinsky)


286. On Kandinsky and the George/Wolfskehl circle in Munich, see Weiss, Kandinsky in Munich, 21-5, Chapter VIII and Schall, "Rhythm and Art in Germany." Hans Prinzhorn was associated with a related circle with contacts to Klages' lover, the Countess von Reventlow, and to Ricarda Huch, see: Geinitz, "Hans Prinzhorn," 42.


289. Scheler describes what I would refer to as biocentrism in the following terms: "Fechner, Bergson, Phänomenologie, Vitalismus, Kreis um Stefan George, Jugendbewegungen." Scheler, *Wesen und Formen der Sympathie*, 104. As we have seen, Evelyn Priebe is the only scholar to have discussed Kandinsky within this milieu in relation to Neo-Vitalism and Monism. I wish to thank Rose-Carol Washton-Long for her suggestion to examine the George circle.

290. Kubin was too shy to introduce himself to Klages after he began to frequent Karl Wolfskehl's Munich circle in 1903, but he met him by chance on a train during the summer of 1911 and was deeply impressed by him. He invited him in August to his home in Zwickledt in Austria. See Anneregor Hoberg, ed., *Alfred Kubin 1877-1959* (Munich: Lenbachhaus and Hamburger Kunsthalle, 1990), 16, 21, 72-3, 180. On Kubin and Prinzhorn in 1922, see p. 25. For Kubin and Franz Marc's correspondence, see Gollek, ed., *Franz Marc*, 123-9.


294. Paul Klee, *Eros*, watercolour 1923 (33.3 X 24.5 cm). While Christian Gelhaar does not refer to Klages, in connection with this work he writes: "For the meaning of the content of the work it is only necessary to recall the cosmogonic role of Eros in the ancient Creation-myths." Christian Gelhaar, *Paul Klee and the Bauhaus*, 56.

295. Grohmann, *Paul Klee*. For the parallels between Klee's and Francé's thinking, see below.


Klee, 97-98.

298. Driesch was not in Naples during Klee's visit, as he left "im Frühjahr 1902" and only returned "im Frühjahr 1903." (Driesch, Lebenserinnerungen, 128)


300. Weiss, Kandinsky and Old Russia, 28-30.


304. Fransiscono, Bauhaus, 245.
CHAPTER FOUR

Raoul Francé, the Biocentric Constructivist Discourse, and Moholy-Nagy’s New Vision

Wir müssen die Herrschaft der Technik abschütteln. (Behne 1918)²

Beweglichkeit, dem Akademischen werfe ich den Fehdehandschuh hin, kein mechanischer Aufbau, sondern lebendiger, organischer. (Gropius 1919)²

L’avion et la limousine sont des créations pures qui caractérisent nettement l’esprit, le style de notre époque. (Le Corbusier 1920)³

The organization of industrial life has given rise to new forms that are totally different from those of organic origin. ("Engineerism" n.d. c. 1922)⁴

We have lost unity with nature and the religion of the supernatural. Our actions are executed in accordance with laws of scientifically and technically determined, rationally organized energies. This can be taken as tragic or accepted with equanimity: For an art that ... wants to face this given, civilizing reality, this urgently calls for intellectual lucidity and discipline rather than unconscious or metaphysical oppression. It is not organic growth, but abstract construction that is to be spiritualized. (Kállai 1922)⁵

Das Mechanische ... ist unmittelbarster Ausgleich des Statischen und Dynamischen.... Wenn ... Kultur ... Unabhängigkeit von der Natur bedeutet, dann darf es uns nicht wundern, weshalb für das kulturelle Stilwollen die Maschine im Vordergrund steht. Die Maschine ist das Phänomen geistiger Disziplin par excellence.... [Ihre] neuen Möglichkeiten ... haben eine unserer Zeit entsprechende Ästhetik geschaffen, welche ich ... die ‘Mechanische Ästhetik’ genannt habe. (van Doesburg 1922)⁶

En mocht de techniek ons geven wat wij verlangen, mocht de mensheid opbouwen uit deze stof een nieuwe wereld, dan zullen wij wederom ... vrolijk zijn in te tuinen der fantasie en dwalen met onzen geest en onze ziel door het vrolijk labyrinth van den kosmos. En kunst en techniek zullen broederlijk in die tuinen spelen... Stil lacht de natuur in haar almacht en laat de kinderen spelen. (Wijdeveld 1923)⁷
La machine ... opère dans le monde une réformation de l’esprit... La leçon de la machine est dans la pure relation de cause à effet. (Le Corbusier 1925) 

Mécano (van Doesburg 1922)

La maison est une machine à habiter. (Le Corbusier 1925)

Hausorganismus. (Ebeling 1926)

It is not difficult to show that Nature will never be completely conquered by Man’s technological creations .... The machine is much more like an animate organism than is generally thought.... Therefore we must learn to regard the machine not as something dead ... but as something animated, organic, alive. (Toporkov 1921)

We have had enough of perpetually hearing MACHINE, MACHINE, MACHINE when it comes to modern art-production.... We wish to design ... the peace of nature.... Our work is not a philosophy and not a system for acquiring cognition of nature, it is a limb of nature.... There is still a civil war going on with opposing opinions; and today this civil war is art’s fight for its life. (El Lissitzky 1924)

The end of a civilization that considers buildings as mere machines is that it considers human beings as mere machine-tenders: it therefore frustrates or diverts the more vital impulses which would lead to the culture of the earth... (Mumford 1924)

Das Leben ist eben nicht bloss ein materielles, sondern auch ein funktionelles Problem. (France 1923)

Das Bewusstsein der herrschenden materialistischen Weltanschauung ist ein mechanisches, dem sich für uns die universale Funktionalität entgegenstellt. (Hausmann 1924)

Wenn der Funktionalist sich auf die Maschine beruft, so sieht er in ihr ... die vollkommene Annäherung an das Organische. Wenn der Utilitarist sich auf die Maschine beruft, so sieht er in ihr das ökonomische Prinzip: Arbeits-, Kraft- und Zeitsparnis. (Behne 1926)

Die Form des Baumes ist eins mit seinem Wachstumsprozess, der ein lebendig organischer ist, ebenso
wie die Form einer Maschine eins ist mit den in ihr organisierten Kräften. (Rietzler 1926)\textsuperscript{18}

The "Constructivists" also operated with materials, but secondarily, for the sake of their formal tasks .... [They] did not take into account the organic connection between material and its tensile capacity in [their] work.... [I]t is only as a result of the dynamics resulting from these interrelationships that a vital and inevitable form is born.... My [flying machine] is built on the principle of utilizing living, organic forms. (Tatlin 1932)\textsuperscript{19}

Das Weltgesetz erzwingt es, dass zuletzt die Technik des Organischen und die des Menschen identisch sind. (Francé 1920)\textsuperscript{20}

Die Technik ist ein organisch sich entwickelnder Lebensfaktor. (Moholy-Nagy, 1929)\textsuperscript{21}

1. "Biocentric Constructivism": Towards a Synthesis of the "Machine Analogy" and the "Biological Analogy"

These passages circumscribe the aesthetic debate carried on during the early 1920s as part of the controversy on nature and technology that Friedrich Dessauer termed the "Streit um die Technik."\textsuperscript{22} At the core of this debate was a perceived dichotomy between "nature" and "technology," of a "technocentric" versus a "biocentric" position; a transposition of the dichotomy between Seele and Geist which carried with it the ideological baggage of that opposition. While in the immediate post-war situation an anti-war, anti-technological position was widespread, the debate became more complicated with the consolidation of the German economy towards 1923-24.\textsuperscript{23} It was intense enough around that time for the Belorussian Jewish artist Lazar El Lissitzky to refer to it as a "civil war" within art. Monist organicists such as Adolf Behne and Raoul Hausmann, and a biocentric Constructivist such as Lissitzky, took the side of "nature" in this debate, for -- like Ludwig Klages and Oswald Spengler -- they saw technology and mechanization as destructive manifestations of Geist and Welt.\textsuperscript{24} For
others such as van Doesburg, Werner Graeff, Ernő Kállai and the Paris Purists -- despite what might be termed a "biocentric unconscious" discernable in their thinking -- at this stage "nature" was for them redolent of outdated romantic attitudes inappropriate for the mechanized post-war era.

Rather than nature, machines were to be the source of a "new spirituality" and matter was to be "denaturalized," as van Doesburg put it in the title of a collage of this period. This dichotomy has been modelled by Peter Collins as a contest between the "machine analogy," the idea that art and architecture should emulate machinery, and the "biological analogy," that nature's structures and processes should act as models instead. Oskar Schlemmer articulated these tensions thus:

> These two alternatives strike me as typical of current trends in Germany[: ] On the one hand, the influence of oriental culture ... [and] a return to nature in the Wandervogel movement and others like it; also communes, vegetarianism, Tolstoyism, reaction against the war; and on the other hand, the American spirit, progress, the marvels of technology and invention, the urban environment.... I affirm both possibilities, or at least I would like to see cross-fertilization between [them]. Or are progress ... and self-fulfillment ... mutually exclusive?

He elaborates on this "cross-fertilization" elsewhere in his diary: "Both these modes of consciousness ... are symptoms of one and the same yearning. A yearning for synthesis dominates today's art...." Sensitive to new trends, well-placed at the Bauhaus to keep abreast of them, and reflecting his own Monism, Schlemmer not only identified this tension, he also articulated something crucial to my argument here: the Monist-inspired desire for its synthetic resolution. For some, the resolution resided in a shift to biocentrism, which resulted in what might be termed a "biocentric Constructivist discourse," a discourse out of which, in turn, László Moholy-Nagy's "New Vision" arose. Hence Raoul Hausmann's slogan of 1921: "Wir wollen in dieser mitteleuropäischer Flachheit endlich den Aspekt einer Welt, die real ist, eine Synthese des
As we shall see in Chapter Five, this New Vision gave rise to the incorporation of the results of scientific imaging processes into the discourse of high art, making such images readily available to artists. A mediate position was occupied by the Polish Constructivists Mieczysław Szczuka and Teresa Zarnower, who wrote, "Constructivism does not imitate the machine, but it finds its equivalent in the machine's simplicity and logic."\(^{11}\)

The debate Schlemmer articulated was central to the cultural shift occurring in Europe -- what John Willett has referred to as the "turning point" of 1921 to 1923\(^{12}\) -- from personal, "emotional," expressionist cultural forms towards rectilinear abstract, ostensibly "elemental," impersonal, "sachlich," and "functional" ones; from Expressionism towards what came to be known as a neue Sachlichkeit, a new objectivity in architecture, design and photography, and "Constructivism" in painting and sculpture, what Willett has summarized as "The New Sobriety."\(^{13}\) "Arbeit. Klarheit. Organisation." wrote the Russian writer Ilya Ehrenburg in 1921, in _Und sie bewegt sich doch_, his manifesto of the New Sobriety, which appeared the next year in Berlin and Moscow.\(^{14}\) "Unsere 'Gefühle' hindern uns daran, das für uns wahrhaft Wesentliche zu sehen," wrote Werner Graeff and Hans Richter in the first issue of their International Constructivist journal _G_ [Berlin: 1923-26].\(^{15}\) Gustav Hartlaub phrased it thus in the "Neue Sachlichkeit" exhibition catalogue: "Today, buffeted as we are by the most profound upsets and wild fluctuations in our lives and values, we see the differences more clearly: the move toward topical, restrained findings in some, the emphasis on concreteness, the technical precision in all."\(^{16}\)

a. International Constructivism in Germany

Besides the pre-war tradition of Hermann Muthesius, Henry van de Velde and the _Werkbund_ in Germany, there were key imports which stimulated the rise of sachlich design and artistic
Constructivism in post-war Germany: Paris Purisme, the Dutch De Stijl circle, Hungarian emigre "Constructivism," and its Russian original. While in the debate on nature and technology they all privileged the machine analogy at this stage, they also occupied complex positions blending technophilia (or "technomania" as Kállai later phrased it), biocentrism and idealism; positions fluid enough to allow for the emergence of a biocentrically informed Constructivist ideology in some.

Embodying the post-war rappel à l'ordre, rooted in the ideas of the Werkbund and its pre-war organ the Werkbund-Jahrbuch, the Swiss expatriate Charles-Edouard Jeanneret’s and the Frenchman Amade Ozenfant’s journal L’Esprit Nouveau appeared in Paris in the fall of 1920. The German understanding of this phenomenon was epitomized by the critic Waldemar George, who in 1927 wrote that in France "dieser Antiromantismus hatte sein Organ im 'Esprit Nouveau', der zum Sprachrohr einer 'mathematischen' Kunst wurde." In their art Jeanneret and Ozenfant were working in a restrained, orthogonal-abstract style of post-Cubist painting, and in their journal they addressed issues of the relationship between art, nature, science, mathematics and technology. When he resumed architectural design in 1922, "Le Corbusier" employed a pared-down, rectilinear style. Despite the post-war tensions between Berlin and Paris, this journal became known in German avant-garde circles by early the following year and contact was maintained by critics as important as Behne and Westheim, the latter the editor of the influential Berlin art journal Das Kunstblatt [Weimar; Berlin: 1917-1933]. The juxtaposition of architecture, art and machines; the Purist style, and the material on scientific, philosophical, psychoanalytic, literary, and artistic subjects in L’Esprit Nouveau made a deep impression on the Central European avant-garde of the day, and in effect gave foreign legitimation to the Werkbund’s ideology at a time when anything German was in disrepute. In their call for "un esprit de construction et de
synthèse," the Purists offered one answer to Schlemmer's Monist Sehnsucht.\textsuperscript{41}

The Purist aesthetic was a complex and contradictory amalgam of Platonism and Pythagorean philosophy spiced with healthy doses of anthropocentrism and Organicism.\textsuperscript{42} While it was, in the 20s -- as von Moos phrases it -- essentially "Neoplatonic and idealist,"\textsuperscript{43} it also contained within it what could be termed a "biocentric unconscious," one which came increasingly to the fore as time wore on.\textsuperscript{44} Thus, though the "mathematical" art Waldemar George referred to was one based on the Golden Section proportions Le Corbusier came to adopt as a result of his direct study of nature, and though "le Corbusier constantly points to the basic analogies between biology and building," the "Nordic" kosmovitale Einsfühlung was missing; "there was hardly ever the sense of solidarity and conspiracy with a natural site that was so important to architects such as Neutra, Wright, or Aalto."\textsuperscript{45} The ideal realm of mathematics -- associated with technology -- rather than deriving from "nature," was seen to precede and underlie it.\textsuperscript{46} Von Moos has provided us with the most cogent résumé of this complex, early Purist position:

On the formal level, geometry frequently serves not only as an antithesis to nature but also as the mediator by which nature can be extended into the man-made environment. On the conceptual level, geometry, and mathematics in general, provide the structure through which nature, and the cosmos, can be understood and organized. To discover nature with the help of geometry and to use geometry as a cabalistic key -- not only to an intellectual understanding, but also to a pantheistic experience of nature.\textsuperscript{47}

Rather than through a direct experience of "nature," it was through a Pythagorean sense of the underlying geometric order of the cosmos that kosmovitale Einsfühlung was experienced. Indeed, in 1923 Le Corbusier and Ozenfant held that "la nature est un fait extérieur à l'homme, elle est multiple, diffuse, généralement insaisisable."\textsuperscript{48} They display a veritable revulsion to natural forms in their 1924 criticism of Hermann
Finsterlin's biomorphic architectural fantasy drawings published in the Dutch organicist journal *Wendingen* [The Hague, 1918-1925] as "de visqueuses éjaculations rappelant les horreurs sous-marines ou celles des viscères ou celles des actes impurs de la bête." Given this it seems appropriate that during the early twenties the Purists privileged mechanism over Organicism: "On the basis of their enthusiasm for the moral and aesthetic virtues of modern engineering, the two authors develop a kind of rationalist cosmology in which they describe nature as a logical machine whose adherence to physical laws is the very reason for its beauty." Since machinery was invoked as a model for beauty rather than as a functional exemplar, at base theirs was not a functionalist aesthetic at this time. In the early twenties the Purists mechanized nature rather than naturalizing machines, adhering to what Philip Steadman refers to as "machine-theoretical biology." Their exemplary expression of the mechanical analogy is the famous spread in *L'Esprit Nouveau* comparing Greek temples to late-model cars. (Fig. 4-1) And rather than "natural" forms, Le Corbusier cited Platonic bodies (cylinder, pyramid, cube, right-angled parallelepiped, sphere) as the sources of architectural form. What is more, technologically produced forms were superior to natural ones. (Fig. 4-2)

Theo van Doesburg's Dada poem "Manifest 0,96013" of 1922 expressed in an intentionally humorous -- though equally sexualized -- manner the revulsion to the natural that the Purists had displayed in their attack on Finsterlin's biomorphic architecture: "Le Monde est une petite Maschine [sic] a Sperme, La vie -- une maladie vénérique. Toutes mes prières sont dédiés à la Sainte-Vénérerica." In his writings and practice, and on the pages of his journal *De Stijl* [Leiden and Paris, 1917-28], Van Doesburg developed an "anti-natural" art theory and orthogonal style which was another important source for post-war German *Neue Sachlichkeit* and Constructivism. Despite the fact that -- having emerged from the Dutch occult
revival -- van Doesburg adopted vitalmystisch attitudes towards nature, and that -- like Behne and Karl Ernst Osthaus -- he was an avid reader of von Uexküll, by the early 20s he came to represent a position correctly described by Mansbach as one privileging technology over nature. As John Elderfield articulated it:

Van Doesburg rejected the organic analogy. Although De Stijl [as the Purists] posited a cosmic geometry that lay behind natural appearances, it had always been an anti-naturalist movement. Since nature was brute matter concealing a truer reality (the geometric architecture of the universe), it was necessary to separate man from nature to create the new style.

As we saw in the quotation at the start of this section, van Doesburg did not abandon the concept of the "spiritual" at this time. Rather, like the Purists he declared that "die Maschine ist das Phänomen geistiger Disziplin par excellence." And as Kállai articulated it in the passage of 1922 quoted at the start of the Chapter, "it is not organic growth, but abstract construction that is to be spiritualized."

The following year Kállai elaborated on this idea: "Constructive art, in tandem with the discoveries of the natural sciences and technical innovations, can master ever more completely every resistance of matter." A theorist and promoter of International Constructivism in Germany, Kállai was formulating texts which, while taking what has been seen to be a typically "Constructivist" anti-natural stance, reflect not only an awareness of Lebensphilosophie and the Monist discourse, but also a desire for a rapprochement between what he saw as the dialectical pair "nature" and "technology," between the "organic" and the "modern." Referring to the Monism of neo-Romanticism during the early 20th century and its manifestation in Expressionism, Kállai wrote in 1922 that "The unity of the world and its creative law finally became identical with human consciousness. It took a long time, however, for this realization to be liberated from the traditional view of
a transcendent order, for art to be seen as a simple expression of humanity." Kállai properly saw Expressionism as a late Romanticism, a manifestation of the traditional understanding of this Monist view, and he opposed it at this time. According to him, Constructivism was the approach which liberated humanity from its attachment to nature, while maintaining an awareness of humanity's and nature's essential unity.

Along with his fellow Hungarian exiles Moholy-Nagy, László Péri, and Lajos Kassák, Kállai was one of the first Central Europeans to hear of Russian Constructivism when the Hungarian artist Béla Uitz -- who had seen the "First Working Group of Constructivists" exhibition in May and had met the artists -- passed through Berlin on his return from Moscow in the fall of 1921. Probably at the end of that year the Berlin Hungarians also heard of Constructivism from Alfréd Kemény, another compatriot fresh from a stay in Moscow, one who had lectured on Constructivism at the INKhUK itself. While -- like the Finnish-born Ivan Puni and the Ukrainian Alexander Archipenko -- there were avant-garde artists from Russia in Berlin, it was not until El Lissitzky's arrival late in 1921 or early in 1922 that an artist with first-hand experience of Constructivism was on the scene. Though he had been in Malevich's rather than Rodchenko's circle in Soviet Russia, Lissitzky became one of the seminal figures of the emergent International Constructivist circle in Berlin. The émigré Hungarian journals Ma [Today, Budapest and Vienna: 1917-25] and Egység [Unity, Vienna and Berlin: 1922-24], had brought Russian and International Constructivist material during the first half of 1922, but because they were Hungarian-language publications, they remained largely inaccessible to the Germanophone public. In April and May of 1922, Lissitzky and Ehrenburg published two issues of Vjeshch [Object] in Berlin, in which aspects of Russian Constructivism were presented, and that same year Ehrenburg's Und sie bewegt sich doch appeared. The "Erste Russische Kunstaustellung" of October
1922 included Russian Constructivist material along with much else, and was the sensation of the Berlin art season. While in their glorification of industrial production, of the engineer as a model for the artist ("Engineerism"), and of the beauty of industrial products, they were displaying a penchant for the machine analogy of art, what has been overlooked in most accounts of this emergent International Constructivism is that inherent to Russian Constructivism was an Organicist undertow, particularly in the thinking and work of its inspirational figure Vladimir Tatlin. As Patricia Railing observes, for the Russian avant-garde, "Even the machine was created out of the organic laws of nature, first of all as material and secondly as structure. It harmonized form and function. Thus, being a product of organic laws itself, the relationship between the machine and the organic should not be thought of in terms of a duality or a dialectic. Together they are processes, and together they weave their way through ... theory and ... practice." She points out, furthermore, the essentially organic nature of the Constructivists' interest in faktur or material properties, and that "for their part the Suprematists relied on the notion of organic laws as their basis of all creativity...." Tatlin's "Maschinennenkunst," popularized by the placard photographed at the First Berlin Dada Fair of June 1920, was a myth based on a misunderstanding. Given that Organicism was inherent to Constructivism and Suprematism, it seems less surprising that Lissitzky, moving between these circles and active on the International Constructivist scene, was taken by first Spengler's and then France's ideas.

As a consequence of these developments the orthogonal-abstract style associated with Purism, Russian Constructivism, De Stijl, and the Hungarian emigré artists, became fashionable among the German avant-garde, reinforcing analogous home-grown trends. As early as February or March of 1922, the expatriates Kemény, Moholy-Nagy, Péri, Kállai, Lissitzky, Gabo, Viking
Eggeling, and Van Doesburg, as well as the Germans Arp, Hans Richter, Werner Graeff, Willy Baumeister, and a few others, had met in the Berlin artist Gert Caden’s studio to found an informal Constructivist group. Just as an attempt failed in Düsseldorf the next July, however, the effort to found a "Constructivist International" in Weimar that September foundered on the rock of joint participation by "Constructivists" and "Dadaists." But the appearance of Moholy-Nagy and Kassák’s Buch neuer Künstler in Vienna that same September did provide them with a compendium of International Constructivist material. Finally, in July of 1923 Graeff, Lissitzky and Richter, in collaboration with the Berlin International Constructivist circle, produced the first issue of G, a German organ of International Constructivism.

It is in this context -- as well as in the context of Hausmann’s, Arp’s and Moholy-Nagy’s biocentrism -- that their and Ivan Punis October 1921 "Call to Elemental Art" and Moholy’s and Kemény’s "Dynamic-Constructive System of Forces" should be regarded. The "Call" is easily understood as a proto-Greenbergian manifesto of formalist "Constructivism" because in it the artists called on others to "construct" their art employing only those elements which are properly of the medium in which they are working. But this statement’s meaning is determined by the sentences which follow:

To surrender to the elements of form-giving is to be an artist. The elements of art can only be discovered by an artist. They do not come about as a result of his individual choice; the individual is not an entity broken off from the whole and an artist is but an exponent of the forces that give shape to the elements of the world.

Or, as Hausmann put it in an unpublished Marcusian text of that same year, "Malerei und Plastik haben die geistige Wirklichkeit, die Spur der Unendlichkeit in der Identität, in räumlichen, körperlichen Formen zu kristallisieren, die haben ein Ausfluss der unaufhörlich bewegten, beweglichen Welt zu sein, kein kaltes Denkmal erstarrender Hilfskonstruktionen des
Erinnerns... "It is as an "organic" and "vital" expression of these forces that, a year later Hausmann and László Péri articulated their theatrical dance style "Pré," and Moholy-Nagy and Alfréd Kemény proposed their midway-ride-like art environment, the "Dynamisch-konstruktives Kraftsystem," which begins with the thoroughly lebensphilosophisch phrase "Die vitale Konstruktivität ist die Erscheinungsform des Lebens und das Prinzip aller menschlichen und kosmischen Entfaltungen." These texts are statements of the individual's lack of autonomous subjecthood within the unitary system of nature, and the mission of art as a means to give its forces expression, a biocentric position which Arp, Moholy-Nagy and Hausmann were to hold for the rest of their lives. Biocentrism and its psychobiological view of the human psyche in the universal natural system is also the context within which the technology/nature debate is to be understood. This was the means by which Schlemmer's desire for their synthesis was to be achieved.

b. Paul Westheim's Intervention: Enter Raoul Francé

Classical machine parts such as gears, pins, cams, and bearing plates (reduced to their basic geometric equivalents) are equated in the subconscious of industrial society with the life force itself.

Though Jack Burnham did not know of Raoul Francé's conception of the seven Grundformen of nature, with typical sapience he nevertheless articulates a crucial consequence of Francé's effect on avant-garde practitioners in Germany during the twenties. The pre-war attempt undertaken by Hermann Muthesius, van de Velde and the German Werkbund to effect Sachlichkeit, a rapprochement between technology and art, to articulate a "functionalism," resurfaced at the start of the decade. In June of 1920 Paul Westheim began a campaign against the emotional and stylistic excesses of "Expressionism," directed in part against his rival, the impresario, dealer and publisher Herwarth Walden. In "Das 'Ende des Expressionismus'" Westheim, employing the melodramatic tone of those times,
exhorted; "The Expressionist academy, Expressionist fashion, Expressionist fellow-travellers, that catchphrase Expressionism with which the smart art dealer and smooth art critics practice their propaganda: would that it was already at an end!"

In the first issue of the 1921 volume of his journal he reported the rush to coin an alternative catchphrase for the new artistic direction in formation: "Suprematismus, Tatlinismus, Kompressionismus, Kubo-Futurismus, Neo-Klassizismus, Neo-Primitivismus" are the alternatives included in this ironic listing. Always one to notice a new trend, Walden was eager to jump on the streetcar so recently set in motion. In April 1921 he published "Technik und Kunst" in his journal Der Sturm [Berlin: 1910-32], in which he propounded an organicist analogy between artworks and machinery: "Jedes technische Werk hat eine und zwar eine eindeutige Wirkung. Kunst und Technik setzen die sinngemässe Verwendung der Mittel voraus. Denn nur dadurch entsteht ein Organismus." Inspired by the example of L'Esprit Nouveau, that same month, in his article on abstract art, Westheim turned from the mere criticism of what he saw to be an Expressionism in the process of degeneration, to a constructive intervention into the debate. He criticized the "Formlosigkeit" of German Expressionist abstraction and contrasted it with recent trends in France where the Cézannésque tradition resulted in "Bestimmtheit, Klarheit, Ordnung, Gesetzhaftigkeit.... So ist est begreiflich," he continued, "dass es eine Kandinsky-Schule von irgend welcher Geltung in Frankreich nicht gibt..., Die Form ist nicht irgendeines der Schaffenprobleme, sie ist das Urphänomen alles Kunstgestaltens." Rather than with the "Gretchenfrage: ob gegenständlich, ob ungegenständlich," artists, he maintained, should concern themselves with a "weitaus geistigeres Problem: Disziplinierung im Architektonischen." Later that year, in a series of reports on his visit to Paris, Westheim continued this line of thinking and provided a more detailed program for this new "architectonic" art:
Klares Denken, Bewusstheit, logische Bestimmtheit, Sachlichkeit, das sind die Forderungen, die man allenthalben und unerbittlich stellt... [Die] organisierte und konzentrierte Gestaltung ist die grosse Kunst... An [einem] Motor kann es keine schwache Stelle geben... nichts Unklares... kein Sentiment, sonst würde das Ding sofort in die Luft fliegen. Solch Werkzeug der potenziertesten Kraft ist klar und logisch konzipiert, eine Einheit, innerhalb derer es keinerlei Zufälligkeit und keinerlei Willkür gibt... eine Zurückführung jedes einzelnen Elementes auf die Urform. Ein Bild... ist selbstverständlich nicht dasselbe wie ein Motor; aber es ist auch ein Organismus, auf seine Art auch eine Quelle konzentrierter Energie.... Auch der Künstler muss zu den Urformen gelangen, das ist die Lehre des Cézanne von Kubus, Konus und Zylinder. Aus den Gedankengängen heraus lehnt man jetzt in Frankreich alles ab, was nicht klare Ordnung, sachliche Bestimmtheit, organisierte Arbeit ist.88

Significant here is not only the references to Cézanne's solids employing the Goethean term "Urform," and his usage of the term "Sachlichkeit," but also the fact that while he employs both mechanical and organic metaphors in his discussion of the artwork, unlike the Purists, he finally comes out on the side of the organic alternative.89 The contrast between the Purist position and his own organicism is put into high relief a year later, in the January issue of the 1923 volume of Das Kunstblatt.

The issue's lead article consists of a series of telegraph-style statements by Fernand Léger which build up to constitute the artist's aesthetic credo of the time, one which can be characterised by the statement "Herrschaft der Maschine, ihre Perfektion...."90 Despite the Purist inspiration, it is characteristic that in the German context Westheim should call on the authority of "nature" rather than geometry, mathematics or the machine tout court, to support his reform program. To this end, he followed Léger's credo with the central organic-functionalist thesis of Raoul Francé's 1920 book Die Pflanze als Erfinder (itself a popular edition and further development of Francé's book Die technischen Leistungen der
Pflanze), expressing the hope, "vielleicht hilft solche Erkenntnis unseren ästhetischen Diskussionen vereinfachen und ... versachlichen."91 (Fig. 4-3)

Westheim begins his introductory blurb by invoking Cézanne's Urformen again, pointing out that while "Cézanne's ... Lehrsatz von 'Kubus, Konus und Cylinder' ... eine Revolution für die Kunstwelt [bedeutete] ... für andere, die die Natur bewusst zu ergründen versuchen, für Techniker und Naturwissenschaftler, wäre dieser revolutionierende Satz des Cézanne vermutlich eine -- Selbstverständlichkeit gewesen." The excerpt began with Francé's functionalist-determinist creed:

All must have its best form, its 'optimum' which is also its nature.... There is for everything, be it a concrete thing or a thought, only one form which corresponds to the nature of that thing... Like [cuneiform] writing upon rock, the fundamental knowledge about form and function is engraved in our brain,...92

While there is a long history of organic-functionalist theory in the West going back through Ruskin, Pugin, Greenough, Coleridge, Emerson, Goethe and Alberti to Aristotle, Francé's restatement of Louis Sullivan's well-known "form follows function" adage was a particularly radical one, and was powerful to Das Kunstblatt's readership because in an age when Positivist science was the world power among Weltanschauungen, it derived from a biologist rather than an artist, architect or aesthetic theorist.93

Francé maintained the unitary nature of technology: all Technik, including that found in nature and that produced by humans, is part of the same universal natural system of perceived "nature": the Bios. Francé maintained, furthermore, that the Bios is built up of combinations of seven basic geometric forms, or Grundformen: crystals, spheres, planes, rods, ribbons, spirals, and cones.94 "There are only seven fundamental technical forms! They are the basis of architecture, of the parts of an engine, of crystallography and chemistry, geography and astronomy, of art, of industry -- of the
whole world. And the world teeming with life has produced no other possible forms. Of these fundamental forms, Francé named the spiral as the most efficient way to counter resistance in movement (Fig. 4-4):

The shape of the screw is adopted by everything which has the function of boring and squeezing through... We ourselves, did not invent the screw... The natural law -- deeply embedded in the structure of the world -- stands behind all these occurrences: spiral movement occurs with less expenditure of energy than movement in a straight line.

It is not surprising that in the case of artists fascinated with dynamism such as Moholy-Nagy and El Lissitzky, this constatation should meet with a particular resonance. Indeed, it is telling that Moholy-Nagy incorporates -- with the possible exception of the cone -- Francé's Grundformen into his Lichtrequisit einer elektrischen Bühne, his famous "Light-Space Modulator": the crystal (here as glass), the sphere, the plane, the rod, the strip and the spiral. (Fig. 4-5) Since both natural and human technologies are rooted in the Bios, the prototypes of human technologies, for example the turbine, are to be found in nature: "No technical form exists which cannot be traced to the forms of nature." (Fig. 4-6) Humans, furthermore, had much to learn from organic technology and they stood to profit from its adaptation to their purposes, a process Francé termed Biotechnik. If human technology is a subset of the greater category of technology, furthermore, then our technology is not something foreign to or necessarily harmful to ecosystems: as long as it contributes to the equilibrium of the ecosystem within which it is located, it is to be valued rather than abjured. Harmoniously integrated into its surroundings, technology was a Good Thing rather than Evil (or Geist) incarnate. Significantly, Westheim ended the Francé excerpt with an unmistakable statement of Monist biocentrism, a dose of kosmische Einheitsgefühl illustrated by means of the topos of self-similarity:

Swedenborg conceived the startling idea for his
generation that the world is a great unity. He pictured it as an eternal flowing of the same things, a return of similar laws, only in different intensities; at one time concealed in small things, in another returning with giants steps to construct ... mountains, to write with starry script upon the heavens, or to assume spiritual shape and become feeling in man's brain and heart.\footnote{100}

It is not difficult to see the attraction that this biocentric legitimation of emergent Constructivist style, and of the generally waxing technophilia, carried for avant-garde practitioners in Germany, raised on Naturromantik and the Jugendbewegung, and harbouring a deep-seated love of "nature" as a consequence.

While versions of some of these ideas were published in 1917 by D'Arcy Wentworth Thompson in his book On Growth and Form,\footnote{101} Thompson's publication could not have been available in Germany at the time because of the war and its aftermath, and it seems to have been this text by Francé that stimulated Lissitzky, Hausmann, Moholy, Mies, Siegfried Ebeling and Hannes Meyer to seek out Francé's books, and to adopt -- or attack -- his ideas.

Westheim followed up the Francé excerpt with "Maschinenromantik," his lead article for the next, February 1923 issue of Das Kunstblatt. With its oxymoronic title, this piece was not only meant as an ironic critique of the emergent machine aesthetic; it was also an appreciation of van de Velde on his sixtieth birthday.\footnote{102} Westheim warned artists that imitating the outward appearance of machines was just as "academic", "formalist," indeed "romantic," as the decoration of 19th-century machinery had been, or as the use of Haeckel's Kunstformen der Natur by turn-of-the-century artists as a pattern-book, had been\footnote{103}:

Es hat grosse Künstler gegeben, die sich nie genug tun konnten im Studium der Natur, möglich, dass der grosse Künstler von Morgen mit der gleichen Unermüdlichkeit die sinnvoll lebendige Organik technischer Konstruktionsformen studieren wird. Nicht der Formen, sondern der Organik wegen, durch die solche Ma-
schinerie lebendig ist wie ein Geschöpf der Natur.\textsuperscript{104}

With this, opposed to the Purists, Westheim states his Francéan position that machinery is organic, and that to be organic -- as van de Velde held -- it is the Sachlichkeit of machinery and natural forms that the artist must reproduce in the very process of working rather than their outward forms.\textsuperscript{105}

This, as Westheim knew, was the working method Klee was promoting through his teaching. Indeed, possibly by the fall of 1923 Klee taught with photographs of shells.\textsuperscript{106} (Fig. 4-7)

c. Of Spirals and Shells

Képarchitektúra sees an endless spiral even in a straight line. (Kassák 1921)\textsuperscript{107}

...wij willen het onkenbare, kenbaar maken, ... wij willen de oneindigheid van den kosmos kristalliseren en in een idee voor u te vertalen! Zoo is het gekomen, dat wij ... naar de realisering dezer nieuwe wereld, staren naar de natuur en duiken in de diepste der oceanen en grijpen wat daar spanning en innerlijke kracht in sich draagt en brengen aan de oppervlakte, huizen en kluizen die in het water zwemmen, ... die geen gevels hebben en geen daken, ... maar, die in zich dragen de spanningen der gebogen velden, de rechte en strakke banden, de ... spiralen; die kennen vorm, van de edelste lijn in de volste massa, ... die één zijn in innerlijke kracht, één zijn in het alomvatten ... één in organisch geheel! (Wijdeveld 1923)\textsuperscript{108}

Francé’s discussion of the spiral as the path of least resistance in nature, that is of this form as the most functional method of movement through any medium, was both an early indicator, and an instigator of the fashion for spiral form -- especially as manifested in shell growth -- discernable in Central and Eastern European avant-garde circles at the time.\textsuperscript{109} We have noted Tatlin’s celebrated use of this form in his 1919-20 Monument to the Third International. Lajos Kassák’s statement in his proto-Constructivist, September 1921 "Képarchitektúra" [architecture of the picture] manifesto is another early sign of this interest, as is Moholy-Nagy’s
While, as far as can be determined, books by Francé do not remain in Klee’s library, there are parallels between their approaches to the understanding of nature. Klee’s pedagogical notes indicate that his teachings on spiral growth patterns began around 1922, just before Francé’s writings broke into the avant-garde scene in Germany. But the fact that *Die Pflanze als Erfinder* had appeared in 1920 already, and that Francé was wintering in Weimar during the early twenties, suggests that some interchange could have happened. Of course Klee had always been interested in natural forms and processes, and he might have garnered relevant information from other sources, as well as from his own observations. In March of 1922 Klee wrote on spiral growth patterns, and that same July, like Francé, he described the spiral as the "reinst Bewegungsform." While we cannot be certain that Klee read Francé’s text in *Das Kunstblatt*, the fact that he made notes on growth, particularly spiral growth, during the fall of 1923, raises the possibility that he might have seen it. On 23 October Klee wrote of growth as "Fortbewegung der Materie durch Neubildung zu Stehenbleibendem hinzu. Bewegung im irdischen Bereich erfordert Energie," invoking not only the idea of growth as a translation of energy into matter, but of stages of dynamic equilibrium, just as Francé did. On 5 November Klee wrote of the growth of plants as directed by purely functional needs: "Die ganze Form resultiert auf einer Basis, der Basis aus innerer Notwendigkeit. Es liegt Bedarf zugrunde. Es ist kein eitles Spiel gegeben mit Resultaten, sondern ein aktiver notwendiger Weg zur Form." Later that same month Klee invoked the élan vital in his discussion of shell growth: "It is the energy-charged creative force that forms the basic life content... This force stands revealed in its functions, it derives its living form by permeating matter. It invests matter with life, sets it in motion by a defi-
nite order, by definite rhythms.... The particles are placed in resonant relation with the primal force." Significant-
ly, "in the twenties" Klee assembled a "collection of pictures cross-sections and x-rays of mollusks" which, while I have not been able to examine them first-hand, seem to have been from or very like those in the "Schelpennummer" of Wendingen.15

It may indeed be more than coincidental that it was in the fall of 1923 that the epoch’s most influential images of spiral form in nature appeared in the "Schelpennummer" of the Hague art journal Wendingen, the "expressionist" and organ-
icist -- indeed biocentric -- rival to De Stijl designed and edited by the biocentric architect H. Theo Wijdeveld.16 (Fig. 4-8) Contained in this issue were a series of radio-
graphs of nautilus shells in the collection of the Amsterdam Zoological Museum by J. B. Polak of that institution, and "straight" photographs of them by Wendingen’s house photo-
grapher Bernard Eilers. (Figs. 4-9, 4-10, 4-11, 4-12)

Accompanying these images was an introduction by the organicist architect Roland Holst entitled "Schelpen. De Wondervormen der Zee, Vreemde Gelijkenissen," which played on the biological analogy between shells as products of the animal, and architecture as a human organic product. Also included was Wijdeveld’s "Natuur, Bouwkunst en Techniek," a biocentric text expounding the all-embracing power of nature and our part in it.17 In a move calculated to counter van Doesburg’s anti-natural position of the time, this article -- suffused with Vitalmystik, and based on a psychobiological view of human nature and inspiration, called on architects to learn from the beauty and economy of nature:

Door dit boek ruischt de muziek der oceanen; ... hier zijn gevoelige wezens, die leven, in trillende vollbewegingen, de ziel, het nutteloos geworden huis, den mensch in millioenen voorbeelden op de stranden voor te toveren. Opgewoeld uit de diepste wateren, gevonden aan de verste stranden, voelen we in de wonderen dezer molusken, een harmonie tusschen de vormen der natuur en de vormen der kunst. Beiden
In the context produced by the texts, the images were made to function as models for human technology, and as signifiers for kosmovitale Einsfühlung, of a Monistic creed of the unity and harmony of nature. Wijdeveld echoes Francé’s theorizing about human technology as both an aspect of natural technology, but also as standing to benefit from the imitation of it, ideas published earlier that same year in *Das Kunstblatt*:

Sluit uw oogen en grijp met den drang tot scheppen om u heen, vorm ruimten die uw innerlijk bewegend voorbrieselt, componer de vormen met de nieuwste mogelijkheden techniek, grijp met volle accorden in uw ziele-instrumenten, maar hoe ge dringt en wringt, steeds komen er gelijkenissen met de vormen der natuur, zou het sublieme in de kunst één zijn met de natuur, zou de synthese voor beide dezelfde zijn, is er een geheim verbond tusschen beiden, dringt d’een, d’ander voorwaarts.... Daarom is dit boek, gewijd aan die schelpen der zee, opgedragen aan den ingenieur en den architect, den modernen mensch.\(^{116}\)

This issue of *Wendingen* captured the imagination of European avant-gardists involved in the discourse around nature and technology, calling to their attention not only the beauty and economy of natural structures, but also the power and creative potential of scientific imaging technologies. Not since Eder and Valenta’s album of 1896, produced soon after the development of x-ray photography by Wilhelm Conrad Röntgen, had such beautiful X-ray images been published in an album format, but Eder and Valenta’s album was a rarity, while *Wendingen* had a fairly wide distribution, especially in central European avant-garde artistic circles.\(^{120}\) By 1925 its images had reappeared in publications by El Lissitzky, Moholy-Nagy and Le Corbusier, and the issue had made an impression on key critics such as Behne and Kállai.\(^{121}\) In 1934 even Lewis Mumford had reproduced a Polak radiogram in his book *Technics and Civilization*.\(^{122}\)
While the "Schelpenummer" and the December 1924 issue of *Wendingen* devoted to crystals were the only ones to feature "natural" rather than artistic material, their publication is not surprising given that Wijdeveld's journal was devoted predominantly to the "organic" tradition in architecture.\textsuperscript{121}

The "Schelpenummer" is the earliest publication distributed in Weimar German artistic circles I am aware of in which photographs employing a technology normally used by scientists were produced with biocentric aesthetic intentions and presented in an artistic context.\textsuperscript{124} As we shall see in Chapter Five, these factors were crucial in inspiring Moholy-Nagy to effect a biocentric aestheticization of scientific photography after 1924.

While Collins' is a useful schematization, I wish to complicate its application to the early 1920s by incorporating Francé's biocentrism. As I have indicated in relation to the Bauhaus, and as suggested by Westheim in his introduction to the Francé excerpt, the general shift towards *Sachlichkeit* in German avant-garde culture during the early 1920s was spurred by, indeed was in part a response to Francé's "Objektiv," in other words *sachlich* internal reform of Monism. An important component of the resulting cultural developments is what could be termed (adapting Lodder's and Elderfield's terms) "biocentric Constructivism."\textsuperscript{125} In the remainder of this chapter I will detail Francé's role in inspiring the "biocentric Constructivist discourse" among participants in the "Constructivist International." It was out of this discourse, engaged in by Moholy, Lissitzky, Mies, Kurt Schwitters, Ebeling, Hannes Meyer, Hausmann and Kállai, that Moholy's conception of New Vision emerged. New Vision, I will argue, was above all else a biocentric vision of the world.
2. Francé and the Biocentric Constructivist Discourse

Die vitale Konstruktivität ist die Erscheinungsform des Lebens und das Prinzip aller menschlichen und Kosmischen Entfaltungen... Deshalb müssen wir an die Stelle des statischen Prinzips der klassischen Kunst das Dynamische des universellen Lebens setzen. (Moholy-Nagy and Kemény 1922)

Constructivism can be neither proletarian nor capitalist -- it is the crystallized product of our general affective viewpoints -- in it we have discovered the Urform -- the pure form -- the organicism of nature -- this form is classless and cannot be subjected to tendentious force. (Egon Engelien 1923)

Wie Francé richtig sagte, gibt es in der kompliziertesten Industrie keinen Vorgang, der nicht längst im Menschen- und Tierleben oder in den Pflanzen ohne Unterbrechung in Betrieb wäre. (Fuhrmann 1923)

Constructivism: These artists look at the world through the prisma of technic... The shortsighted see therein only the machine. (Arp and El Lissitzky 1924)

Be quite sure you buy the book by Francé called Bios, I should very much like to make personal contact with him. We must find out his address without fail. When Nasci is finished, I will send him a copy with a dedication. (El Lissitzky 1924)

Das Verständnis für die ganze moderne Kunst, vom Impressionismus über Futurismus, Expressionismus, Kubismus bis zum Konstruktivismus wird durch die sich jetzt nach und nach herauskristallisierende Grundidee: alle Arbeit nach ihrer Funktion in der selbstverständlichen organischen Form der Vollendung erschlossen. (Moholy-Nagy 1925)

Biology, psychoanalysis, relativity and entomology are common intellectual property: Francé, Einstein, Freud and Fabre are the saints of this latterday. (Meyer 1926)

...[Dass] das treffliche Buch von Raoul Francé 'Technische Leistungen der Pflanzen' ... von der Architekturwissenschaft der Zukunft größere Beachtung finden wird. (Ebeling 1926)
ich kenne z.B. auch das reizende kleine Buchlein von R. H. Francé 'Die Pflanze als Erfinder', in dem der Verfasser nachweist, dass der Mensch durch genaues Studium der Natur viel einfacher auf viele Erfindungen hätte kommen können. (Rietzler 1927)\textsuperscript{134}

Neuerdings hat man ... festgestellt, dass unsere ... schönsten Apparate, Flugzeuge, Autos usw. ganz ohne Willen und Zutun des Ingenieurs und Technikers an wenig beachtete Naturformen anklingen: an die Gestalt von Fischen, Vögeln, Insekten und Muscheln, an alle äusseren Panzer- und Krustenformen der organischen Natur, die der fleischlichen Leiblichkeit des Menschen sehr fern, seiner Einfühlung kaum zugänglich sind. ... So fand also auch das indirekte, abstrakte, naturferne Gestalten der beginnenden Stahlzeit doch noch einen Weg zur Natur zurück, wäre selbst ein neuer biologischer Ausdruck, der in uns selbst in unserer künstlichsten bewusstesten Anstrengung wirkenden Natur? ... [D]ie abstrakte Malerei die objektiv gegebenen Naturgestalt, die sie auf der einen Seite ausgetrieben hat, auf der anderen Seite wieder hereinzulassen scheint. Diese Künstler ehren die Natur ... sie möchten sie am liebsten erfassen wie einem kühnen Ingenieur des Lebens, der aus eigenem, keineswegs im Menschen vollendeten Gesetz gestaltet. (Hartlaub 1927)\textsuperscript{135}

das grundgesetz: auf allen gebieten ... bemüht man sich heute, reine funktionele lösungen technisch-biologischer art zu finden: ein jedes werkstück eindeutig aus den elementen aufzubauen, die zu seiner funktion erforderlich sind. (Moholy-Nagy 1928)\textsuperscript{136}

eine intensität des ausdrucks zu produzieren ... erfordert unser ganzes bios und nicht nur eine spezifische erkenntnisstufe. (Moholy-Nagy 1928)\textsuperscript{137}

Technoromantik. (Kállai 1931)\textsuperscript{138}

Raoul Francé’s bio-technique, which we shall teach in the New Bauhaus, is an attempt at a new science which shows how natural forms and designs can be translated without great difficulty into human production.... I visited the east coast this summer and I was most amazed to see a little animal ... the horseshoe crab. This very thin prehistoric animal shell is constructed in such a wonderful and economical way that we could immediately adapt it to a fine bakelite or other moulded plastic form. (Moholy-Nagy 1937)\textsuperscript{139}
While El Lissitzky was actively seeking contact with France early in 1924 and he and Arp -- as well as Mies and Egon Engelien -- were countering the view that Constructivism was a purely technocentric phenomenon, by 1926 the Swiss International Constructivist architect Hannes Meyer was listing France with some of the great figures of the early 20th-century mytho-scientific imagination. The following year, in his retrospective musings on Constructivism, Gustav Hartlaub, curator of the "Neue Sachlichkeit" show, was among the first critics to articulate a recognition of the way in which "nature" was "allowed back" into abstract art. Kállai, who already in his Constructivist writings modelled the nature/technology split as a dialectic rather than as an either/or choice, eventually came to analyze Constructivism itself from a biocentric position, referring -- as we have seen in Chapter One -- to a "constructive" or "technoid drive" when referring yto the art which expressed, as he put it, "the profane Trinity rationalism-materialism-utilitarianism." Evident in Moholy's Malerei, Photographie, Film of 1925, France's influence was determinant by 1929 when Moholy's pedagogical treatise, Von Material zu Architektur, appeared. Though the recognition of France's importance was implicit or explicit in these texts of the 20s, it was not until the late 80s that -- in a footnote -- the Swiss architectural historian Stanislaus von Moos would write that France was "probably the most important inspiration for most European avant-garde artists and architects intrigued by the analogies of natural and technical form." 

a. Hausmann's Anarchist Biocentrism

Die Natur ist eine schöne Sache... aber ... in diesem Deutschland gibt ... es nur eine ... Natur, eine dicke Natur, eine Bertha-Natur -- die bürgerliche Gesellschaft. Kein Klassenkampf, kein Kommunismus, nichts -- nur eine reine, unerhört stark Bürgernatur. (Hausmann, "Manifest der Natur" 1921)
Warum wächst und gedeiht ein Lindenblatt? Weil es die Idee des Lindenblatts gibt. ... Welche Klassenkampf spielen sich ab im Chlorophyll, von dem und von denen wir nichts ahnen -- und ... ist denn die Gothic oder der moderne Tiefbau nicht sich und dem Lindenblatt ähnlich? (Hausmann c. 1922)

Shortly after the publication of Francé's chapter in Das Kunstblatt, Hausmann's and Viking Eggeling's "Zweite Präsenistische Deklaration" appeared in Ma. This was a critique of mechanistic Constructivism -- of the engineer as a model for the artist -- and of a Communist conception of Constructivism as a way of producing art for the proletariat. Hausmann and Eggeling declared instead, "Unser Aufgabe ist es, im Sinne einer universalen Verbindlichkeit an den physikalischen und physiologischen Problemen der Natur und des Menschen zu arbeiten," an attempt at a biocentric reorientation of International Constructivist activity based on Ernst Marcus' radical, ontological version of Empiriocritical epistemology. Such was the suggestive strength of Hausmann's personality that he in turn interested those artists around him -- Arp, Puni, Moholy-Nagy, Péri, Kemény -- concerned with the cosmic positioning of humanity, in an "elemental" Constructivism which took the life-force and other cosmic forces into account in their work.

While advocating an anti-mechanistic Constructivism, as discussed in Chapter Two, Hausmann was the only one of his fellows to note the totalizing political implications of Francé's biologism, that Francé "sich für einen Führer und Lehrer der Menschen in einem menschlichen Sinne ausgibt oder vielleicht wirklich hält." Hausmann, whom we have seen had been interested in Haeckelian Monism and Kropotkinian Anarchism, launched an Anarchist attack on Francé and his book Die Kultur von Morgen in July of 1923 from within the biocentric discourse, in the Activist journal Die Aktion. He correctly saw that Francé's philosophy was inherently conservative politically, that if any system -- for example the extant
"bourgeois" Capitalist order which Hausmann hated -- could be labelled as being "in harmony" as an ecosystem, then the upsetting of that harmony was to be avoided. Hausmann, a fierce critic of mechanistic Newtonian science, summarized his attack on Francé with the worst accusation he could level, "Kurz: Francé 'vermenschlicht' die Gesetze der Welt und des Lebens etwa so, wie die gesamte Wissenschaft dies auch tat."

In this article and in his next publication in Die Aktion, Hausmann attacked Spengler and Nietzsche, and characterized Hitler as "nur ein nebensächlicher Faktor" beside figures such as Francé who represents the humanistisch-wissenschaftliche ... Seite des Nationalsozialismus... Francé als Khung-Tseu und Schopenhauer- 'Vollender' [and the Nietzschean-Christian pop-philosopher L. C. Häusser] sind in der Tat nichts anderes als die sich selbst für Genies, für Gipfel erklärenden Durchschnittsbürger, die ... zuviel und zu wenig wissen, um sich nicht zwangsläufig als Führer ... zu fühlen und auszubieten ... Volkskaiser zu werden."

But in a typically Anarchist mode, he also lashed out at Karl Radek and his German Socialists, as well as at the entire Moscow leadership of the "russische Zentralismus," including Trotsky, and presumably Lenin, for their statism. Of course, Francé -- like Hausmann -- did not regard the extant social system as harmonious. Except Francé called for a revival of the "organic" German culture of the past, which he saw as a "racially pure" "Gothic" culture of the "forest" instead of the current order -- needless to say, not the alternative Hausmann had in mind, but -- from our perspective -- an early version of the state Hitler attempted to build after 1933. While Hausmann was incorrect about Hitler being a marginal figure next to Francé, he did foresee Francé's later association with the National Socialists. In a subversive and critical gesture, in July of 1923 -- around the time Francé's book Plasmatik appeared -- Hausmann published his "simultaneous poem" "Chaoplasma" in Merz.
It was an interesting twist, however, that in "Ausblick," published in the third issue of G in 1924, Hausmann criticized Francé (though without naming him directly) for not going far enough in his biocentrism, that is, for not extending the Biocönose concept to the cosmic realm, as did Hans Hörbiger in his Welteislehre.\textsuperscript{132} Ironically it was Hörbiger's highly speculative astro-physical Welteislehre which the Nazis -- particularly Hitler -- later favoured over any aspect of Francé's objektive Philosophie.\textsuperscript{153} Hausmann also renewed his call for a revolutionary interpretation of biocentric thinking in "Ausblick," over Francé's socially conservative views, seeing Hörbiger's theory as a means to effect such an activist biocentrism:

Wir müssen nicht zur Harmonie mit unserer Gesamtstuation kommen, wir müssen zum Organgedanken vorstossen. Wir können und müssen die Biozönose umformen wenn wir das organische Denken und die daraus entspringende Tat und Tatsächlichkeit ernstlich in das Milieu, in das Gesamtmitebengebiet hineingetragen oder besser aus ihm herausarbeiten. Dies erfordert organische Arbeit. Einer der Wege hierzu ist die Welteislehre H. Hörbiger.\textsuperscript{154}

Despite the ironies of Hausmann's adherence to Hörbiger's Welteislehre, he was the only one of the biocentric avant-gardists to engage in a political critique of Francé's position. And it is notable that none of the Francé-fans, including Hausmann's friend Moholy-Nagy, listened to him in this respect.

b. G and Mies

Mies van der Rohe occupied a position on the opposite end of the political spectrum of Biocentrism from Hausmann. As we have seen, the first issue of G appeared in July 1923. Francé's name is not mentioned on its pages, which is not surprising given that -- since Graeff had attended van Doesburg's de Stijl seminar in Weimar the previous year -- the magazine was produced under the direct influence of the "anti-natural"
Dutchman. Still, Hausmann’s critique employing Francéan terminology in "Ausblick" is not the only evidence of awareness of Francé’s writing in G. Statements such as Graeff’s "Die Form soll nie Ziel sein, sondern ist sozusagen Nebenerscheinung an dem nach Maßgabe der Funktionen vor allem," are close to Francé’s sentences published in Das Kunstblatt earlier that year, and were, in any case, of a functionalist-determinist nature not typical of van Doesburg. Even the other Weimar "De Stijl Course" alumnus Egon Engelien was writing of the Urform and of the "organicism of nature" in his International Constructivist text of 1923 published in Ma and misattributed to Moholy-Nagy. Mies van der Rohe’s article in the September 1923 issue of G was similarly informed by Francé’s thought: "Wir kennen kein Form-, sondern nur Bauprobleme. Die Form ist nicht das Ziel, sondern das Resultat unserer Arbeit. Es gibt keine Form an sich. Das wirklich Formvolle ist bedingt, mit der Aufgabe verwachsen, ja der elementarste Ausdruck ihrer Lösung." Statements Mies made in a letter written that same month express the same thoughts, as did a letter to Walter Rietzler, founding editor of the Werkbund’s postwar, organicist journal Die Form [Berlin 1922-1933], concerning the journal’s title: "Geben sie dem Blatt einen anderen Titel... Liegt in dem Titel ‘Die Form’ nicht ein allzugroßes Anspruch? ... Verpflichtet er nicht in einer falschen Richtung? ... Ist die Form wirklich ein Ziel? Ist sie nicht vielmehr das Ergebnis eines Gestaltungsprozesses? Ist nicht der Prozess das Wesentliche?" Mies may first have encountered Francé’s thought through Karl Ernst Osthaus’ "biosophical" employee Ernst Fuhrmann, who though -- like Hausmann -- was an Anarchist biocentric, was along with Paul Westheim among the first to recognize the potential importance of Francé’s concept of Biotechnik. The full effect that Mies’ reading of Francé had on his work is as yet unknown, but as Fritz Neumeyer points out, it was probably strong. While Francé was not the first to enunciate this functionalist view,
Mies' texts are so close to Francé's that there is little doubt that the Kunstblatt excerpt inspired Mies in his writings of the summer of 1923. In any case, Francé's statements are a likelier source for Mies' functionalism than those Otto Wagner "made several decades earlier" and "known in prewar Werkbund circles" which Mies was not part of.

Indeed, Mies was a typical biocentric and a committed follower of Francé. We have seen in Chapter Two that he had a standing order at Nierendorf's bookstore for Francé's books and that he amassed over forty of them. Mies' library is so rich in related literature that I have used it as an ersatz canon, a guide in my work on interwar biocentrism. The underlining of his copy of Die Kultur von Morgen, Francé's book which so outraged Haussmann, is an indication of Mies' adherence to a more conservative, indeed, from a Leftist perspective, politically reactionary biologicist biocentrism. And Mies' interest in Francé was not a mere enthusiasm. Not only did he teach Francé's Objektive Philosophie while he was director of the Bauhaus, he continued to collect Francé's books and teach him in Chicago while he was at the Illinois Institute of Technology. Significantly, during the early to mid-20s Mies was closely allied with Hugo Häring, the prominent "organic" architect. In fact it was out of Mies' studio that the two organized the "Ring," the cradle of German functionalist, that is sachlich architecture, in 1924.

c. Lissitzky's "Nasci"

The relationship between Francé's ideas and Mies' work is suggested visually in a layout in "Nasci," the special issue of Kurt Schwitters' journal Merz, which appeared in July of 1924 and was edited by El Lissitzky. (Fig. 4-18) In this naturamorphic analogical spread, Mies' proposal for a tower on the Friedrichstrasse in Berlin is juxtaposed to a drawing of a human femur based on a photograph reproduced in Francé's books Bios and Die technischen Leistungen der Pflanzen. (Figs.
4-19, 4-20) El Lissitzky set to reading Francé in 1923, probably after the appearance of the Kunstblatt excerpt, graduating from Die Pflanze als Erfinder to Francé's 1921 two-volume magnum opus Bios, die Gesetze der Welt. Lissitzky was so taken by Bios that he accepted Schwitters' proposal to edit a special issue of Merz, and decided to devote it to ideas suggested by his reading of Francé. Schwitters -- whose biocentrism is another topic awaiting fuller treatment -- was eager to cooperate with Lissitzky on a project devoted to the topic of nature. As Peter Nisbet points out, "[Nasci] reveals one of the strongest affinities between Schwitters and Lissitzky, their deep devotion to nature understood as the creative forces of organic growth and evolution." Accordingly Lissitzky named the special issue "Nasci," Latin for "becoming" or "coming into being." Lissitzky's conception of "becoming" is not a simple Bergsonian one. It represents, rather, Lissitzky's realization that

> Modern art, following a completely intuitive and obvious course, has reached the same results as modern science. Like science, it has reduced form to its basic elements, in order to reconstruct it according to the universal laws of nature... EVERY FORM IS THE FROZEN INSTANTANEOUS PICTURE OF A PROCESS. THUS A WORK IS A STOPPING-PLACE ON THE ROAD OF BECOMING AND NOT THE FIXED GOAL.

This is a psychobiological epistemology characteristic of biocentrism, which holds that regardless of the system of cognition, intuition or systematic research used to attain it, knowledge is based in the deep structure of nature. In Chapter Five we will see that Kállai reiterates it in his Bioromantik theory. Lissitzky's psychobiology is related to Francé's psychovitalist epistemology and by quoting Francé from Die Pflanze als Erfinder (in capitals), Lissitzky not only acknowledges his debt to the scientist, he also underlines his adherence to Francé's functionalist-vitalist theory of form. When Lissitzky then writes that "The machine has not separated us from nature; through it we have discovered a new
nature never before surmised," he refers not only to Francé's organicist theory of technology but also to the types of images using advanced technological means he saw in Wendingen. As Elderfield writes:

What is striking about "Nasci" ... is the way in which these [organicist] propositions are combined and linked to machine-age themes to provide what is best described as an organicist vision of Elementarist theory. Modern art is compatible with modern science, not because it adopts technological principles, but because the principles common to both art and machine construction are "natural" ones.

"Nasci" was Lissitzky's manifesto of biocentric Constructivism. Rather than comparing art to machines, as the Purists, and after them Moholy and Lajos Kassák did in Buch neuer Künstler, Lissitzky compared a work by Schwitters to an aerial view of a landscape and a photograph of a plant. In another spread Lissitzky borrowed Francé's theory of Grundformen, and he included a photograph of a crystal, one of these forms, comparing it to his own sheet from the Kestnermappe. (Figs. 4-21, 4-22)

Francé's emphasis on the spiral Grundform as the most efficient means of moving through space also had its resonance in Lissitzky's thinking soon after he encountered it. In an article which appeared in the September 1923 issue of G, Lissitzky identified the screw and propeller as the technologies which -- following the foot and the wheel -- would usher in a new age of personal flight. In "Nasci," under an illustration of Tatlin's spiral-shaped "Monument to the Third International," Lissitzky identified the spiral as the form which constitutes the best expression of our time and at once hinted at his awareness of Tatlin's own organicism. When discussing the as-yet-unrealized transition of the production of art conceived on the basis of three-dimensional space to art produced with four-dimensional space in mind in his article "K. und Pangeometrie," Lissitzky chose one of Polak's radiographs of a nautilus shell as an illustration of what the
coming four-dimensional art might resemble\(^\text{175}\) (Fig. 4-13) Not surprisingly, of the contemporary International Constructivists only El Lissitzky designed a cover for Wendingen, the journal's other covers of the time being carried out in a late Expressionist, decorative style\(^\text{176}\)

"Nasci" is not merely Lissitzky's manifesto of biocentric Constructivism, however. It is the most forcefully articulated document of the biocentric Constructivist discourse. What is more, Lissitzky was eager for Francé's approval of his work. As we have seen, while working on "Nasci," Lissitzky expressed a desire to meet Francé, and he intended to send the scientist a copy. While I do not know whether Francé received it "Nasci" did impress avant-gardists with organicist tendencies.\(^\text{177}\)

d. Hannes Meyer and Switzerland

After Lissitzky had begun the production of "Nasci," he fell ill with the tuberculosis already in his body, and in early February 1924 he had to go to Switzerland to seek medical treatment. While there, he cooperated with Arp on the production of the anthology Die Kunstismen which, as noted above, reflected the two artists' nature-centric view of Constructivism. While in Switzerland, Lissitzky also inspired the production of the first issue of the Swiss-German avant-garde architectural and planning journal largely modeled on G ABC. ABC was produced by a circle of young Swiss-German architects including Alfred Roth, Hans Schmidt, Hans Wittwer, and Wittwer's partner Hannes Meyer, as well as the Dutchman then working in Zurich, Mart Stam.\(^\text{178}\) Accordingly, ABC and Swiss architectural thinking in general began to show the effects of Lissitzky's infatuation with Francé.

In "Element und Erfindung," Lissitzky's article for the inaugural issue -- written in Locarno in February and March -- he reiterated some of his Francéan concepts. Thus, it was a shortlist of Francé's Grundformen, "Kibus, Konus und Kugel," rather than Le Corbusier's Platonic bodies, or Cézanne's
"Kubus, Konus und Zylinder" recently invoked by Westheim in his articles, which were promoted by Lissitzky as the most important forms of Gestaltung. The anti-mechanist theme was reinforced by the statement that "Die neue Gestaltung muss die alte Maschine überwinden," and Lissitzky's Francéan functionalist position was reiterated in ones such as "So entsteht die Form als Resultat der Aufgabe" and "Wir kennen keine Form an und für sich." In the last paragraph Lissitzky invokes both the Bios and Biotechnik: "Die Technik hat unter dem Hochdruck des sich umbildenden Lebens den Weg der Element-Erfindung eingeschlagen.... Die Erfindung ist die biomechanische Kraft, die alles zur Überwindung der Hindernisse auf ihrem Wege nach Vorwärts antreibt."  

In the following issue of ABC, the naturamorphic analogies Lissitzky included in "Nasci" inspired the journal's editor, Alfred Roth's "Gestalten-Form," which included a photograph of dandelions accompanied by a Francéan functionalist-determinist text. Roth also published an organicist lecture given in Paris by Roland Holst, who had co-produced the "Schelpennummer" of Wendingen. Roth's analogy was referred to in Mart Stam's series "Modernes Bauen," an organicist architectural design theory in which -- reiterating the Francéan theme treated by Lissitzky in "Nasci" -- Stam defined the process of design psychobiologically as the "conscious" version of the same functionalist process which occurs "unconsciously" in nature: "Die moderne Kunst wird sich der Elemente der Natur bewusst bedienen, sie wird also nicht gegen die Natur handeln," and "Der Wuchs von Pflanze und Tier zeigt uns die äusserste Ökonomie der Materialverwendung." 

In an issue of ABC guest-edited by Hannes Meyer, and devoted to avant-garde art, Moholy-Nagy's article "Ismus oder Kunst?" clarified his Francéan-biocentric theory of artistic creativity: "Die Ismen sind Anstrengungen zur Überwindung der traditionellen Bilderform. Sie sind Wegbereiter zu einer rein funktionellen Gestaltung, deren elementare Ausdrucksmittel den
durch unseren Organismus bedingten, in uns latenten Spannungsbeziehungen entsprechen."

Just as Lissitzky had declared his art to be a "limb of nature" in "Nasci," the excerpts from a letter Lissitzky sent from Russia published in this same issue of ABC discussed the "elementary plastic" components of his PROUN art as equivalent to the elements of nature." As demonstrated by this issue he edited, Meyer was interested in questions of organicism in art and architecture.

Indeed, as much as, and perhaps to an even greater extent than Mies, Hannes Meyer has been misrepresented in the literature. Like others who participated in the biocentric Constructivist discourse, Meyer was a committed Leftist and an ardent functionalist and rationalist, and like some of the others, he was a biologicist functionalist, and a proponent of Francé's biotechnics with a keen interest in psychology and the natural sciences. To my knowledge, the only historian to note this is Stefan Kraus, who writes that "Hannes Meyer ist der Architekt am Bauhaus, der die soziale Frage des Wohnens mit biologischen, psychologischen und ökologischen Überlegungen und der Utopie einer sozialistischen Gesellschaft verband." That it was through Lissitzky and his work in Switzerland that Meyer came to know Francé's work is likely given that, according to K. Michael Hays, El Lissitzky and Le Corbusier affected Meyer's development the most.\textsuperscript{185}

Not surprisingly, Meyer had roots in the Reformbewegung. He was, e.g., heavily influenced by the English town planning tradition, especially the Garden City movement, which he had encountered while on an extended stay in England in 1912-13.\textsuperscript{186} That the origins of Meyer's biocentrism are to be located in his English experience is indicated by a former student who remembers that Meyer assigned as reading not only the writings of Lewis Mumford, but of Mumford's mentor, the Scottish biocentric-Anarchist theorist of an organic approach to understanding cities, Patrick Geddes, who also exercised an influence on Håring at the time.\textsuperscript{187} A tangible result of Mey-
er's interest in the Garden City was the realization of his plan for the cooperative housing estate "Freidorf" near Basel in 1919-21, a project related to Hellerau, centre of the Reformbewegung, as much is it was to the English examples. In the mid-twenties Meyer went through an International Constructivist phase, producing not only orthogonal-minimalist-style "functionalist" building designs, but also geometrical-abstract graphic art and photographs. The central document of this period is the manifesto "Die neue Welt" of 1926. Though characterized by an unbridled optimism in a technologized Socialist utopian future as well as a declared anti-aesthetic, "functionalist" approach to design -- while practicing the geometrical-abstract aesthetic typical of International Constructivism -- this text is also marked by the fascination with nature, biology and biological processes, and the biological determinism, characteristic of other biocentric Constructivists influenced by France. Indeed, Meyer was so enamoured with France's thought, that, as we have seen at the start of this segment, he placed France first on a shortlist of "latterday saints" which, besides France, included only Einstein, Freud and the famous French entomologist Henri Fabre. While it is unclear whether these scientists would have appreciated the Mormon metaphor, as shall be discussed in Chapter Five, when Meyer assumed the directorship of the Bauhaus in 1928, he promoted various biocentric views, including those of Ludwig Klages.

e. Ebeling and the Bauhaus

I have suggested that the Glass Chain architects progressed from a biomorphic expression of their biocentrism during the teens to an orthogonal Modernist one in the "Ring" after Mies encountered the writings of France. I have also shown how Swiss-German architectural thinking was affected by France through Lissitzky's transmission of his ideas. As in the case of the "Ring," at the Bauhaus, France's influence was
direct. While we do not know exactly when Moholy-Nagy began teaching Francé's concepts of Biotechnik and the seven technischen Grundformen in his Grundlehre at the Bauhaus, we do know from his pedagogical treatise Von Material zu Architektur, that he taught them there between 1923 and 1928. For his part, Gropius continued to make organic-functionalist statements during the mid-twenties. In "Bauhaus-Dessau -- Principles of Bauhaus Production" of 1926, for example, Gropius "resolutely affirms" "the living environment of machines and vehicles" and calls for "the organic design of things based on their own present-day laws" -- a typically Francéan organization of the technical. Moholy-Nagy, meanwhile, expressed a biologicist view of the experience of space in bauhaus, the school's journal, of which he was the editor: like all sensory experience, for Moholy "raumerlebnis ist kein privileg begabter menschen, sondern biologische funktion."

Siegfried Ebeling entered the Bauhaus as a student in 1924 remaining -- off and on -- until late 1926, and it might well have been in Moholy's introductory class that he encountered Francé's writings. While Ebeling's prediction concerning Francé's Die technischen Leistungen der Pflanzen quoted above did not come to pass, it does indicate the fashion for Francé's ideas at the school. Ebeling's reformulation of Le Corbusier's dictum that "the house is a machine for living in" as "Hausorganismus," may well have inspired Gropius to write that "das wohnhaus ist ein betriebstechnischer organismus, dessen einheit sich aus vielen einzelfunktionen organisch zusammensetzt."

Like many in the Reformbewegung, Ebeling was interested in the rhythms of nature. In fact though he had studied philosophy, theology, art history and archaeology early on -- like others concerned with the expression of such rhythms in their lives (Raoul Hausmann for example) -- he was a dancer, and he wrote on both dance and architecture during his career. Two of his sources in this connection would have been the
discipline of Eurythmics, which he would have encountered through his interest in Anthroposophy, and Ludwig Klages, whose writings on the fundamental pendulations of nature were well-known in Weimar Germany, and are reflected in Ebeling’s statement that "es ist alles nur rythmischer Antagonismus gleichgeordneter Prinzipien, die in der ‘Natur’ als solcher begründet sind."\(^{19}\) Wulf Herzogenrath detects the influence of Itten’s protégée, the Weimar Bauhaus "Harmonisierungsübung" instructor Gertrud Grunow, on Ebeling’s ideas.\(^{200}\) After the Bauhaus Ebeling headed for Dornach, Anthroposophy’s headquarters, and he worked with the Swiss-based Austro-Hungarian modern dance pioneer Rudolf von Laban in Berlin. Ebeling’s biocentrism is evident from a 1927 article on dance that discusses the "Totalität des Organischen Lebens die uns noch mit Tier und Pflanze aufs Engste verbindet."\(^{201}\)

As Herzogenrath has observed, Ebeling’s awareness of the architecture of the Glass Chain is suggested by "Kosmologe Raumzellen," the article he published at the Bauhaus in the November 1924 issue of Junge Menschen, in which he speculated on the manner in which an awareness of the forces of the cosmos could be integrated into architectural practice. Ebeling continued to develop these utopian architectural views after encountering the biocentrism of Francé. The result of this synthesis was Der Raum als Membran, an architectural theory with vitalmystisch overtones published at the end of 1926, just before Ebeling left the Bauhaus for good.\(^{202}\) Der Raum als Membran articulates Ebeling’s Francéan ecological view of architecture as a practice which should take into consideration the ecosystem of which the structure is a part. Buildings should be made to interact with, rather than exclude, their environments; their envelopes should be treated as "membranes," that like our skins, act not only as barriers, but also as transmitters. Ebeling recognized the architectural projects of the Glass Chain as his precursors in this book. His description of the change in style from that of the Glass
Chain to his own implies his awareness of a unity of purpose behind both. In his review of Der Raum als Membran, Bruno Taut noted that in contrast to the "crystalline" architecture of the Gläserne Kette, Ebeling describes his as a "biological architecture," and Taut implicitly agreed with Ebeling that though differing in style, both are performed within a context of an awareness of our unity with nature. Not surprisingly, Ebeling's "biological architecture" has been recognized as a forerunner of today's ecological architectural practice. Just as in Lissitzky's spread in "Nasci" juxtaposing Schwitters' work with a plant, for Ebeling's Francéan biologische Architektur, "das neue Ursymbol ... wird die lebende Pflanze." 

f. The Analogous Projects of Moholy-Nagy and Francé

The biological pure and simple taken as the guide. (Moholy-Nagy 1928) 

Though I am not certain he attended them, it might well have been in one of Moholy-Nagy's classes -- or from one of Moholy's students -- that Ebeling learned of Francé's Die technischen Leistungen der Pflanze. I presume this, for it is in this book that Francé began to articulate his concepts of Biotechnik and the Grundformen, aspects of Francé's thought which Moholy-Nagy taught at the Bauhaus. Thus, in Von Material zu Architektur, Moholy's book based on his Bauhaus teaching, he discussed Francé's Biotechnik and quoted Die Pflanze als Erfinder extensively on form and function in the natural world. He also discussed the Grundformen, and in the second American edition published as The New Vision in 1938, he depicted them. (Fig. 4-23) In addition, in these and in his final book, Vision in Motion, Moholy quoted from Francé's 1921 compendium of biocentric philosophy, Bios: Die Gesetze der Welt, and he continued to teach Francé's concepts in Chicago. Because he does not say so, and because Von Material zu Architektur only appeared after Moholy's departure
from the Bauhaus in 1928, we do not know exactly when he began to incorporate Francé's idea into his curriculum. Given his friendship with Hausmann, Mies and Lissitzky before he was called to the Bauhaus early in 1923 when the excerpt from *Die Pflanze als Erfinder* appeared in *Das Kunstblatt* (a journal they all read), it seems safe to assume that he studied it just as the other members of his circle did. Were this the case, then he might have included Francé's Biotechnik as well as the Grundformen-concept in his teaching when he first began holding the Vorkurs in 1923.210 In any case, by early 1925 Moholy described the Vorkurs curriculum in biocentric terms, invoking von Uexküllian, Marcusian-Hausmannian and Francéan themes and terms such as Umwelt, Grundelement, perceptual education, function and form:

die Grundlehre ... vermittelt [dem Student] die Grundelemente eines vielseitigen Wissens. Ihre Einstellung zur Umwelt wird geklärt, die oft abgestumpfte Sinnessitigkeit geweckt, geschärft und ihre Verwendung unter die Kontrolle der eigenen Persönlichkeit gestellt. Lehre der Naturbetrachtung, der Farbe, Flächen, Form, des Materials, der Funktion, der Proportion, des Raumes wird vermittelt.211

The ideas expressed in the Kunstblatt excerpt are certainly discernable in Moholy's first book, *Malerei, Photographie, Film*, the manuscript for which -- just as Lissitzky's "Nasci" -- was ready by the summer of 1924.212

When Moholy arrived in Weimar, Francé was in town working on *Plasmatik*, a book in which the scientist conceived of all organic matter as part of a kind of superorganism which he termed Plasma, and in the introduction to which -- as we have seen in Chapter Three -- he made a direct reference to the Bauhaus. Remember also that the Francés spent an evening with Gropius that summer of 1923, and they visited the Bauhausausstellung, the organization of which Moholy was hired to coordinate. While I have found no evidence of a meeting between Francé and Moholy, it is plausible that either Francé -- who would have heard of the controversial hiring of his
compatriot at the Bauhaus -- or Moholy -- who might have got wind of the presence of the famous scientist in a town as small as Weimar -- would have tried to secure one.213

Whether or not Moholy and Francé actually met, there is no doubt that Moholy was familiar with Francé's thought by the time he wrote *Malerei, Photographie, Film* -- his manifesto of the New Vision -- in 1923-24.214 If we also take into consideration László and Lucia Moholy-Nagy's background in the Freideutsche Jugend, the Pädagogische Reformbewegung, and Berlin's International Constructivist circle, then like "Nasci," *Malerei Photographie Film* was constituted within the biocentric Constructivist discourse. Unlike in *Von Material zu Architektur*, Moholy does not refer to Francé directly in this book. But Lissitzky barely does so in "Nasci" and the evidence for Moholy's awareness of Francé is contained in both its text and layout.

*Malerei, Photographie, Film* has typically been regarded as a utilitarian call to exploit the formal qualities contained in photographic images of all kinds, those produced by regular cameras and those inherent to the full range of what Harry Robin has referred to as the products of scientific "self-imaging," such as microscopic, telescopic and x-ray photography and film.215 As Moholy-Nagy wrote, "The photographic apparatus has provided us with surprising possibilities which we are only now beginning to evaluate. These optical surprises latent in photographic procedure, become available to us very often through objective 'non-artistic' pictures taken by scientists, ethnographers, etc."216 This has been seen as the essence of Moholy's Neues Sehen, his New Vision. Molly Nesbit's analysis is typical. She writes that "nature for [Moholy-Nagy] was simply a raw material for art and industry alike, a material to be seen with a camera, worked on and converted to the new vision."217 Even Eleanor Hight, whose recent book on Moholy's photography rightly attempts to counter the view that Moholy was a mere formalist,
interprets the contents of this book in a similar fashion:

For Moholy, the scientific photographs pointed to a new way of seeing the world and, in the process, evoked a sense of amazement about hitherto unseen aspects of it. However, this new seeing for Moholy is something very visual, formal, and abstract. In equating the three types of image -- photograph, photogram and painting -- he seemed to be suggesting that the relationship of light and dark forms floating in an infinite space is more important than the object pictured.\textsuperscript{219}

As we have seen, Nesbit's view on Moholy's relations to nature is incorrect. While Nesbit's and Hight's reading of the New Vision as promoting the creative exploitation of formal possibilities inherent in the camera is correct, it is incomplete. Though the captions of the book's extensive illustrations do, by and large, comment on the visual values of these images, commentators on this book have not only overlooked the visual rhetoric inherent to the juxtaposition of natural and artistic forms in the context of mid-1920s Germany, but also the fact that Moholy-Nagy saw these values as first and foremost "creative elements which are rooted in biological laws," and only secondarily as forms which "can also be mobilised as constructional and compositional auxiliaries."\textsuperscript{219} Even when writing about the fundamental aesthetic components of colour and \textit{Faktur}, Moholy's rhetoric is biologistic: "The biological functions of colour, its psycho-physical effects, have as yet scarcely been examined. One thing, however, is certain: it is an elementary biological necessity for human beings to absorb colour, to extract colour."\textsuperscript{220} As a consequence of what Haus sees as Moholy's "failure" to distinguish between natural and human causes of \textit{Faktur}, "he 'naturalized' the entire category of material work and divested it of all social attachment."\textsuperscript{221} Surely Moholy's treatment of basic visual values cannot be described adequately with the term "formalist." But even more, Moholy's obsession with novel viewpoints and visual qualities was part of his effort to "educate" vision, to take vision and other sensory experiences to their biological
limits. In this regard his major inspiration was Raoul Hausmann’s Ernst Marcus-inspired psychobiological attempt to effect a radical biocentric reform of sensory experience, put forward in a number of publications of the early 1920s. As Hausmann wrote in an unpublished text of 1921 -- around the time that he, Arp, Moholy and Puni were formulating their "Elementarist Manifesto": "Die tote Mechanik unseres durch Newton bestimmten Sehens ist nicht Sehen, ist nich Wahrnehmen -- sie ist nur Trennung der lebendig-dynamischen Erscheinung in lauter rubrizierte Klassen, Kategorien und Begriffe." But while Hausmann’s conclusion from this -- based on an old-fashioned view of photography as mere "Wahrnehmung" -- was "Nein, wir sind nicht und wir wollen nicht sein: die Photographen!," Moholy decided soon after this text was formulated to employ photography precisely as the principle means to effect a revolution of vision in Hausmann’s biocentric sense.222

Moholy is in fact surprisingly frank when it comes to his biocentric view of art in this book.223 Indeed it is hard to make sense of the book’s introductory essay without the context of contemporary biocentrism, particularly of Francé’s biologistic conception of the Bios as consisting of nested hierarchies of Biocônose, or ecosystems in or on their way to states of dynamic equilibrium.224 While Francé writes, ‘Es liegt also in Wesen des Biologischen, dass jedes Erlebnis und die Summe aller Erlebnisse: der Bios, als ein Ganzheitskomplex erscheint, der aus Teilen besteht, die einander irgendwie zugeordnet sind,"225 Moholy refers to the "rootedness [of a work of art] in the life of a collective entity," and he holds that "'Art' comes into being when expression is at its optimum, i.e. when at its highest intensity it is rooted in biological law, purposeful, unambiguous, pure."226 As Francé promoted the integrated harmony of nature as a socio-cultural model, Moholy decried the overspecialization of knowledge, and called for, as Irene-Charlotte Lusk put it, "mit Hilfe der
Kunst eine Harmonie des gestörten biologischen Gleichgewichts, einen Ausgleich der Gegensätze zu schaffen." He saw the balance of the abstract components of his artworks as aids to achieving balance in social Biocönose. Moholy's biologism was important enough for him to plan a book by a certain Martin Schäffer on the topic of "constructive biology" when he first undertook the Bauhausbücher project in 1923 -- a plan that was supposed to have been nearly realized in 1924, and was still forecast shortly before Moholy left the Bauhaus in 1927. The very term konstruktive Biologie is suggestive of both Constructivism and biologicist biocentrism.

Employing the biologicist, Monistic and neo-Vitalistic terminology of biocentric discourse employed by his Bauhaus colleagues and discussed in Chapter Three, Moholy called for the unity of culture, indeed "the unity of life":

With its ramifications and its fragmenting action in every field, specialization had destroyed all belief in the possibility of embracing the totality of all fields, the wholeness of life. Since, however, the Gesamtkunstwerk is only an addition, albeit an organized one, we cannot be satisfied with it today. What we need is not the 'Gesamtkunstwerk', alongside and separated from which life flows by, but a synthesis of all the vital impulses spontaneously forming itself into the all-embracing Gesamtwert (life) which abolishes all isolation, in which all individual accomplishments proceed from a biological necessity and culminate in a universal necessity.

Moholy’s Neo-Vitalist intentions were also clear in the original title of Von Material zu Architektur: "Von Kunst zu Leben." Not only was Moholy’s Weltanschauung biocentric, his interest in this wider range of images and imaging technologies was rooted in the biocentric tradition of scientific imagery as a signifier of the harmony and beauty of nature, of kosmische Einheitsgefühl; of such images as exemplars of a biocentric morality directly reflective of "nature." Moholy’s approach derives from the late 19th century phenomenon of aestheticized scientific imagery -- a naturamorphic analogy --
epitomized by Ernst Haeckel in his scientific illustrations collected in the 1899 album Kunstformen der Natur and recently expressed in the powerful images of the "Schelpennummer" of Wendigen, which exercised such a strong fascination on Lissitzky, Moholy and others. Brian O'Doherty has called this phenomenon "the poetics of bourgeois wonder," but as he points out, this wonder is not only one of formal values. It is also "informed by a quasi-religious sense of a higher order revealed through the microscopic." This quasi-religious sense is the biocentric moral value with which Haeckel imbued natural images.

France was, of course, Haeckel's direct heir in this regard. Married to Annie France-Harrar -- a one-time art critic well-connected in the Munich art world -- France was a visually intelligent man, who though conservative in his own artistic tastes, was a talented and highly regarded scientific illustrator. France both executed his own illustrations, and he made extensive use of photographic illustrations in his publications, many of these photographs by himself or by his wife. Because of the limited focal range of microscopic photographs, and because it was difficult for such images to illustrate the ecological, that is interactive aspect of microscopic Biocônose, France preferred to produce his own illustrations for his books. While, in emphasizing the interaction in ecosystems France was polemically rejecting the Jugendstil aesthetics of Haeckel's prettified representation of microscopic and undersea creatures in isolation as autonomous objects of beauty, France still operated self-consciously within the Haeckelian tradition, elaborating Haeckel's concept of ecology and his Monist philosophy, effecting a revision of Haeckel's style of decorative scientific illustrations adequate to the interactive concept of ecosystem, and emphasizing the moral value of the appreciation of natural beauty. In the process, France developed his own style of scientific illustration. (Figs. 4-24, 4-25)
Informed by Francé's ideas, and familiar with his usage of scientific photographs in *Bios. Die Gesetze der Welt*, as well as the scientist's own illustrations, Moholy's concern with formal values in found photographs was rooted in the moral and aesthetic appreciation of nature typical of Monism. Indeed Francé may very well have exercised an influence on Moholy-Nagy's biomorphic late art style of the 1930s and 40s.\(^{235}\) (Fig. 4-26) Moholy's appropriation of Polak's images from the "Schelpennummer" of *Wendingen* (whose context -- as determined by Wijdeveld's essay -- was itself biocentric), and of Albert Renger-Patzsch's close-up photographs of plants produced for the biocentric *Biosoph* Ernst Fuhrmann (and which the photographer himself later understood in the biotechnical sense of the naturamorphic analogy), is of more than merely practical significance for illustrating his book.\(^ {236}\) (Figs. 4-14, 4-15, 4-27) The very sources of these images in *Malerei, Photographie, Film* connote Moholy-Nagy's biocentrism.

The bulk of *Malerei, Photographie, Film* is devoted to captioned images, many of them applied photographs here reproduced as exemplars of the (novel) aesthetic value inherent to images not intended as works of art. Rather than merely formal devices, however, some of Moholy's visual comparisons are exemplars of the naturamorphic analogy, which make a similar point that Francé's concept of *Biotechnik* does.\(^ {237}\) With Moholy's acceptance of Francé's biotechnics in mind, one can no longer read this photo-juxtaposition of a flock of geese and an aircraft formation as merely illustrating rhyming contrasts of light and shadow; it also functions as an illustration of Francéan biotechnic principles underlining the view that we humans are neophytes when it comes to the technology enabling flight. (Fig. 4-28) The juxtaposition of Polak's radiograph of a nautilus shell with one of Moholy's own photograms embodies a similar argument that goes beyond the caption's narrower purpose of demonstrating the wide tonal range possible using the two imaging technologies. (Fig. 4-14) Moholy does not
employ just any photogram to this end, he employs one including a spiral form, one of many such works in his oeuvre at the time. Moholy would have known Francé’s illustration of galaxies as instances of natural spiral form in *Bios*, as well as his accompanying discussion of such astronomical form as the result of the same functional laws that operate at the smallest level of scale:

Moholy had more in mind than examples of telescopic photography as alternative image-making devices, or as found images with instructive visual values, when he composed this layout of astronomical photographs. (Figs. 4-29, 4-30) In fact, Francé’s text in *Die Pflanze als Erfinder* explaining the spiral’s universality as due to it being the path of least resistance, is located in the paragraph before the one on *Grundformen* quoted by Lissitzky in "Nasci" and later by Moholy himself in *Von Material zu Architektur*. As we have seen, Francé’s discussion of the spiral as the most functional method of movement through any medium was both an early indicator and an instigator of the fashion for spiral form -- especially as manifested in shell growth -- discernable in Central European avant-garde circles at the time, and Lissitzky saw the spiral as the *Grundform* adequate to the times. And it was Moholy-Nagy who taught his friend, the photographic historian Beaumont Newhall, to notice that "in spite of the fact that astronomical photographs are taken solely as scientific records, some of them have an awe-inspiring beauty,
especially those of spiral nebulae," after Moholy emigrated to the United States in 1937. With Moholy's reading of Francé in mind then, one can better understand the inclusion of no fewer than five photographs of spirals in Moholy's book, including one of a gramophone record, an invocation of the topos of self-similarity and the biocentric baggage which that invocation carried. (Fig. 4-31) In the spread of two x-ray images, one of human hands and the other of a frog, we are not only experiencing -- as Moholy's caption puts it -- "the penetration of the body with light [as] one of the greatest visual experiences," we are also having the parallels between our own skeletal structures and those of animals pointed out to us; of our status as just one of the many zoological species. (Fig. 4-32) In his juxtaposition of a herd of Zebra at a watering hole and the aerial photograph of an experimental Bavarian fish-farm operation displaying a striped, chiaroscuro pattern, Moholy is not merely making a visual comparison, he is also invoking the parallel between the "natural technology" of the Zebra's surface markings and our adaptation of nature's technologies in a fish farm. (Fig. 4-33) When Moholy reproduces close-up photographs of cacti which Albert Renger-Patzsch produced on order for Ernst Fuhrmann's book on spines in plants, he is not only calling attention to the expressive straight and curved lines emphasized by their enlargement through the close-up lens, he is also pointing out the variations on the spinal defense technologies of "die Pflanze als Lebewesen." (Fig. 4-27) When Moholy includes photomicrographs of a louse and a barnacle's foot, he is both documenting the aesthetic possibilities inherent to the microscope, and he is tapping into the old tradition of the Kunst und Wunderkammer -- recast by Haeckel in the late 19th century as a fascination with the wonders and beauties of the microscopic and the undersea. (Figs. 4-24, 4-34) Indeed, at the German Werkbund's "Film und Foto" (FIFO) exhibition held in Stuttgart in 1929, for whose German sections Moholy-Nagy -- as
we shall see in Chapter Five -- was largely responsible, the integration of his own photograms with microscopic photographs gave visitors the chance to compare them directly, in order to see the structural parallels and contemplate our deep rootedness in the "forces which make manifest the elements of the world." 246

Though the creative potential of scientific photography had been noted by technical authors writing for amateur photomicroscopists, who in turn had been producing such imagery for years, Moholy was the first within the high artistic discourse to suggest its use in the making of art.247 He also encouraged artists to view "found" applied photography as a source of visual inspiration. As Newhall writes: "It was this attitude of approaching photographs in the quest of form that led him to appreciate scientific photographs for their quite often accidental beauty. In them he found a new vision of the world." 248 For Moholy, imaging technologies not only had the capacity to supplement vision, they could actually reeducate it -- and not only in a visual sense, but in a moral sense as well.

Moholy further explicated the biocentrism of his New Vision in other publications, both contemporary to the early editions of Malerei, Photographie, Film, and after them. In 1927 Moholy commissioned the biocentric music teacher Heinrich Jacoby to write an article for ii0 which was to be entitled "die gemeinsame biologische grundlage aller gestaltungen," and he described Jacoby's overall project as "eine der wichtigsten geistigen leistungen unserer zeit." In The New Vision, Moholy notes that though the article did not appear, "the title was vindicated beyond doubt by Jacoby's previous works."249 As we have seen, in "Ismus oder Kunst?," reiterating ideas originally contained in the 1921 "Call to an Elemental Art," Moholy made clear his debt to Francé's and Hausmann's biocentric explication of human creativity. Abstract art -- both painterly and photographic -- represented for Moholy evidence
of our biologically determined, unconscious drive to reproduce the "elementary" forms and forces, the Grundformen inherent to nature. He saw photography as a device useful in freeing the painter from the tendency to paint naturalistically, a tendency contrary to the potential to discover these Grundformen. Since for Moholy, everything is grounded in nature -- realism because it is a depiction of nature, and abstraction because, as psychobiology holds, it is an unconscious expression of our awareness of its elementary forms and forces -- the ultimate aim of artistic education is to make people aware of our groundedness in, our unity with the biological, the "natural." But he also saw an artwork of pure form, such as the photogram, as an exemplar of the interconnectedness of things in the world, of the ways in which we are always in interactive, dynamic equilibrium with the other elements of the Biocônose of which we are a part.

Even his understanding of Einstein's and Minkowsky's space-time continuum, an element central to his New Vision, particularly its articulation as a "Vision in Motion," is related to his biologicist view of the world. As Veit Loers correctly implies, Moholy attempts -- even if naively -- to embed Einsteinian relativity theory within a biocentric matrix. In an addition to the original text of Von Material zu Architektur Moholy-Nagy writes that

Young people are today conducting investigations of the biological bases and requirements, in different fields of life. ... Efforts toward a new spatial conception and creation should therefore -- important as they are -- be understood only as a component part in this new orientation. The most primary sources of space experience are even today submerged under technicalities, a state of affairs which prevents the emergence of the future architecture, the creation of a new life space for men. Architecture will be brought to its fullest realization only when the deepest knowledge of human life as a total phenomenon in the biological whole is available.

This Francéan, aesthetic-ecosystems-based thinking was also reflected in 1942, when he wrote:
The photogram ... produces space without existing space structure only by articulation on the plane.... there starts an invigorating investigation about the incoherent use of our rich resources. Technological ingenuity provides us with gigantic structures ... but how we use them is shockingly anti-biological -- resulting in wild city growth, elimination of vegetation, fresh air, and sunlight. ...in the shadow of these modern buildings we ... tolerate the slums.... So it seems that the most abstract experiment of space-time articulation carries a sensible reality.... Such experiments may signalize a spatial order in which not single structural parts ... will play the important part, but the relationships of neighbour units, buildings and free areas, shelter and leisure, production and recreation, leading towards a biologically right living most probably through a right regional planning; towards a city-land unity....

[T]he photographer ... has to focus his attention on the facts which give an adequate record of the actions and ideas of his time. As he cannot do this without participating fully in life, consciously or intuitively his specialized field must be integrated with social reality. ... Then the photographer will bring to the masses a new and creative vision. This will be his social significance. For culture is not the work of a few outstanding people ... their theories have to penetrate into everybody's daily routine.253

Moholy ends "Ismus oder Kunst?" with the admonition that "Es kann nicht genug daran gearbeitet werden, die Menschen aufzuklären, sie zu der Erkenntnis ihres organischen, elementaren Funktionsaufbaus zu führen." In this light, one can regard Moholy's overall pedagogical project as one analogous to Francé's attempt to make people aware of what he saw as our biologically-determined state: the enlightenment of the masses concerning their unity with nature, the counteracting of the tendency to a consciousness of the divide between "nature" and "culture;" the enhancement of the extent to which such an awareness can further the harmonious development of culture as a part of nature, within it.255 To Francé's project, Moholy added a sophisticated perceptual-aesthetic dimension, one which wished to educate people in using their biologically
determined sensory capabilities to their fullest. Moholy's New Vision was at base a pedagogical project to promote a biocentric, that is, an ecological view of the world. Francé's support for the criminal National Socialist state -- a support of which Moholy-Nagy was evidently unaware -- does not lessen the import of the parallelism of their projects.

g. The Naturamorphic Analogy as Fashion

Though as we have seen in Chapter Three, Kandinsky preceded him, Moholy was among the first to illustrate the naturamorphic analogy in an artistic context. In the text cited at the start of this section, Gustav Hartlaub was referring to the fashion for the naturamorphic analogy in German publications by the second half of the decade -- particularly in the Deutsche Werkbund's journal Die Form, launched as a monthly by Walter Rietzler in 1925. As implied by Rietzler in his Monist biocentric article illustrating the naturamorphic analogy, "Einheit der Welt," this fashion was rooted in an awareness of Francé's theory of the Grundformen of nature and of Biotechnik, as well as in Klages' poetic concept of the rhythms of nature. As remarked by Rietzler, it was also stimulated by Ernst Kropp's Haeckelian book of 1926 on nature as a model for the arts, Wandlung der Form im XX. Jahrhundert, for which Rietzler wrote the introduction.256 (Fig. 35) In 1928 it was to receive stimulation through the publication by Karl Nierendorf (the same Nierendorf whose bookstore supplied Mies with his Francé publications), of Karl Blossfeldt's turn-of-the-century Musterbilder for his smithery students as Urformen der Kunst. Enormously successful, as we shall see in Chapter Five, this book was important for Kállai in the development of his conception of Bioromantik.257 As Rudolf von Delius wrote in his psychovitalist article "Kunstform und Naturform" published in Die Form and illustrated with images of shells from Kropp's book, "der Ablauf und Rhythmus der Formbildung in Kunst und Natur ist der gleiche."258 And the biocentric nature of this
trend was reflected in Hugo Haring's critique of the arbitrary geometric abstraction of the International Style in his lead article for the first issue of Die Form, "Wege zur Form." Haring wrote, "wollen wir also Formfindung nicht Zwangsform, Gestaltfindung nicht Gestaltgebung, so befinden wir uns damit in Einklang mit der Natur, indem wir nicht mehr gegen sie handeln, sondern in ihr." 265

We have seen that Beaumont Newhall was struck by Moholy's aesthetic and vitalmystisch regard for astronomical and other scientific photographs once he met the artist. In 1934, two years before Moholy's arrival in America, however, Francé's and Francéan biotechnical ideas had spread to the point that Newhall's boss, Alfred Barr -- before his institutionalization of Grigson's use of Haddon's term "biomorph" in an artistic context -- introduced the catalogue to the "Machine Art" exhibition held at the Museum of Modern Art with the following words:

"Machine Forms and Natural Forms. The beauty of the machine art in so far as it is a mere by-product of function may seem a meagre and even trivial kind of beauty. But this is not necessarily so. The beauty of all natural objects is also a by-product -- the helix of a snail's shell (and a steel coil), the graduated feathering of a bird's wing (and the leaves of a laminated spring), the rabbit's footprints in the snow (and the track of non-skid tires), the elegance of fruit (and of incandescent bulbs)."

h. Ambivalence

Just as Elderfield and Lodder have hinted at the biocentric Constructivist discourse, I am not the first to recognize the biologicist, that is, biocentric or "organic" content of Moholy's writings of this time. As we saw at the start of Chapter Three, Sibyl Moholy-Nagy recognized her late husband as a "Vitalist." The biologism inherent to Moholy's position was understood by others among his contemporaries, such as Carola Giedion-Welcker, and by Menno ter Braak, who in his
review of Malerei, Fotografie, Film of 1928, discusses Moholy's biological determinism. In his grandiose, thoroughly Monist-organicist plan for a Werkbund exhibition intended for Cologne in 1932-33 entitled "Die neue Welt," and published in Die Form, Ernst Jäckh began his shortlist of relevant thinkers with Max Scheler, Ludwig Klages, Hans Prinzhorn and Hermann Keyserling. "The New Era is an organic result of the developments of a century, the conscious experience of the continuity of the most decisive century of discoveries, inventions and transformations of form.... A development from the atomistic nineteenth into the organising, partly even organic twentieth century." From the realm of the arts -- listed immediately after the philosophers -- only three phenomena were named: "Von Henry van de Veldes 'Neuen Stil' an bis zu Ernst Kropps 'Wandlungen der Form im 20. Jahrhundert' und zu Moholys Von Material zu Architektur'." The biocentric anarchist art critic Herbert Read also recognized Moholy's biocentrism. Read held that Moholy's "experimental material is the result of a method, and underlying that method is what one must call a philosophy of life. The method Moholy-Nagy called 'Design for Life': for the philosophy he had [had] no specific name ... but the keyword to describe his outlook is organic."  

While Alain Findeli recognizes Moholy's pedagogy as "un fonctionnalisme organique" or "fonctionalisme vitaliste," such awareness is exceedingly rare outside Germany. In current writing it has been German -- often Marxist and post-Marxist -- critics such as Irene-Charlotte Lusk, Rainer Wick and, as we have seen in Chapter Three, Andreas Haus who, sensitized to the negative connotations of biologism in the German context, have been more apt to recognize the biologicist aspect of Moholy's biocentrism than others. In her highly valuable 1980 study of Moholy's photomontages, Lusk cannot hide her astonishment when she realizes the depth of Moholy's biologism: "Überraschend ... ist ... der Biologismus, mit dem er die physischen Funktionen und ihre harmonisierung durch Ästhetik
mit dem Glück der Menschen gleichsetzt. Die soziale Dimension wird suspendiert; Moholy-Nagy gerät hier in eine Nähe zu Programmen, die ein Jahrzehnt später in Deutschland durchgesetzt wurden, mit denen er sich in keiner Weise identifizierte. Wick acknowledges Moholy-Nagy’s view of technology as "organic" even though he fails to place his thought into its larger biocentric context. While in his article "Sinnlichkeit und Industrie," Andreas Haus is the first to have stated outright that "Moholy war, durch seine Neigung zur Lehre des Popularbiologen Raoul Francé bereits in den zwanziger Jahren mit einem... 'biozentrischen' Weltbild bekannt geworden," in his earlier writing on Moholy’s photography, it is exactly Haus’ failure to recognize the biocentrism informing Moholy’s early work, that leads him to what I think is an inaccurate analysis: He sees Moholy as moving from a socially progressive, critical "Activism" during the 1920s, to a John Dewey-influenced biologist, a "sinister configuration - undialectic, organic, of necessity nature-like, ‘existentialist’ in so far as the alienated environment as such becomes the reason for self-enjoyment. For the first time [in the later 1930s] there manifests itself ‘empathy’ with the alien automatism ... In this irrational and magical procedure Moholy abandoned completely the subversive content of his earlier filmscript Dynamic of the Metropolis and substituted for it signs of fatalism.”

Taking into consideration also the fact that Moholy had adopted a biologist, biocentric world-view in the early 20s, already, and that this view coexisted happily with his Leftism, as it did with the Leftism of Lucia Schulz and so many others at the time, Lusk’s and Haus’ implication that biologist and a "revolutionary" or "subversive" position are mutually incompatible does not hold water. Indeed, though he was a committed Francé-style biological determinist in the aesthetic sphere, Moholy was not convinced -- as was Francé -- that social life is biologically determined, or rather, even if it
is biologically determined, that such a determination should not be "resisted" or "challenged" when necessary. As Moholy wrote in 1929: "I have slowly formed the opinion that, seen in perspective, everything develops organically. This does not necessarily mean that one can accept the present system without opposition." And Moholy was not the only biocentric avant-gardist of the interwar period to voice such ambivalence about a fatalistic form of biologicist social determinism. We have seen Hausmann's critique of what he saw as Francé's reactionary political position and incipient authoritarianism. But Hausmann was the only biocentric intellectual to voice this concern at the time. During the early 20s, even the left-wing press was neutral concerning Francé's books. In his biological column in Sozialistische Monatshefte -- a socialist cultural journal supported by the avant-garde -- Walter Zimmermann followed Francé's development, reviewing books such as Zöesis and Bios: Die Gesetze der Welt fairly favourably. Francé was - - like Baron von Uexküll -- seen as a politically neutral advocate of a biocentric world view despite Francé's and von Uexküll's conservative, indeed Rightist, connections.

It was not until the political lines were drawn more clearly later in the decade, and especially during the 30s, that other Weimar Biozentriker, including Francé's admirers, would come to see the danger inherent in a hard-line socially deterministic and racially essentialistic biologism. One of the first to do so was Adolf Behne, an early advocate of von Uexküllian biocentric architectural theory. Starting in late 1922, with his article "Kunst, Handwerk, Technik," Behne became critical of anti-technical Romanticism. He criticized an exaggerated organism that did not distinguish between "nature" and "culture." In a plain reference to the fashion for spiral form in shells among biocentrically minded artists and architects, and specifically to Wijdeveld's article in the "Schelpennummer," Behne wrote in 1923 that "das Schneckenhaus z.B. ist ein Teil des individuellen Schneken-
körpers und dient keinem sonst -- organisch -- als Haus. Es wächst mit den Schneckenindividuum und es stirbt mit diesem ...... Das gebaute Haus wächst weder, noch stirbt es." He calls this romantic organicist architecture (the kind that fully embraces the organicist analogy) anti-social:


Hiernach scheiden sich ganz klar zwei Typen; deren letzte schärfste Ausprägungen sind der Rationalist und der Romantiker. Wir haben innerhalb der Architektur den konsequenten Funktionalisten als Vertreter des einen, des romantischen Typs kennengelernt. Sein Gegenpol ist der zum Formalisten erstarrte konsequente Rationalist.

Biologistic socialism was even criticized by Rietzler in an editorial published at the dangerous moment of 1932:

Wir halten es aber anderseits für ein verhängnisvolles Missverständnis, wenn man als eigentliches Ziel des Sozialismus die Durchsetzung jener Forderungen, die Sicherung der fälschlich sogenannten "biologischen" Existenz des Menschen ansieht und daraus die Folgerung zieht, dass sich auch die Werkbundarbeit heute danach allein orientieren müsse. Wenn man den biologischen Massstab an den Menschen anlegt, darf man ihn nicht betrachten wie ein anderes Tier auch und darf nicht vergessen, dass zur "biologischen" Existenz des Menschen auch der ganze ungeheure Reichtum des Geistigen und Seelischen gehört.

As we shall see in Chapter Five, by the mid-20s Ernő Kállai had become biocentric. Though always anti-Nazi, like Mies and Gropius he at first remained in Germany after the Machtergreifung but by 1935 he moved to Budapest, where he was attacked in the right-wing press. He responded with an article opposing ethnic essentialism ironically entitled "His Father
is Swabian, his Mother is Serbian, he, Therefore, is Hungari-
an." In a move at odds with his critical writing of the previ-
ous years, Kállai distanced himself from biological determin-
ism in the social realm: "I don't much believe in the biologi-
cal explanation for world views and power structure sys-
tems." Westheim, who -- like Moholy and Lissitzky was of
Jewish heritage -- and who had been the first to promote
Francé within the avant-garde artistic context, became one of
the most vociferous critics of the Nazis' "rasse-biologische
Ästhetik" from exile in Paris. This response to Francé's
biologism and to biological determinism, reflects the range of
biocentric political positions as they were played out in the
dangerous political landscape of interwar Europe.

i. Attraction

What was it, then, about Francé's thinking that attracted
some International Constructivists? Francé's version of bio-
logical determinism appealed to some Leftist intellectuals
because it held that all nature -- including culture -- is
organized into nested hierarchies of ecosystems, the tendency
of which is to arrive at optimal states through symbiotic
cooperation more than competition. Awareness of this led
Francé to what he termed "objective philosophy" and its prac-
tical application, the Lebenslehre, which set guidelines for
living in harmony with one's environment. In his copy of
Francé's 1923 book Plasmatik, Mies marked the following pass-
gages: "Leben ohne biocénnotische Einordnung in das Weltganze
undenkbar ist." "Aus der Biocénnotik entspringt also die Leb-
enskunst." As we saw in Chapter Two, his systems-based
method of holistic thinking convinced Francé of a basic "har-
mony in nature" which was maintained through strict adherence
to the principles of equilibrium and function, but which also
implied a problematic social determinism. The apparent
scientific authority, the practicality and the cooperative
implications of Francé's program nevertheless appealed to
Leftist cultural practitioners of the twenties who were in reaction to the speculative, occult, and individualistic tone of the Expressionism they emerged from, and were unsettled by the chaos of early Weimar Germany. Indeed around 1923, at the historical moment when hope for a world revolution was fading among these intellectuals, Francé's "objective," or sachlich vision of functionalism and order in nature filled a gap for some. Just as in the French context Le Corbusier and Ozenfant's Purism offered a "reassuring assumption of an inner analogy or equivalence between classicism and mechanics," for those in Germany Francé's thinking offered scientific legitimacy to innate kosmovitale Einsfühlung. Francé's biocentrism was the Germans' appel a l'ordre.

But it was also a variety of Neo-Catholicism. Just as Monism was seen by pre-war intellectuals as bridging science and religion, Francé's neo-Monist interwar Biozentrik fulfilled the desire for a scientifically-based yet quasi-religious Weltanschauung after the war. His new program could potentially appeal to the avant-garde ready for a greater degree of scientific "objectivity," but not prepared to abandon their deep-seated kosmovitale Einsfühlung completely. As Charlotte Douglas writes in connection with the Russian avant-garde, "the biological paradigm had the advantage of combining a well-developed, objective, and scientific system with the immediacy and inclusiveness of living nature; it seemed to make possible an ideal transcendence through the application of purely rational means." 

Through his focus on function in nature with respect to Biotechnik, Francé's "biological paradigm" operated in an analogous fashion for members of the avant-garde in Germany. His ideas stimulated Moholy, El Lissitzky and the Ring architects to seek a synthetic, or "transcendent" position which embraced both technology and nature.

For International Constructivists as well as for the Ring architects, Francé provided easy answers, apparently rooted in the certainty of "nature," to vexing questions, and his seven
Grundformen legitimated the artists' essentially arbitrary "elementary," "abstract," "International" styles of artistic and architectural production -- be they biomorphic, orthogonal, or informed by a technological aesthetic -- in a discourse of "nature" rather than a discourse of Platonic Idealism (as did Le Corbusier's and Cézanne's basic geometric solids). As Elderfield writes, "Francé['s] popularized organicism ... was useful both to Lissitzky and to Schwitters in providing a justification of their ideas that was no less 'scientific' than that which the anti-naturalist faction of International Constructivism possessed, and one, moreover, which corroborated Malevich's notion of universal form. They were able to claim, therefore, that geometry and abstraction were not only the province of cultivated urban man (as De Stijl theory insisted) but were what linked modern man to his natural roots."283

Finally, members of the Weimar-German avant-garde were attracted to Francé's legitimation of human technology and of functionalism as "natural."284 As Haus wrote of Moholy's rethinking of our relationship with technology:


Indeed it was Francé's framing of human technology as part and parcel of "natural" technology which held the greatest interest for them, and which contrasted with the Purist privileging of the machine analogy. Francé was a thinker who, by seeking to biologize the mechanical rather than merely displacing the mechanical metaphor with a biological one, offered artists the
possibility of a synthesis based in nature. As Lissitzky put
it in a letter to van Doesburg of 1924, since he had (through
Francé) discovered the identical laws operating in them, he
has outgrown the "2 gegenüberstehenden Hosen: Natur und Kun-
st"; he has moved from a position of binary opposition to one
of synthesis.\textsuperscript{286} It was Kállai’s\textit{ ab ovo} dialectical system of
nature-technology that -- in a sense -- inocculated him
against Francé’s thinking, a thinking he would have found
totalizing. Though he adopted a biocentric position in the
later 20s, as we shall see in Chapter Five, when he did so, it
was an adaptation of Klages’ polar Geist-Seele structure which
took into account the "demonic" in both nature and technology
that he promulgated, rather than what he would have seen as
Francé’s naive optimism. By 1931-32 he named the artistic
manifestations of this dialectic, denotations which reflected
his Klagesian "romantic" biocentrism: "Technoromantik" and
"Bioromantik."

In the final chapter I will outline the process by which
scientific imagery came to be incorporated into the discourses
of art photography and avant-garde art. The nexus of these
domains, and the primary agency of this process in Weimar
Germany, was László Moholy-Nagy’s biocentric-aesthetic, "tech-
noromantic" program of New Vision. New Vision was the realiz-
ation and creative exploitation of optical possibilities
offered by mechanical imaging technologies. It was also
vision, as I argue, based in Moholy’s biocentrism, a view of
the rootedness of humanity in nature, of the "earth as an
entity," as he put it. It was this vision, furthermore, which
added the final element to Kállai’s formulation of the first
coherent theory of biomorphic Modernism, "Bioromantik."
Endnotes:


2. From an unpublished manuscript, dated by Peter Hahn to "Frühjahr, 1919," Peter Hahn, "Black Box Bauhaus: Ideen und Utopien der frühen Jahre" in *Das frühe Bauhaus und Johannes Itten* (Stuttgart: Gerd Hatje, 1994), 22.


5. Kállai, "El Lissitzky" *Das Kunstblatt* 6, no. 1 (1922) 296. Translated by Oliver Botar. For another example of Kállai's opposition of nature and technology, see "Lajos Tihanyi," *Der Cicerone*, 16, no. 8 (April 1924), 363.


17. Adolf Behne, Der Moderne Zweckbau (Munich: Drei Masken, 1926), 53.


22. Friedrich Dessauer, Streit um die Technik (Frankfurt/Main: Josef Knecht/Carolusdruckerei, 1958).


24. The organicist variant of this view was most clearly (and famously) articulated at the time by Oswald Spengler, whose best-selling Der Untergang des Abendlandes [Decline of the West] (Munich: Beck, 1920-22) was read by, among others,


33. Ibid., esp. pp 111-7 and 124-32. On the term "neue Sachlichkeit" see Fritz Schmalenbach, "Jugendstil und Neue Sachlichkeit." In: Jost Hermand, ed., Jugendstil (Darmstadt: Wissenschaftliche Buchgesellschaft, 1971). According to Schmalenbach, the term "Sachlichkeit" was popularized at the turn of century by Hermann Muthesius and Alfred Lichtwark (p. 70) and reflected the organic functionalist concept of Sachlichkeit in the thinking of Hermann Obrist and August Endell (p. 76). "Neue Sachlichkeit" was first used for painting -- inappropriately as Schmalenbach points out -- by Gustav Hartlaub in May 1923; and for architecture (appropriately) around 1926 (pp. 66-8). In the case of painting, rather than "Neue
Sachlichkeit" work, it was some abstract Expressionism, Dada and Surrealism which was informed by biocentric ideology. On the differences between the usage of the term *Neue Sachlichkeit* for painting and architecture, see pp. 65-6.


35. G. Material zur elementaren Gestaltung 1 (July 1923), cover.


44. Ozenfant and Le Corbusier parted ways in 1925. Subsequently they developed towards a biocentric position. By the time Ozenfant wrote Foundations of Modern Art in 1927-28, such elements were already coming to the fore. [Though the book appeared in 1929, Ozenfant dates the Preface of the first edition to "1927-28." See Ozenfant, Foundations of Modern Art (London: John Rodker, 1931), xiv.] Thus, Ozenfant takes the position that "our life is but one aspect of universal life, which perpetuates itself in other forms," even if his anthropocentric bias still causes him to privilege "man [as] a soloist in the universal orchestra." While for Ozenfant "natural forms are mechanistic, for they are the product of universal forces. And these very forces are in their turn transformed by mechanism," in the following sentences he goes on to occupy a biocentric position in which everything is natural: "The honey-bee is a relay that nature uses: mankind too, is a relay like the bee: machines are relays created by man, and the collaboration of men and machines creates natural objects which artificially we call artificial. ... does anything exist that can be called unnatural?" and in the following paragraph he declares "mechanical" laws to be "natural":

A machine that turns out good work is a healthy machine: its organs rigorously satisfy mechanical, therefore natural, laws. Its products by degrees become stereotyped because the play of forces is unchanging and their effect is to compel such products into certain shapes, their optimum. But all this does not happen at once. Mechanical evolution
is comparable with natural evolution, the law of mechanical selection is comparable with the law of natural selection. (p. 151)

Here he unequivocally takes a biocentric, functional-determinist position on technological formation which organizes machines. (It should be noted that fellow-Frenchman André Lurçat adopted an "organicist" view of architecture by 1929 as well: "On peut regarder une architecture comme on regarde un organisme vivant..." Lurçat, Architecture, les Manifestations de l'esprit contemporain. (Paris: Au Sans Pareil, 1929); quoted in de Zurko, Origins of Functionalist Theory, 11.)

Le Corbusier's biocentric unconscious came to the fore after 1945 when, in his program of the "Modulor" he, as von Moos phrases it, "reacts to the alarming triumph of rationalism effected by the technocrats and the bureaucrats of the postwar boom by a retreat into a universe of antitechnological, vitalist, and organicist beliefs -- a romantic escape into nature." (Von Moos, Le Corbusier: Elements of a Synthesis, 312). Steadman also points out that Le Corbusier's thinking became increasingly biologicist as time wore on. In his 1960 book My Work, for example, we find: "Biology! The great new word in architecture and planning!" (Quoted by Steadman in The Evolution of Designs, 140. See also page 147.)


49. Unsigned (Le Corbusier and/or Ozenfant?), in "Bilan d'une Génération," L'Esprit Nouveau no. 25 (July 1924): unpag.


52. Steadman has refined Collins' binary schema by pointing out that the organism is sometimes itself modelled as a machine ("machine-theoretical biology"), while the machine is in other cases conceived of as an organism. Steadman, The Evolution of Designs, 14-16.
53. Le Corbusier and Ozenfant, "Des yeux qui ne voient pas ...." On Le Corbusier and the machine analogy, see also Collins, Changing Ideals in Modern Architecture, 159-60.


55. "La machine fait luire devant nous des disques, des sphères, des cylindres d'acier poli, d'acier taillé avec une précision de théorie et une acuité que jamais la nature ne nous montra." the emphasis is Le Corbusier's. L'Art Décoratif d'Aujourd'hui, IV.


61. On Kallaï's polarity, see Chapter One. In her article "Attribute des Konstruktivismus, Wucher traces this polarity, and in her discussion of Kallaï's use of the term élethesség [vitality], though she does not name Lebensphilosophie, she describes what amounts to Kallaï's use of its categories in his Constructivist writings of the early 20s.

63. For evidence of Kállai's own biologism even at the height of his "anti-natural" Communist-Constructivist phase, see Kállai, "Korrektúrát (A de Stijl figyelmébe)" [A correction (to the attention of de Stijl)] Ma 8, no. 9-10 (1 July 1923): unpag. Thus he writes of "art as a biological positivum [positive factor]," and of mass organizations as "biological possibilities and necessities."

64. Kassák, in Vienna at the time, learned of these developments from Uitz earlier, as Uitz claims to have sent him a package during the summer of 1921. On the process of the transmission of information on Russian Constructivism to Berlin, see Oliver Botar, "Constructivism, International Constructivism and the Hungarian Emigration." In John Kish, ed., The Hungarian Avant-Garde, 1914-1933. exh. cat. (Storrs, Conn.: The W. Benton Museum of Art, 1987).

65. Ibid.

66. On this circle see Werner Graeff, "Concerning the so-called G Group," Art Journal 23 no. 4 (280-3). Note that while Stephen Bann reinvented the term "International Constructivism" in his anthology published in 1974, Raoul Hausmann had used the term in the subtitle to his "Zweite präsentistische Deklaration: Gerichtet an die Internationalen Konstruktivisten," published in the unpaginated Ma 8 no. 5-6 (15 March 1923). See Bann, Introduction to The Tradition of Constructivism, xxxii. On the origins of International Constructivism, see also Bann, "Russian Constructivism and its European Resonance," in Andel, et al., eds., Art Into Life, 213-21.


68. See Willett, Art and Politics in the Weimar Period, 74-6. As neither editor had been directly involved with Rodchenko's circle, this was still not the "real thing," and was received with surprise in Moscow Constructivist circles. See Wassilij Ratkin, "'Vorwärts, zur Rekonstruktion der Welt': Episoden aus der Geschichte einer Kunstpolemik." in: Konstruktivistische Internationale, 68-72.


73. The famous photograph of George Grosz and John Heartfield holding the placard reading "Die Kunst ist tot. Es lebe die neue Maschinenkunst Tatlins" was published in Richard Huelsenbeck, Dada-Almanach (Berlin: Erich Reiss, 1920), 41. On this misunderstanding, see John Milner, Vladimir Tatlin and the Russian Avant-Garde (New Haven: Yale University Press, 1983), 1-2.

74. Lissitzky's article on Russian architecture was one of the only pieces in the West to discuss Tatlin's "Monument to the Third International" in organicist terms. Lissitzky, "Architektur Russlands," ABC no. 3-4 (1925): 1-2. The examination of Lissitzky and organicism was begun by Peter Nisbet in El Lissitzky 1890-1941 (Cambridge Mass.: Harvard University Art Museums/Busch-Reisinger Museum, 1987), 28-30; and has been continued by Manuel Corrada in "Mechanical and Organic Form in the Theory and Art of El Lissitzky," The Structurist no. 34-5 (1995-96): 57-63 and Railing in "'The Machine is no More than a Brush'."  

75. Kai-Uwe Hemken, "'Muss die neue Kunst den Massen dienen?' Zur Utopie und Wirklichkeit der 'Konstruktivistischen Internationale,'" in: Konstruktivistische Internationale, 58. While Arp was an Alsatian who later chose French nationality, at this stage he was still a German-born German citizen.

76. Ibid.

77. See Graeff, "Concerning the so-called G Group."


On Moholy and Kemény’s manifesto, see below.


80. Raoul Hausmann, "Wir sind nicht die Photographen" (n.d. c. 1921) in: Hausmann, Sieg Triumph Tabak mit Bohnen, 59. On Hausmann and Ernst Marcus’ radical psychobiology, see Chapter Three.


84. In an ironic unsigned piece directed against Herwarth Walden (probably by Westheim) entitled "Bemerkungen." Das kunstblatt 5, no. 1 (January 1921): unpag.


87. Ibid., 121.


89. Westheim had shown Monistic and nature-centric tendencies earlier already. See, e.g., his article "Die Landschaft" in which he writes almost nostalgically about the time before the Renaissance: "Das Bewusstsein einer solchen allwaltenden und allgestaltenden geistigen Kraft war für die mittelalterliche Menschheit das, was Goethe und Humboldt im Reich der Natur suchten: Die Universalität, die innere Einheit des Alls..." Das Kunstblatt 4, no. 1 (January 1920): 9-10. Westheim's campaign against what he saw to be the excesses of Expressionism did not prevent him from publishing Paul F. Schmidt's "Das Recht auf Romantik" that same year, however, in which Schmidt praises the pantheistic/Monistic aspects of ancient and recent art. Das Kunstblatt 4, no. 11 (November 1920): 321-25.


92. Francé, Plants as Inventors, 11.
93. For a brief history of this idea (made famous and perhaps introduced into the field of architecture by Sullivan's "form follows function"), see Collins, Changing Ideals in Modern Architecture, 155. For a longer history, see de Zurko, Origins of Functionalist Theory. As Vitale points out, Sullivan's adage was itself related to biocentrism: "Les écrits de Sullivan montrent clairement que déjà pour lui la fonction va bien au-delà d'une conception mécaniste. Elle prend une signification éthique, sociale, organique, vitaliste, voire politique et même nationaliste." Eliode Vitale, "L'enseignement au Bauhaus de Weimar (1919-1925)" (Doctorat d'Etat, Université de Paris VIII, 1985), 44.

94. Francé, Plants as Inventors, 11.

95. Ibid., 19.

96. Ibid., 16.

97. Ibid., 17. It is hard to tell from the plans and photographs whether there was no cone in the Lichtrequisit; perhaps it appears as a virtual volume or as a shadow projection. In any case, it is almost as if in compensation for this lack that Moholy features transparent cone shapes so prominently in his set design highly reminiscent of the "Light-Space Modulator" for Alexander Korda's film Things to Come, an image of which he used for the title page of the first brochure for The New Bauhaus in Chicago in 1937. See Passuth, Moholy-Nagy (1985), fig. 197. Not surprisingly, Moholy began work on the Lichtrequisit in 1922, just before he encountered Francé's writings on the Grundformen. He completed work on the stage prop in 1930, in time to be shown in his theatre section of the German Werkbund's contribution to the Exposition des Arts décoratifs in Paris in the summer of 1930. See the description of the Werkbund section in Richard P. Lohse, New Design in Exhibitions (Erlenbach-Zurich: Verlag für Architektur, 1953), 20-27. See also Veit Loers, "Moholy-Nagy's 'Raum der Gegenwart' und die Utopie vom Dynamisch-Konstruktiven Lichtraum" in Loers, ed., Moholy-Nagy, 49.

98. Ibid., 18.

99. On Francé's work on Biotechnik, see Annie Francé-Harrar, So war's um Neunzehnhundert: Mein fin de siècle (Munich: Albert Langen/Georg Müller, 1962), 141-8. She dates the "birth" of Biotechnik to 16 September 1916, and the public use of this term in German to 1920 the year Die Pflanze als Erfinder was published in the Kosmos series of popular scientific books. (p. 147, 141) For a more objective account of Francé's role in the development of biotechnology (one of the few areas in which a secondary literature has developed on him), see Robert Bud, The Uses of Life: A History of Biotechnology


101. D’Arcy Wentworth Thompson, *On Growth and Form* (Cambridge, 1917). (I refer here to the abridged edition: Cambridge: Cambridge University Press, 1961.) Thompson also posited a geometrical basis for organic entities as well as an idea akin to Biotechnik (on this, see chapter 8, "On Form and Mechanical Efficiency"). Note also the similarity between Thompson’s "form as a diagram of forces" and Francé’s views on formation: "Cell and tissue, shell and bone, leaf and flower, are so many portions of matter, and it is in obedience to the laws of physics that their particles have been moved, moulded and conformed." (p. 7) "The form, then, of any portion of matter, whether it be living or dead, and the changes of form which are apparent in its movements and in its growth, may in all cases alike be described as due to the action of force. In short, the form of an object is a ‘diagram of forces....’" (p. 11). For Thompson’s discussion of spiral form in nature, see Chapter 6. See also Martin Kemp, "Doing What Comes Naturally: Morphogenesis and the Limits of the Genetic Code," *Art Journal*, 55, no. 1 (Spring 1996), 27-32, Steadman, *The Evolution of Designs*, 13-14 and Werner Hahn, *Symmetrie als Entwicklungsprinzip in Natur und Kunst* (Königstein: Langewiesche, 1989).

On others at the time who were publishing on Biotechnik, see Bud, *The Uses of Life*.

102. On Westheim’s support for van de Velde since 1914, and his opposition to the "machine aesthetic," see Windholz, "Paul Westheim," 331, 337. For Westheim’s polemical reference to Mies’ domestic architecture as a "Wohnorganismus" (rather than a *Wohnmaschine*), see Westheim, "Mies van der Rohe: Entwicklung eines Architekten," *Das Kunstblatt* 11 (1927): 60. (C.f. Ebeling’s phrase "Hausorganismus" of 1926, quoted at the start of this chapter.) In his review of the Bauhausausstellung Westheim also made fun of the Bauhaus’ "Quadratstil," i.e. of orthogonal geometric formalism. See: "Bemerkungen: Zur Quadatur des Bauhauses," *Das Kunstblatt* 7, no. 10 (October 1923): 319-20.


104. Ibid. Einstein and Westheim’s interest in biocentrism and the arts is also indicated by the inclusion in the Europa Almanach of Fritz Landsberger’s article "Georg Simmel" (75-9), El Lissitzky’s "K. und Pangeometrie" (103-12), a plan and
photographs of Hugo Haring's manifesto of organic architecture "Gut Gurkau" (122-3), Rudolf Grossmann's brief writings on Scheler, Kubin, Spengler and Keyserling (151-3) and Max Möckel's article on the golden section (258-61).

105. By publishing Ozenfant and Le Corbusier's "Nature & Création" in German translation, including their statement (quoted above in French) that "Die Natur ist für den Menschen eine äussere Tatsächlichkeit, sie ist vielfältig, grenzenlos, im allgemeinen unfassbar," Westheim was pointing up this difference in their thinking on the issue of nature. See: "Natur und Gestaltung," Das Kunstblatt 8, no. 3 (March 1924): 65. On van de Velde c.f. Sebastian Müller, "Ornament als Ausdruck der organischen Panfunktionalität der Natur (van de Velde)" in his Kunst und Industrie (Munich: Carl Hanser Verlag, 1974), 61-70.

106. See Hans Hartmann, "Die Spirale im bildnerischen Denken von Paul Klee," in Hans Hartmann and Hans Mislin, Die Spirale im menschlichen Leben und in der Natur: Eine interdisziplinäre Schau (exh. cat.) Basle: Museum für Gestaltung, 1985), 94-98. Probably in the fall of 1923 Klee wrote of cross sections: "The object grows beyond its appearance through our knowledge of its inner being, through the knowledge that the thing is more than its outward aspect suggests. Man dissects the thing and visualises its inside with the help of plane sections ... This is visible penetration, to some extent that of a simple knife, to some extent helped by finer instruments which make the material structure or material function clear to us." Paul Klee, Notebooks, Vol. 2, The Nature of Nature. Jürg Spiller, ed.; Ralph Manheim, transl. (Woodstock, N.Y.: The Overlook Press, 1992), 288. Klee's teaching was coincident with -- indeed it perhaps directed -- the emergent interest in scientific imagery at the Bauhaus. Thus Carl Koch's scientific films were shown on 18 August 1923, during the Bauhauswoche in Weimar, the concluding event series of that summer's Bauhaus exhibition. "Erziehungsfilm und Filme der UFA-Kulturabteilung: Mikroskopische, Zeitlupen- und Zeitrafferaufnahmen" Program reproduced in Wulf Herzogenrath, ed., 50 Years Bauhaus (exh. cat.) (Stuttgart: Württembergische Kunstverein/Darmstadt: Bauhaus-Archiv/Toronto: Art Gallery of Ontario, 1969), 314.


108. Wijdeveld, "Natuur, Bouwkunst en Techniek."

110. A reproduction of Nikkelplastik mit Spiral was included in the Buch neuer Künstler, which appeared in September of 1921, and in Ma 7, no. 5 (1 May 1922): 14. Ivan Punin's article "Tatlin's Tower" -- concerning the Monument to the Third International -- appeared in Veshch no. 1-2 (March-April 1922) and translated as "Tatlin üvegtornyja" [Tatlin's glass tower] appeared in that same issue of Ma the following month, on page 31. On the Dynamisch-konstruktiven Kraftsystem, Von Material zu Architektur, 204.


112. Paul Klee, unpublished pedagogical term plans, 23 October 1923. Bauhaus, Weimar. Paul Klee Stiftung Bern. Transcribed by Katalin von Walterskirchen, n.d. [ca. 1960], p. 1. Klee was fascinated not only by natural structures, but by dynamic systems in nature, what Francé called Biozönose. What is significant is that Francé was well-known for emphasizing his view that -- rather than of static structures -- the Bios consisted of a multitude of interacting and interpenetrating systems in search of or in equilibrium. For example, see "The Plant," from a lecture of 27 February 1922, where Klee describes the growth of plants in dynamic, systems terms. (Klee, The Thinking Eye, 351) On the meteorological cycle of
precipitation as a system, see Klee, The Nature of Nature, 91-97. After this discussion of the meteorological system in our environment, Klee goes on to make the point that "We carry a circulatory system of similar nature within us, without being aware of it. This is the circulation of the blood." (Klee, The Nature of Nature, 101) On Klee's views of growth see also Wiedmann, 202 ff.


115. Spiller in Klee, Notebooks, Vol. 2, The Nature of Nature, 289. Spiller is no more specific than this, though the context into which he places the single photograph he reproduces suggest that it is placed near the notebook entry of 20 November 1923. As the "Schelpennummer" of Wendingen had just appeared a couple of months previous, this is a plausible dating.

116. Wendingen was probably the most important organicist architectural and art journal of the time. On the organicism of Wendingen, see: Wim de Wit, "'Wendingen', la Scuola di Amsterdam e Wijdeveld," in: Wendingen 1918-1931. Documenti dell'arte olandese del Novecento (exh. cat.) (Florence: Centro Di and Palazzo Medici-Riccardi, 1982), 28ff. On Wijdeveld's biocentrism, see below.


119. Ibid.

120. Josef Maria Eder and Eduard Valenta, Versuche über Photographie mitteilst der Röntgen Strahlen (Halle: Knapp, 1896).

121. El Lissitzky reproduced a Polak x-ray photo in "K. und Pangometrie," 110. This is discussed below. Lissitzky was soon doubly sensitized to X-rays, for he had to submit to their penetrating gaze while being diagnosed with tuberculosis
in Hannover late in 1923. Moholy-Nagy reproduced two of Pol-
ak’s images from Wendingen in: László Moholy-Nagy, Malerei, Photographie, Film (Munich: Albert Langen, 1925), 66, 68. Le Corbusier reproduced one of Eilers’ photographs of two shells with the caption "Esprit de Vérité" in L’Art Decoratif D’Aujourd’hui, 167. We know from Kállai’s review of Karl Blossfeldt’s Urformen der Kunst (1928) in bauhaus 3 no. 1 (January 1929: 27) that Kállai had been struck by these images as well at the time. See Adolf Behne’s reference to the "Schelpennummer" in Der Moderne Zweckbau, 51.


124. Though the scientific imagery reproduced in L’Esprit Nouveau at this time illustrated scientific articles, it was in effect aestheticized through its inclusion in an art journal. This highly successful issue of Wendingen was followed in 1924 with a special issue on crystals, which also enjoyed success.


128. Ernst Fuhrmann, Der Sinn im Gegenstand (Munich: Georg Müller, 1923), 29. The copy I read is from the library of Mies van der Rohe, in the Department of Special Collections of the University Library, University of Illinois at Chicago.

129. Hans Arp and El Lissitzky, eds., Die Kunstismen (Zurich: Eugen Rentzsch, 1925), XI. The English of the original is flawed.


133. Ebeling, *Der Raum als Membran*, 30.


137. Ibid., 177.


140. Typically, Alois Martin Müller, author of the essay published to accompany the reprint of *Die Kunstismen*, contrasts Arp’s and Lissitzky’s views of Constructivism as a nature-centric versus a techno-centric one, despite the obvious evidence to the contrary in the agreed-upon definition of the term published in the book. Useful, however, is Müller’s point that "rather than construction alienated from nature [Arp] envisions ‘concretion’ approaching nature." Müller, "The Last Parade: The Isms of Art 1914-1924," looseleaf insert in the Reprint edition of *Kunstismen*.

998, respectively. On this, see Gábor Pataki, "Technoromantik," in Gassner, Kopanski and Stengel, eds., Die Konstruktion der Utopie, 203-8.


145. Eggeling and Hausmann, "Zweite präsentierte Deklaration," unpag. It should be noted that several of Hausmann’s most important biocentric texts appeared in Ma, evidently as a result of his friend Moholy-Nagy’s efforts as Ma’s Berlin correspondent. See Illona Illés, A Tett (1915-1916) Ma (1916-1925) 2X2 (1922) Repertórium (Budapest: Petőfi Irodalmi Múzeum, 1975), entries 440-41; 1411, 1419.

146. On Marcus, see Chapter Three. On Empiriokritizismus, see Chapter Two. The ideas of the "Zweite präsentierte Deklaration" are developed in Hausmann’s "Egyetemes szervműködés" [Universal sensory functioning] (Ma, 8, no. 7-8 [1 May 1923]: unpag), another of his speculative articles based on the thought of Marcus, but here focusing on the Lamarckian possibility of humans extending their sensory and communicative abilities; ideas related to contemporary speculative applied science such as Francé’s Biotechnik, and particularly Mikhail Matiushin’s experiments with Zorved (See-Know) announced at INKhU in 1923. Marcus’ book, Das Problem der exzentrischen Empfindung und seine Lösung (Berlin: Der Sturm, 1918), was brought to the Hungarians’ attention by Hausmann, and was reviewed by Kassák’s assistant of the time, Endre Gáspár, in Ma 9 no. 2 (15 November 1923): unpag. On Zorved, see, e.g., Lodder, Russian Constructivism, 206. C.f. also Raoul Hausmann, "Optophonetik," Ma 7, no. 1 (15 October 1922): 3-4. Reprinted in: Hausmann, Sieg Triumph Tabak mit Bohnen, 52.


148. György Lukács offered a similar analysis: "man in capitalist society confronts a reality 'made' by himself (as a class) which appears to him to be a natural phenomenon alien to himself; he is wholly at the mercy of its 'laws', his activity is confined to the exploitation of the inexorable fulfilment of certain individual laws for his own (egoistic) interests.... Thus the word 'nature' become highly ambiguous." Lukács, "Reification and the Consciousness of the Proletariat" in: History and Class Consciousness: Studies in Marxist Dialectics (Cambridge: MIT Press, 1971), 135.


150. Ibid.


153. For Francé's problematic relationship with the Nazis, see Chapter Two. On Hörbiger and the Nazis, see Brigitte Nagel, Die Welteislehre: Ihre Geschichte und ihre Rolle im "Dritten Reich" (Stuttgart: Verlag für Geschichte der Naturwissenschaften und der Technik, 1991). In a letter to van Doesburg of 26 August 1924 written near Schwarzerden in the Rhön mountains, Moholy-Nagy says "Das was Hausmann -- etwas snobistischer Weise -- auf dem gebiet der Eiskristallisation der Sonnensysteme und anderer rätselhaften kosmischen Vorgänge versucht, müsste auf viel positiverem Gebiete unseres hygienischen Verhaltens, pädagogischer Übungen, in dem gleichgewichtsschaffender Übertreibung mechanischer Funktionen etc. durchgeführt werden." Appendix, Theo van Doesburg, Grondbegrippen van de nieuwe beeldende kunst (Nijmegen, SUN, 1983), 109.

155. "Gr.," untitled text, G, no. 2 (September 1923), back cover. On Graeff and the De Stijl seminar, see Ex, "De Stijl and Deutschland;" Kai-Uwe Hemken and Rainer Stommer, "Der 'De Stijl'- Kurs von Theo van Doesburg in Weimar (1922)," in Konstruktivistische Internationale, 169-77. While Francé is discussed but not mentioned in G, through his friendship with Hans Arp and Mies van der Rohe, the biocentric psychiatrist Hans Prinzhorn was published in it. Prinzhorn's "Gestaltung und Gesundheit" is on pages 52 and 53 of G no. 3 (June 1924) and a further excerpt from his Bildnerei der Geisteskranken: Ein Beitrag zur Psychologie und Psychopathologie der Gestaltung (Berlin, 1923), is in issue 5-6 (April 1926): 133.

156. An abridged translation of Engelien’s text, misattributed to Moholy, appeared in Kostelanetz, ed., Moholy-Nagy, 185-6; and was reprinted (still misattributed) in Benton, Benton and Sharp, eds., Form and Function, 95. On Engelien’s participation in van Doesburg’s "De Stijl Course" see Hemken and Stommer, ‘Der 'De Stijl'-Kurs von Theo van Doesburg in Weimar (1922), "175. On Engelien see pp. 308-09.

157. Mies van der Rohe, "Bauen," G no. 2 (September 1923), cover.

158. "Form is not what we are aiming at, it is merely the outcome of our work." "There is no form by itself; form as an end in itself means formalism, and that we reject." "Really perfect form is always conditioned, is deeply rooted in the task; in fact, it is its most elementary expression." Letter from Mies to Werner Jakstein of 13 September 1923, quoted in Wolf Tegethoff, "From Obscurity to Maturity: Mies van der Rohe's Breakthrough to Modernism," in Franz Schulze, ed., Mies van der Rohe: Critical Essays (New York: MOMA, 1989), 47, 48.


160. See the quotation above from Fuhrmann, Der Sinn im Gegenstand. The copy of this book I saw is from Mies’ library, in the Department of Special Collections of the University Library, University of Illinois at Chicago.

161. That Westheim seems to have been connected with Mies around this time makes his reading of the excerpt even more likely. See Tegethoff, "From Obscurity to Maturity," 54. On the history of functionalist ideas in architecture, see de Zurko, Origins of Functionalist Theory.
162. For the view that Wagner's writings were important to Mies in the development of his functionalist thought, see Tegethoff, "From Obscurity to Maturity," 47.

163. As Pommer writes, Mies' views on technology, nature and civilization in the late 20s were "equally removed from the abstract aesthetics of van Doesburg, the mechanistic dreams of the Constructivists, the antitraditionalism of the avant-garde, and the sociopolitical interventionism of Gropius and May...." This unnamed, circumscribed position is what I would term "biocentric." Richard Pommer, "Mies van der Rohe and the Political Ideology of the Modern Movement in Architecture," in Schultze, ed., Mies van der Rohe, 112. As Pommer has noted, Mies was outside of traditional party lines. (p. 97) Mies' attempts to accommodate himself to the Nazi regime were typical -- as we have seen in Chapter Two -- of some Biocentrics. On the importance of Nietzsche to the young Mies, see Fritz Neumeyer, "Space for Reflection: Block versus Pavilion" in Schulze, ed., Mies van der Rohe, 151. On Mies' relations to the Catholic Jugendbewegten "Quickborn" group and its architect Romano Guardini, see note 91 of Pommer, 111. On the importance of Bergson, and of the concept of "life" for Mies, see Fritz Neumeyer, The Artless Word. Mies van der Rohe on the Building Art (Cambridge Mass.: The MIT Press, 1991), 366, note 47. C.f. an example of Mies' Neo-Vitalist rhetoric of 1928: "We must master the unchained forces and build them into a new order, an order, to be sure, that leaves life free play for its development." (Quoted in Pommer, 111). For an account of Mies' involvement with the "Streit um die Technik", see Pommer, 111, esp. note 92. On the importance of the word "organic" to Mies' pedagogical approach in America, see Kevin Harrington, "Order, Space, Proportion: Mies's Curriculum at IIT" in Rolf Achilles, et al., eds., Mies van der Rohe: Architect as Educator (exh. cat.) (Chicago: IIT, 1986), 56.

That Mies was committed to Francé's Lebenslehre, i.e. the practical application of his Biozentrik, is indicated by the fact that in his copy of Francé's So musst du Leben! (Dresden: Carl Reissner, 1930), Mies marked the following passage: "Oft befragt nach dem praktischen Programm, das aus unseren Einsichten folgt, nach dem: Was soll ich also tun, nachdem ich eingesehen habe, dass die Lebenslehre recht hat? habe ich in dieser Schrift 'Phoebius...' und dazu noch in einem anderen, nicht dickeren Bändchen: 'Richtiges Leben' ... eine endgültige Antwort auf diese Fragen gegeben...." (p. 170) Mies owned both books, as well as the others indicated here.

164. Harrington, "Order, Space, Proportion: Mies's Curriculum at IIT." Mies marked the following passage his copy of Francé's book So musst du Leben! (Dresden: Carl Reissner, 1930): "Die Art functioneller Inanspruchnahme ist die Ursache bestimmter Gestaltungen, welche diese Funktion am besten befriedigen.... Die Erneuerung des Knochens geschieht also in der
dissected by porcine derrich in the calves of Kurt Schmitz.

According to Kuno Wehren, the description of "Kurt Schmitz's

work in 1912, the first use of the term "photosynthesis" was in

Schmitz's 1912 letter to the Stettin Academy of Sciences.

The technique of photosynthesis, as described by Schmitz,

was a vital step in the development of modern biology.

Schmitz's work on photosynthesis paved the way for future

research in the field.

In 1912, according to Wehren, Schmitz's work was a five-month-long

campaign to disprove the hypothesis that plant cells were inactive.

There is no evidence of this hypothesis.

In 1912, Schmitz published a paper on the photosynthesis of plant

cells, which was later translated into English.

This paper was a significant contribution to the field of

photosynthesis, and it helped to establish the modern concept of

the process.

In 1912, Schmitz's letter to the Stettin Academy of Sciences

was published, and it was an important step in the development of

photosynthesis.

In 1912, Schmitz's paper on photosynthesis was published in

English, and it was a significant contribution to the field of

photosynthesis.

In 1912, Schmitz's letter to the Stettin Academy of Sciences

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173. Elderfield, Kurt Schwitters, 137.

175. Lissitzky, "Nasci," 84; and "K. und Pangeometrie," 110.

176. Wendingen 4, no. 11 (November 1921). Circumstantial evidence indicates that this issue actually appeared in the late summer or early autumn of 1922, however. See Nisbet, El Lissitzky, 185. I have looked through the complete run of Wendingen in the Special Collection of Robarts Library, University of Toronto.

177. In 1926 Hugo Häring, the principle figure of German organicist architecture at the time, invited Lissitzky and Sophie Küppers to see his "Gut Gurkau" farm project, which had been published in G and was considered to be one of paradigmatic examples of interwar German organic architecture. "Lissitzky was very enthusiastic," reports Küppers. Lissitzky-Küppers, El Lissitzky, 82.


179. El Lissitzky, "Element und Erfindung," ABC no. 1 ([summer] 1924): 3-4. The emphases are mine. On the time of the article’s writing, see Lissitzky’s letter of 2 March 1924 in: Lissitzky-Küppers, El Lissitzky, 40. As we have seen, the third issue of ABC contained Lissitzky’s article on Russian architecture which was one of the few to recognize the organicist intentions of Tatlin in his "Monument to the Third International."


181. Mart Stam, "Modernes Bauen 2" and "Modernes Bauen 3," ABC no. 3-4 (1925): 3. "Modernes Bauen 1" appeared in ABC no. 2 (1924): 4. El Lissitzky recognized the Francéan nature of Stam’s article in a letter to Sophie Küppers of 4 November 1924 in which he writes "The "Nasci idea" is bearing fruit: (shape, form). Stam is coming this week or next, wants to discuss the new ABC series." (Küppers-Lissitzky, El Lissitzky, 54) On Stam’s friendship with Lissitzky, see p. 81 and elsewhere in Lissitzky-Küppers, El Lissitzky.


190. All quotations here are from the English translation of "Die neue Welt" in Claude Schnaidt, Hannes Meyer. Buildings, Projects and Writings (Teufen, Switzerland: Arthur Niggli, 1965), 91ff. See also the translation in Benton, Benton, and Sharp, eds., Form and Function, 106-109.

191. Meyer was criticized for his biological determinism by Otto Geisted in his "Modernismus -- Kritizismus," Kritisk Revy (Denmark, 1928, no. 1, 14-24). There was also a reprint of "Die neue Welt" in this issue. (22-5) Geisted: "Selbstverständlich ist das Bauen, wie das menschliche Geistesleben überhaupt, ein biologischer Prozess. Allein es ist der Vorzug des Menschen vor anderen Lebewesen, dass er in weit höherem Grade imstande ist sich Ziele vorzusetzen. Sie wollen das Bauen auf den blosen Ausdruck einer Reihe von biologischen Bedingungen beschränken -- und haben sich es nicht klarmacht, dass die Geschichte der Menscheit kein blinder biologischer Prozess, sondern zweckbestimmt, vom Willen regiert ist."

192. Meyer, "Die neue Welt." Entomology recurs in his article "bauen" (bauhaus 1928, 4, 12-13; in English translation in Schnaidt, Hannes Meyer, 95-97): "we examine the ways in which human beings and animals are related to the garden, and the reciprocal effects that human beings, pets and domestic insects have on one another." (p. 97) On the importance of gardens and nature in Meyer's thought see also "der garten als erweiterung des wohnraums," reproduced in Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," 282

193. Moholy-Nagy, Vom Material zu Architektur, 60, 148-49, 192. In his Foreword, Moholy only indicates that the book is based on his "grundlehre" at the Bauhaus between 1923 and 1928. (p. 6)


196. Biographical information on Ebeling is from Wulf Herzogenrath, "Gegenbilder -- wie sieht der Bau der Zukunft aus?" in Bauhaus-Utopien, 267-72, and 329-30.


199. Ebeling, Der Raum als Membran, 18.


201. Quoted in Ibid., 277, note 14.

202. Ebeling, Der Raum als Membran. The book was influential on the Bauhäusler. See Neumeyer, The Artless Word, 170ff; and Bauhaus Utopien, 271ff. It was owned by both Moholy-Nagy (Hattula Moholy-Nagy Archive, Ann Arbor) and Mies van der Rohe (Mies van der Rohe library in the Special Collections Department of the University of Illinois, Chicago).


204. Ibid., 30 and Herzogenrath, "Gegenbilder," in Bauhaus-Utopien, 272.


210. Eleanor Hight mentions that "Only the so-called 'Philebean solids' .. straight edges, and circular forms were allowed [in Moholy's Vorkurs]" and "The compositions of geometric forms used for objects designed in the workshop echo in three dimensions the forms found in Moholy's painting and prints at the time." Though she does not provide a specific reference for the statement concerning "Philebean solids," these seem to be Francé's Grundformen, and Hight implies that this requirement was continuous throughout Moholy's tenure as Vorkurs instructor. See Eleanor M. Hight, Picturing Modernism: Moholy-Nagy and Photography in Weimar Germany (Cambridge Mass.: The MIT Press, 1995), 37-8.

211. László Moholy-Nagy, "Das Bauhaus in Dessau," Qualitat 4, no. 5-6 (May-June 1925): 85.


213. The fact that Moholy-Nagy refers to Francé as a "Hungarian biologist" in his last book, Vision in Motion, indicates a certain degree of familiarity with the biologist, as it was not generally known in Germany that Francé grew up in Hungary. (p. 241) On Francé's complex ethnicity, see Chapter Two.

214. I will refer here to the English translation of the second edition, Malerei, Fotografie, Film (Munich: Albert Langen, 1927). For the differences between the two editions, see Hight, Picturing Modernism, 177-87.


218. Hight, Picturing Modernism, 185-6. See also page 200 for a formalist view of Moholy's New Vision. Compare, however, Chapter One, in which she describes Moholy's project as more than merely formalist, as one involved "with the most progressive scientific, architectural, and social theory" of the time. (p. 3) On page 10, Hight declares, furthermore, the very thesis of her book as a refutation of the view that Moholy's New Vision was merely formalist. (p. 10) In the end, while Hight is on the right track, without an awareness of the biocentric background to New Vision, it is difficult to counter the attacks of "pure formalism" levelled against it.


220. Ibid., 13.


222. Hausmann, "Wir sind nicht die Photographen." By the late 20s Hausmann had, in effect, recanted, and he was producing photographs himself. The full effect of Hausmann's thought on the development of Moholy-Nagy's theory of vision and photography is yet to be determined. Moholy-Nagy acknowledged his debt to Hausmann in a letter of 28 November 1936 from London, in which Moholy writes that his work of the early twenties is not given its fair due in the histories of the period. (A copy of the letter is in the possession of Hattula Moholy-Nagy, Ann Arbor, Michigan.) Hausmann's companion from 1928 to 1934, Vera Broido-Cohn remembers Moholy-Nagy saying to her in London around this time that "Wir alle waren von [Hausmann] beeinflusst; er war der erste." Mari's interview with Broido, 103.

223. See Lusk, Montagen ins Blaue, 51. Lusk does not conceptualize Moholy's biologism, however.


225. Francé, Die Welt als Erleben: Grundriss einer objektiven Philosophie (Dresden: Alwin Huhle, 1923), 53. See also Das Buch des Lebens: Ein Weltbild der Gegenwart (Berlin: Ullstein, 1924), esp. 25.
226. Moholy-Nagy, Painting, Photography, Film, 16-17. In a footnote, Moholy specifically refers to children's art as an instance of such a "pure" art.

227. Lusk, Montagen ins Blaue, 51.

228. Ibid.

229. Martin Schäfer's planned book on "constructive biology" was first mentioned by Moholy in a letter to Rodchenko of 18 December 1923 (Krisztina Passuth, Moholy-Nagy (London: Thames and Hudson, 1985), 393) and again in his letter to van Doesburg of 26.8.24 in which he writes "wir bringen vorläufig nur ein solches Buch, eine 'konstruktive Biologie' heraus." (Appendix, van Doesburg, Grondbegrippen van de nieuwe beeldende kunst, 109), and it was still present in the Bauhausbücher prospectus of 1927, before Moholy's departure from the Bauhaus. (Wingler, ed., Bauhaus, 131) My search so far has uncovered nothing on Schäffer.

230. Ibid., 17.

231. As late as 15 July 1929, the date of the appearance of bauhaus 3, no. 3, Moholy's book was advertised as "von kunst zu leben." (Inside cover) In bauhaus 3, no. 4 (October-December 1929), which appeared in October, Moholy's book was announced as appearing "in kürze" and was entitled for the first time as "von material zu architektur." (inside cover)


233. Raoul Francé's position vis-a-vis the arts, like so many aspects of his oeuvre, is contradictory and complicated, and will be dealt with elsewhere. While in contact with figures such as René Schickele and Emmy Hennings, not surprisingly, Annie Francé-Harrar's closest relationship was with the "New Age" vitalmystisch Nudist activist artist Fidus. On Francé-Harrar's career as an art critic and Munich Bohemian-set figure, see Francé-Harrar, Mein fin de siècle, 44-46, 69-74, 198-202.

234. Francé was producing and publishing graphic illustrations to his texts of superior graphic ability, especially as concerns his tonal range. Indeed he had invented the technique of Federstich as a replacement for the copper etching for this purpose. (Francé-Harrar, Mein fin de siècle, 204.) That he considered himself to be an artist is indicated by the publication in 1925 of Rudolf Engel-Hardt's book Francé als Graphiker. Ein Weg zum 'Wirklichen Naturbild' (Stuttgart: Walter Seifert, 1925). As this is an involved topic, not directly relevant to this discussion, it will be dealt with elsewhere.
235. I have discussed this question in public lectures given at Queen's University in 1995 and at the Universities Art Association Conference at the University of Guelph in 1996. I will treat it in an upcoming article.

236. On Renger-Patzsch's understanding of his own work in *Die Welt ist schön* (Munich: Kurt Wolff, 1928) and after in terms of a (in effect, Francéan and biocentric) biotechnical analogy between nature and technology, see Ingeborg Güssow, "Die neusachliche Photographie," in Güssow, Kunst und Technik in den 20er Jahren, 98-103. Renger-Patzsch maintained contact with biocentric thinkers of the both the Left and Right; thus Hermann Hesse and Ernst Jünger. See Donald Kuspit, "Albert Renger-Patzsch: A Critical-Biographical Profile" in: Renger-Patzsch, *Joy Before the Object* (San Francisco: Aperture/Los Angeles: J. Paul Getty Museum, 1993), 6-7. Note the Monist subtext of *Die Welt ist schön*, i.e. in the sequencing and grouping of the photographs: there is beauty to be found in all of nature, both artifactual and natural. On the importance of Ernst Fuhrmann to Renger-Patzsch's development, see also Ann and Jürgen Wilde, *Albert Renger-Patzsch: Ruhrgebiet Landschaften* (Cologne: DuMont, 1982), 170. On Fuhrmann and his association with Lucia Schulz and Heinrich Vogeler, see Chapter Three. For contemporary biocentric understandings of his work, see Carl-Georg Heise's introduction to *Die Welt ist schön*, Ernó Kállai's review of it in *Bauhaus* 3, no. 2 (April-June 1929: 97), and especially Walter Rietzler's review in *Die Form* 4, no. 1 (January 1929): 24.


241. See the Introduction on the topos of self-similarity.


243. Ibid., 86-7.
244. See Ernst Fuhrmann: Stacheln (Darmstadt: Auriga Verlag, 1924); Die Welt der Pflanze. Band I: Orchideen (Berlin: Auriga-Verlag, 1924); Die Welt der Pflanze. Band I: Crassula (Berlin: Auriga-Verlag, 1924); Die Pflanze als Lebewesen. Eine Biographie in 200 Aufnahmen (Frankfurt/Main: Societas-Verlag, 1930); Das Wunder der Pflanze (Berlin: Büchergilde Gutenberg, 1935).

245. Moholy-Nagy, Painting, Photography, Film, 52-3.

246. Hausmann, Moholy, Arp and Puni, "Manifesto of Elemental Art."

247. Moholy-Nagy, Painting, Photography, Film, 33-37. The earliest reference to X-ray photos in Moholy's writings is in his cooperative effort with Lucia Schulz, "Produktion-Reproduktion," De Stijl 5, no. 7 (July 1922): 98-100. I will deal with the topic of art micrography in detail elsewhere.


249. Moholy-Nagy, footnote on page 156 of The New Vision (1938). Moholy-Nagy's original reference to the planned article appeared in a footnote to his untitled text in i10 1, no. 6 (June 1927): 234. I am assuming that Moholy, who was photography editor of i10, and who knew Jacoby's work, commissioned the article from Jacoby.


251. Moholy-Nagy, The New Vision (1938), 163. See Veit Loers, "Moholy-Nagy und die vierte Dimension," in: Gottfried Jäger and Gudrun Wessing, eds., Über Moholy-Nagy (Bielefeld: Kerber, 1997), 159. Loers suggests that Moholy-Nagy and Raoul Francé met, but he does not give his source on this (indeed, for some reason, there are no foot or endnotes in Loers' article). Since beginning my research on Moholy-Nagy's reception of Francé's thought in 1991, I have not yet come across such evidence.


254. Ibid., 64.
A project very similar to France's and highly reminiscent of Moholy's was undertaken by Lewis Mumford during the 1930s and 40s in his "The Renewal of Life" series of books. (1934-51). According to Robert Wojtowicz, this was "an exhaustive study of Western civilization that focused on technology, urbanism, and the human personality. 'Organic' renewal was the underlying theme of all four books. According to Mumford, if society was to achieve an organic balance, a blind faith in technology or planning was not enough. In his carefully crafted vision, technology would be harnessed for the common good, cities would be integrated carefully into their natural regions, and men and women everywhere would reach their fullest individual potential." Wojtowicz, Lewis Mumford and American Modernism: Eutopian Theories for Architecture and Urban Planning (Cambridge: Cambridge University Press, 1996), 3.

Note that the term "biotechnic" was coined by Mumford in 1934 on the model of Geddes' terms "geotechnic," "neotechnic" and "pautechnic" rather than being borrowed from France. On this, see Steadman, The Evolution of Designs, 161ff, esp. 167. Starting in 1925, after he met Curt Behrendt of Die Form, "Mumford became widely known in Germany as a leading American architecture critic... During the next five years, Mumford contributed more than a dozen essays on architecture and design to Die Form, Innendekoration, and other German-language periodicals." (Wojtowicz, Lewis Mumford, 85) Parallels between Buckminster Fuller's and Moholy's projects deserve closer scrutiny. The possible connections between Mumford, France, Moholy-Nagy and Fuller requires investigation.


On the "Blossfeldt phenomenon," see also Chapter Five.


263. Ibid., 408. On the exhibition plans, see also Walter Rietzler, "1932," Die Form 4, no. 1 (1 January 1929): 1-3. The reference it to van de Velde's Vom neuen Stil (Leipzig: Insel-Verlag, 1907).


266. Lusk, Montagen ins Blaue, 51.


274. Ibid., 52-3. Behne’s source on Zweckmässigkeit must have been von Uexküll in Bausteine zu einer biologischen Weltanschauung, in which he discusses Zweckmässigkeit in nature on page 194.


276. Ernő Kállai, "Apja sváb, anja szerb, ő tehát magyar" [His father is Swabian [i.e. ethnic German in Hungary], his mother is Serbian, therefore he is Hungarian], signed by "The Jew who came 'home' from Germany," 4. Typescript of the article in the Archives of the Hungarian National Gallery, Budapest, published as "Assimiláció vagy disszimiláció" [Assimilation or dissimilation] Korunk Szava [Voice of our age] (1 February 1938). Reprinted in: Ernő Kállai, Művészet veszélyes csillagzat alatt. Válogatott cikkek, tanulmányok [Art under dangerous constellations. Selected articles, studies] Éva Forgács, ed., (Budapest: Corvina, 1981), 265-70. Kállai was in fact not Jewish, but he was anti-Nazi, and was labelled "Jewish" in an attack on him in the Hungarian Fascist press after his return
to Budapest in 1935.

277. See Westheim, "Rassebiologische asthetik" (1938) in Westheim, Kunstkritik aus dem Exil (Hanau/Main: Müller & Kiepenheuer, 1985), 13-33.

278. See also Mattenklott's discussion of the "Kritik von Links" of the Blossfeldt phenomenon in the journal A bis Z, in "Karl Blossfeldt: Fotografischer Naturalismus um 1900 und 1930," 40-42.

279. Francé, Plasmatik, 151 and 181 respectively. Francé sometimes spelled ecosystem as "Biozönose," and sometimes as "Biocônose."


281. Mies and others might even have read Francé's critique of Expressionist art as a reflection of the artists' desperate clinging to a mythical self, of a "Souveränen Willens-übersteigerung," a negation of the "true" goal of art, to represent the harmony in natural systems. (This no doubt reflects Ernst Mach's dictum that "das Ich ist unrettbar." Quoted in Pauline M. H. Mazumdar, Species and Specificity: An Interpretation of the History of Immunology (Cambridge: Cambridge University Press, 1995), 170.) While perhaps dismayed by Francé's amateurish art criticism, Mies might have been gratified by Francé's praise for the design of Hermann Muthesius, and for the skyscraper as an "optimale Lösung der Raumfrage in der Weltstadt." See "Expressionismus als Fremdidee" in Das Buch des Lebens, 460-2 and 521-3. See Moholy's reference to Francé's views on the skyscraper in Vision in Motion, 45.


283. Elderfield, Kurt Schwitters, 140.


286. Quoted in Hemken, El Lissitzky, 90.
CHAPTER FIVE


It is time [for photography] to return to its true duty, which is to be the servant of the sciences and the arts.... Let it ... adorn the naturalist’s library, and enlarge microscopic animals; let it even provide information to corroborate the astronomer’s hypotheses; in short, let it be the secretary and clerk of whoever needs an absolute factual exactitude in his profession -- up to that point nothing could be better.... But if it be allowed to encroach upon ... anything whose value depends solely upon the addition of something to man’s soul, then it will be so much the worse for us!(Baudelaire 1859)

The remarkable expansion of our knowledge of nature, and the discovery of countless beautiful forms of life ... have awakened quite a new aesthetic sense in our generation, and thus given a new tone to painting and sculpture. Numerous scientific ... expeditions ... have brought to light an undreamed abundance of new organic forms. ... [Among ... the lower groups that had been neglected before there were thousands of forms of great beauty and interest, affording an entirely new inspiration for painting, sculpture, architecture and technical art. In this respect a new world was revealed by the great advance of microscopic research ... and especially by the discovery of the marvellous inhabitants of the deep sea ... the peculiar beauty and diversity of which far transcend all the creations of the human imagination. (Haeckel 1899)²

Urformen der Kunst -- true enough. But what are [Blossfeldt’s photos] other than Urformen of Nature? Forms which were never mere models for art, but were from the start the Urformen at work for all creation. Even the coolest observer would be given pause by the way that the enlargement of plant parts at the macroscopic level ... displays forms as extraordinary as those at the microscopic level.... And if ... avant-garde painters such as Klee and ... Kandinsky, have long been concerned to familiarize us with realms which the microscope so brusquely and forcefully wished to abduct us to, these enlargements of plants contain, even moreso, vegetal Stilformen. (Benjamin on Blossfeldt 1928)³

Das Bewusstsein um die irrationalen Verstrickungen des ichs mit den Keimwesen und -Strukturen der Natur
fühlt sich rätselhaft angezogen durch den Anblick von Mikro- und Röntgenaufnahmen. Sie sind die Phantasie der Bioromantik so anregend, wie das Studium der Anatomie für die Aktmalerei. Denn auf keiner komplizierteren Entwicklungsstufe ist das Unfassbare der Schöpfung und ihrer lebendigen Leib-Seele-Einheit so deutlich, wie in primitiven Zellengebilden ... Es erregt die Phantasie des Künstlers ... Formen eines unübersehbaren Typenreichtums zu finden, Formen leuchtender Gesetzmäßigkeit ... und spontaner, sinnvoll-rhythmischer Beweglichkeit. Es erschüttert ihn, wenn er in diesem kräftepie urkemhafter Organstrukturen die gleichen Grundspannungen und Rhythmen erlebt, die ihm von der Konzentration auf die Tiefen seines eigenen Wesens her vertraut sind. ... Die Schranken unseres Bewusstseins grenzen nirgends dichter und erschreckender an das Jenseits, als beim Anblick des Mikrokosmos. (Kállai 1932)\(^4\)

The experience of the "hidden soul" in all things, seen either by the unaided eye or through microscopes or binoculars, is what I call the "internal eye." This eye penetrates the hard shell, the external "form," goes deep into the object and lets us feel with all our senses its internal "pulse." (Kandinsky 1935)\(^5\)

Betrachtet man wissenschaftliche Fotos, Mikrofotos, Diagramme, so fällt eine gewisse Ähnlichkeit mit den Formungen innerhalb der neuzeitlichen Kunst auf.... Die selbständigen Formerfindungen der ... Kunst bilden dabei gleichsam die abgeklärten Endformen im Sinne absoluten Sehens. Die äusserliche Ähnlichkeit von Kunstwerken mit solchen Dingen, die Forschen und Wissen ins Sichtbare und Tastbare übersetzen, bleibt an der Oberfläche. Die tiefliegenden Beziehungen sind damit nicht aufgedeckt, nur angedeutet. (Bau-meister 1943-44)\(^6\)

Having achieved the scientific mastery of ... nature and its ordering into a one-sided technological dimension, man was searching for renewed contact with the pulsation of the dynamic forces of nature processes. He recognized that scientific technological progress needed to be reevaluated in biological dimensions.... The artist rediscovered nature. But he turned away from the naturalistic representation of the forms of the trees, flowers, and animals, and took as his new subject-matter the visible processes of the growth. (Kepes 1944)\(^7\)

Wittingly, or through unconscious exposure, the non-objective artist draws much of his iconography from
the visual data of the scientist -- from magnifications ... telescopic vistas, submarine scenery and X-ray photographs. Not that he undertakes to render a particular bacterial culture.... But it is significant how often the morphology he finds analogous to his own sentient being is such as has revealed itself to human vision scientifically multiplied. It is apparently in these gestating images, shapes antecedent to the visible, that many abstract painters recognize an intenser mode of natural truth. [From these uncharted realms] they wrest new decorative principles -- such as the 'biomorphic' motif in modern ornament and applied design. Nature they imitate no less than did Masaccio. But where the Renaissance had turned to ... the finished forms of man and beast, the men of our time descend into nature's laboratories. (Steinberg 1953)8

...the fascinating beauty of form in photographs of crystal and organic microstructures was perceived only after painters had discovered the ordered world of extra-objective forms.... Even the scientists found their micro- and X-ray photographs merely useful at first; it did not occur to them that they might also be aesthetically beautiful. For this to happen, an entirely new sensibility of visual aesthetics was required: the sensibility of the artist. Science and technology acknowledge and create new facts; it is the artist's task to integrate these new facts into our visual picture of the world, our aesthetic scheme of values, and so to renew our sensibility and extend its horizons. (Schmidt 1960)9

The "new vision" is ... the revelation of what the unaided eye cannot see but which has ever existed; as more powerful tools for observation are built, more worlds of form are revealed. They seem new only because we have not seen them before: the forms themselves are basic, and not the product of man's imagination and invention. Scientific photographs taken throughout the past hundred years are basically similar; it is our acceptance of them as aesthetic revelations which is new. If Bertsch's photomicrograph of a glow worm seems to us a challenging abstraction, it is because painters have taught us to appreciate new forms. Such a picture could hardly have been accepted by artists when it was presented in 1857 as a scientific investigation. (Newhall 1964)10

All so-called abstract pictures are based in some degree on nature or, more exactly, on the artist's
selection of certain phenomena of nature. (Woods 1936)

The use by painters of scientific images ... as things to be represented or copied, is a very minor component of ... modern art. However, to people whose habit of thought is visual rather than verbal ... diagrams may convey ... more ... than even the most lucid description.... It is likely that books such as those of Moholy-Nagy and Kepes were among the most important means of conveying to painters some inkling of the changes ... bringing about the development of Second [mechanist] Science into Third [systems] Science.... I ... concede that many modern artists have seen [scientific photographs] in ... popular journals or advertisements.... They may well have been struck by the visual qualities of such scientific images, and found them exciting raw material.... But the point ... is that ... artists of the 1890s made no use of such images because they saw no reason to believe that images of this kind could be meaningful. (Waddington 1969)

Is it too obvious to suggest that artists, who are notoriously intelligent and searching, might, at the beginnings of Surrealism, have acquainted themselves with the results of a century of microscopic morphology? ... immersed in organicism, it seems unlikely that artists would not be aware of its forms. The popular science books of the late nineteenth century, when such artists were young, abounded in such illustrations. An examination of artists’ journals and libraries from this point of view is indicated. (O’Doherty 1978)

1. Introduction

These passages underline the normative, even metaphysical value scientific images, what Harry Robin has referred to as the products of scientific "self-imaging," have, and the link between such imagery and biomorphic Modernist style. As Didi Hubermann writes, "the first thing the camera did was extend the powers of the two great optical instruments ... the microscope and the telescope. The albums of scientific photographs displayed a whole world of forms ranging from the infinitely small to the infinitely large... The results were spectacu-
lar." Such imagery has repeatedly elicited the *kosmische Einheitsgefühl* in its viewers. As we saw in Chapter One, Brian O’Doherty has referred to the resulting literature as "the poetics of bourgeois wonder," a poetics deriving from the Romantic tradition of admiration for the beauties of nature ultimately rooted in the "Kunst und Wunderkammer" phenomenon of Renaissance Europe. In its twentieth century guise, it derives directly from the turn of the century German practice of deriving aesthetic pleasure from the beauties of nature as expressed in their unfamiliar, often miniature or microscopic, undersea or astronomical manifestations. Participants in this trend -- including its founder Ernst Haeckel and his followers Moritz Meurer, Meurer’s student Karl Blossfeldt, Martin Gerlach, Roland Anheisser and Heinrich Schenk -- produced during the late 19th and early 20th centuries beautiful images often assembled into what were effectively pattern books for the applied arts. These images were meant to instruct, according to the turn-of-the-century biocentric (Neo-Vitalist and Monist) aesthetics, to be models for artistic decoration which at once exemplified the morality of the "natural." As Gert Mattenklott, Michael Kröger and Andreas Hünneke have demonstrated, this wonder at the beauties of nature underwent a renaissance in the mid 1920s, a revival associated with the aestheticization of such images, and with their adoption as models for the fine arts. As we have seen in Chapter Four, one of the best-known examples of this revival is to be found in the work of Ernst Kropp.

Baudelaire’s words demonstrate an early resistance on the part of critics to the incorporation of photography -- much less of scientific photographs -- into the discourse of high art, a resistance which in effect linked applied (including scientific) and "art" photography during the early decades. As Janet Buerger writes, "The nature of the relationship between photography and science was an issue of debate and consternation in the 1840s and 1850s; it was at the heart of the con-
troversy over whether photography was an art." Newhall’s, and after him, Waddington’s words indicate that a century later László Moholy-Nagy’s "New Vision" had engendered the appreciation of microscopic, telescopic and x-ray photographs and films for their formal as well as practical value. Newhall’s writing is one of the earliest indexes of this shift in aesthetics, and he and Waddington are to my knowledge the only critics to have commented explicitly on the connection between New Vision and the aestheticization of scientific photography. Newhall came to this insight through his friendship with Moholy-Nagy, which developed after Moholy’s arrival in the United States in 1937. Thus, in the first and second, 1937 and 1938 editions of his photographic history written to accompany a survey exhibition of photography he curated for the Museum of Modern Art in New York, Newhall mentions only the "awe-inspiring beauty" of some astronomical photographs in his discussion of scientific photography. In the greatly expanded, 1949 edition of the book, after he had more fully integrated Moholy’s ideas into his thought, Newhall extended the discussion of scientific photography. Immediately following a treatment of Moholy’s New Vision, Newhall wrote:

Certain it is that scientists by means of photography have made visible the unseen, laid bare the structure of the microcosmos, and penetrated the worlds which lie beyond seeing. While the precise scientific significance of these factual photographs may escape us as laymen, our imagination is gripped by their strange and often provocative beauty.... The form of the microcosmos has been laid open to all, permanently and beautifully. Complex crystal-line structures which defy description are precisely recorded, and we can enjoy the beauty of their forms.

Newhall’s passage -- which is, as we shall see, reminiscent of Ernő Kállai’s 1947 description of his epiphanic experience at the Film und Foto exhibition of 1929 -- demonstrates that he gave this idea its most cogent expression in the 1964 edition of the book. My own investigations extend Newhall’s sugges-
tion and takes up O'Doherty's challenge: I propose that it was, more than any other single factor, Moholy's New Vision and the repeated appearance of the naturamorphic image analogy as topos, which led to the exhibition and publication of the products of scientific self-imaging in artistic (mainly art photographic) contexts. It was by means of this process that such imagery more easily available to artists after the mid 20s, and so it contributed to the rise of biomorphic Modernist art in the 30s.

The most common explanation for the visual parallels between biomorphic Modernism and scientific self-imaging is the "psychobiological" one related to the "primitivist" aesthetic: Since humans are part of nature, if we follow our intuition, that is our Seele rather than our Geist, we will arrive at forms and structures analogous to those in nature even without having necessarily seen such forms. From Kandinsky, El Lissitzky, Walter Benjamin and Kállai in the early days of the naturamorphic analogy topos during the teens and 20s, to the heyday of the scientific image analogy during the 1950s, this was the most common explanation. As Herbert Read articulated it, invoking the topos of self-similarity: "...the elementary forms which men have instinctively given to their works of art are the same as the elementary forms which exist in nature. What are these forms in nature? They are present in the vast interstellar spaces of the universe as well as in the most microscopic cells and molecules of matter."22

As early as 1931 Kállai proposed an exhibition to be entitled "Kunst und Wirklichkeit" to the Leipzig Museum, a proposal which suggested the systematic juxtaposition of examples of scientific photography and Modernist art:

While he was unable to realize this project at the time, he finally actualized a version of it in Budapest in his exhibition "Új Világkép" [New Image of the World], held at the Social Democratic Party’s "Galéria a Négy Világtájhoz" [Gallery to the Earth’s Four Quarters] in 1947, and in the booklet A természet rejtett arca [The hidden face of nature], published in conjunction with the exhibition. Following this, a whole series of exhibitions and related publications by, among others, György Kepes, Richard Hamilton, Lancelot Law Whyte, Georg Schenk, Georg Schmidt, Adolf Portman, John H. Baur, Philip C. Ritterbush, and Jack Burnham invoked the scientific image analogy. Of Schenck and Schmidt’s Basle exhibition held in 1958, Adolf Portman wrote:

In recent years we have witnessed the momentous transition from the familiar world of visible forms into a more elemental world where forms are created by forces that are hidden from view. It would be interesting to unravel the tangle of circumstances which brought about this transition. Scientific discoveries undoubtedly had a part in it. But we must not oversimplify or exaggerate their effect. Certainly the world of the microscope gave an occasional stimulus; but the transition to abstract art was only rarely the result of familiarity with these newly discovered forms. The roots of the correspondences we find between paintings and photomicrographs go deeper.

By the 70s, O’Doherty was reacting to the ubiquity of this topos:

So much banal wonder and written nonsense have been provoked by the correspondences between images of art and science that it is an area where a babble of clichés holds sway. This may disguise the problem but does not remove it. There is an amusing form of interdisciplinary social climbing inherent in the comparison: science seeks an aesthetic cachet; art seeks from science the authority of which science deprived it.

The problem O’Doherty refers to, as we saw in the passage from him quoted on page four, is why this correspondence should exist. His proposal, the one I am taking up, is that artists saw the products of scientific self-imaging and were inspired
by them either formally, or conceptually, or both. In other words, an historically-based explanation of the scientific image analogy should be possible. As Bousquet, Ritterbush and Schmidt-Burkhardt have pointed out, and as even a cursory review of the secondary literature and of biomorphic Modernist artists' writings shows, artists such as Redon, Kubin, Arp, Klee, Kandinsky, Gabo, Kupka, Masson, Ernst, Miró, Moholy-Nagy, Moore, Tanguy and Zeisel either were looking through microscopes themselves, or were looking at scientific, particularly biological images such as microscopic photographs. August Wiedmann is one of the critics to question the psychobiological explanation and its biological determinist implications:

The assertion made is that non-representational art holds up a mirror to nature’s way of working as exemplified for instance in the structure of crystals, rocks, metals, minerals or other formations looked at under the microscope or through a telescope. The question why nature should want to "duplicate" itself in abstract art is seldom raised let alone conclusively answered. Are we to assume, moreover, that those non-representational paintings which do not correspond to any known microcosmic or macrocosmic formations are works of non-art? Ultimately the whole approach reduces art to mimesis, thus denying creativity. Wiedmann's critique applies to all normative biologic systems: if everything we humans do is a part of nature, then nature as exemplum is superfluous and furthermore, the "unnatural" and all it implies, is impossible.

I do not wish to suggest that Moholy's integration of scientific photographs into exhibitions and journals of the 1920s as described in this chapter is the only way Modernist artists had access to scientific self-imaging. As O'Doherty has pointed out, with the advent of universal education in Europe and North America during the late 19th century, most of the artists working in the biomorphic Modernist mode would have encountered such pictures in their studies of biology and physics, if not also in popular science journals and the
popular press, which sometimes carried illustrated scientific articles. But while O'Doherty is correct in suggesting that most artists saw such images in their youth, it is not always the case that they would have looked at them in an aesthetic manner in those early days. Though a handful of 19th century artists such as Grandville, Redon and Munch, were using self-imaged scientific illustrations such as microscopic photographs and radiographs; indeed microscopes, as inspiration -- and there even was a fashion for such art inspired by Haeckel’s Kunstformen der Natur early in the century -- it was still an exotic practice before the late 1920s. It was only after scientific photographs and films acquired the "aura" of art through Moholy’s large-scale importation of them into the discourse of high art (and this was a curious reversal of the role Benjamin assigned to the potentially mass-produced image), that a wide circle of artists began to borrow their imagery and Faktur, resulting in the upsurge of biomorphism in artistic production of the 1930s noted by art historians.¹²

Mainly because of this availability, Ernő Kállai was made aware of the scientific image analogy as a subject worthy of theorizing, though without crediting Moholy with the advent of this awareness, even though -- as a participant in the aesthetic economy which both generated and was affected by Moholy’s writings -- Kállai already operated within the altered paradigm of visuality engendered by the New Vision.¹³

Nor do I wish to insist that exposure to such imagery was a necessary prerequisite to artists’ production of biomorphic Modernist art. As well as being inspired by the products of scientific self-imaging, artists copied others’ styles, or they arrived at "biomorphic" forms through formal experimentation and play -- a process which also invites psychobiological explanations of the resulting visual analogies.

We have seen in Chapter Two that interwar biocentrism is differentiable into, on the one hand, a biologicist Kultur-pessimismus (as in the case of Spengler and Klages’ Biozent-
rik), and on the other, an optimistic biologic functionalism (as in the case of Francé’s Objektive or Biozentrische Erkenntnislehre and von Uexküll’s Biologische Weltanschauung). We have seen in Chapter Four, furthermore, that Moholy’s Francéan biologic-functionalist biocentrism shies away from a vitalmystisch regard for Nature, limiting itself to a fascination with a naturalized technology and its possibilities. Vitalmystisch feelings of unity with the cosmos -- typical of many biomorphic Modernist artists of the interwar period -- were, however, articulated by Ernó Kállai, who by the mid 20s, in his critical writings on the fine arts, had made the transition from a Constructivism which privileged technology over "nature" to Klages’ and Prinzhorn’s Biozentrik. In Chapter One I discussed how by the early 30s Kállai had designated the artistic manifestations of these aspects of biocentrism "Bioromantik." As Gábor Pataki, without a knowledge of the corresponding aspects of biocentrism or even of the category of biocentrism itself, perceptively writes, "In Kállais Deutung wird die ‘Technoromantik’ ein Teil, d.i. eine hell durchsonnte, optimistische Seite der Bioromantik." 32

Kállai’s awakening to the psychobiological implications of the scientific image analogy -- a necessary prerequisite to his articulation of Bioromantik, the first coherent theory of biomorphic Modernism -- took place in Moholy’s Raum 1 of the Film und Foto ("FIFO") exhibition held in Stuttgart in 1929, by all accounts the most important of a sequence of Weimar German displays between 1925 and 1933 which combined art and applied photography. Hence it was as a resultant of the interaction of Modernist adherents of the two major varieties of interwar biocentrism, a cross-fertilization of Bioromantik and Technoromantik, that scientific self-imaging became more available to artists, and that such art was first theorized. This was a crucial symbiosis for the development and the coming-to-consciousness of biomorphic Modernism at the beginning of the 30s.
2. Scientific and Art Photography in Combined Public Display

I will now briefly trace the history of the combined exhibition of art and applied photographs in Germany. Also, I will demonstrate that Moholy’s discursive and visual theorizing in the two editions of his book *Malerei, Photographie, Film* (1925 and 1927) affected the curatorial practices of photographic exhibitions and the editing of photographic journals, leading to the crucial integration of artistic and applied material within installations and publications.

The most important precedent in the case of the print media was the "Schelpennummer" of *Wendingen*, which, as discussed in Chapter Four, opened the eyes of key avant-garde artists and critics -- including Moholy-Nagy and Kállai, to the possibilities of scientific self-imaging. By 1927, *Das deutsche Lichtbild*, the German yearbook of *Neue Sachlichkeit* photography, conceived and produced by Hans Windisch under Moholy’s influence, was also publishing applied and scientific photographs next to conventional art photographs. The addition of close-up nature photographs by the likes of Karl Blossfeldt, Ernst Fuhrmann, Albert Renger-Patzsch, Albert Léon and Oskar Prochnow, sometimes in conjunction with photographs by avant-garde practitioners such as Moholy-Nagy and the Bauhaus student Otto Umbehr (Umbo), was further evidence of the effect of Moholy’s *Malerei, Photographie, Film*. Other photographic publications followed suit.

a. Heritage

Because photography was just as much a technical and scientific curiosity as it was a medium of artistic expression during the 19th century its early history is closely tied to the history of its scientific applications. Buerger discusses the close contacts between artists, art photographers and scientist-photographers in mid 19th century France. It was in part due to this alliance, and to the aesthetic attention
accorded scientific photographs, that Baudelaire was reacting in the passage quoted at the start of this chapter. While the intensive conjunction of photographic science and art at mid century faded with the consolidation of the photographic industry and of photographic practice, it is in keeping with this history that many of the great late 19th and early 20th century photographic exhibitions, such as those in Paris in 1867, 1900 and 1906, in Vienna in 1873, in Hamburg in 1893, in Berlin in 1896 and 1906, and in Dresden in 1909, featured both art photography and scientific photography. According to Fritz Hansen, the most important of these was the "Internationale Photographische Ausstellung" held in Dresden in 1909. Given this heritage in France and the German-speaking countries, and because Dresden was both a great art centre and a focus for Germany's photographic industry, it comes as no surprise that the scientific applications and technical products of the photographic industry were featured along with artistic achievements of amateur and professional photographers. Thus at Dresden in 1909, the up-and-coming generation of art photographers, or those with art photographic ambitions such as Imogen Cunningham who saw this show, were exposed to photographic prints which exemplified the broadest range of technical possibilities of the medium, possibilities which were being systematically excluded by the Pictorialists, the prevailing school of art photography at the time, although Hugo Erfurth, a forerunner of sharp-focus "neue Sachlichkeit" photography, assisted in making the selections for the artistic section of the show. This integration of industrial products on the one hand, and of scientific, technical and aesthetically oriented photography on the other, set the tone for Weimar photographic exhibitions. It was as a concomitant of the pictorialists' success at having their work accepted as "art" that the disintegration of scientific and "art" photography was effected.

It is important to keep in mind that most of the exhibi-
tors at the turn-of-the-century German photographic exhibitions were "amateurs." In Dresden in 1900 there was an entire exhibition devoted to scientific photography organized by the Dresdner Gesellschaft zur Förderung der Amateurphotographie, presumably at least partly with the intent of inspiring amateurs to engage in such work. This promotion of amateur scientific photography was rooted in the Kunstschulbewegung and the pedagogical reform movement in general of the early 20th century, and gave rise to Moholy's Jacobyian pedagogical approach ("everyone is an artist"; "everyone is talented"). Thus Moholy's later suggestion of the use of scientific imaging equipment for aesthetic ends is also ultimately based in this tradition. Moholy's suggestion, in combination with earlier amateur practice, led to the development of art microscopy, art telescopy, and art radiography in the 20s.

b. Early Weimar Years

As the war and the economic disasters which subsequently befell Germany intervened, the next photographic exhibition of this type was realized only in 1925, the year that Moholy published Malerei, Photographie, Film. It should be noted that Moholy's manuscript was ready by the summer of 1924, and that it appeared in the late summer or early fall of 1925. Thus the "Kino und Photo Ausstellung," popularly known by its abbreviation "KIPHO," which took place in the Funkhaus (radio building) in Berlin from September 25 to October 4 of that year, could not have acted as a suggestive source for the visual organization of Moholy's book. It did, however, give Moholy the chance to acquaint himself with the latest imaging technologies, and to see a wide variety of applied photographs, as well as examples from the history of photography. This experience must have stood him in good stead in preparing the second, 1927 edition of his book.

In keeping with the fin-de-siècle tradition I have outlined above, KIPHO was a combined industrial, scientific and
art photographic exhibition organized by a broad range of German photography and film-related societies, such as the Union of German Amateur Photographer Associations, the Society of German Art Photographers, the Union of Manufacturers of Photographic Products and the German Society for Mechanics and Optics. The exhibition was organized in seven parts, and while a scientific section was not among them, scientific photographs were included among the works displayed in the division devoted to technical and photographic schools. Thus the Photographische Lehranstalt of the Lette-Verein in Berlin showed medical, mineralogical, microscopic and x-ray photographs, praised by one critic as "sehr sauber und sorgfältig ausgeführten Schülerarbeiten." Another school which had a department specializing in the training of scientific imaging technologists, the Photographische Institut für wissenschaftliche und angewandte Photographie of the Technische Hochschule in Darmstadt, showed "eine Anzahl wohlgelungener Schülerarbeiten auf dem Gebiet der bildmässigen und technischen Photographie." Astronomical photographs from the Observatory of Treptow were also shown, as were undersea photographs by the German master of the genre, Franz Schensky. The collector and historian of early photography, Erich Stenger, showed examples from his collection of 19th century artistic and applied work for the first time. This must have made a great impression on Moholy, for it would have given him an initial temporal overview of the visual results of photographic practices. Stenger’s displays were subsequently included in most of the German photographic exhibitions between the wars, he cooperated with Moholy on the FIFO exhibition of 1929 and ultimately with Lucia Moholy in her photographic projects as well. The Lette-Verein, the Treptow Observatory, and Schensky would also become regular exhibitors in these exhibitions. Fritz Hansen judged the KIPHO to be a great success, and a sign that Berlin had displaced Dresden as a centre of photographic technology.
The highly successful Deutsche Photographische Ausstellung (DPA), held in Peter Behrens' "Haus der Moderne" in Frankfurt/Main during the second half of August 1926, was an event which foregrounded scientific photography to a greater extent than had been the case at KIPHO. An entire section, "Gruppe IV," was devoted to scientific and historical photography, the latter drawn partly from Stenger's collection.

The prominence given scientific photography was noted in the press. In the catalogue of the DPA, a Dr. Seddig reviewed the history of scientific applications of the medium from Niépce on, and he set up a typology of its scientific applications which reflected the organizational structure of Gruppe IV: the use of straight photography, e.g. in the documentation of visible phenomena in geology, zoology and botany and in documenting scientific experiments; photography as an extension of our senses, such as microscopic, astronomical, spectrographic, x-ray and time-lapse photography; and the study of the photographic process itself. In a second article on scientific photography published in this catalogue, the Frankfurt criminological photographer Georg Popp reminded visitors of the wide range of uses of scientific photography, in fields as diverse as astronomy, physics, the natural sciences, botany, zoology, anthropology, art history, medicine, surgery and law. He further pointed out some of the important scientific advances made with such aids, for example the research of metallic, crystalline and even atomic structures through microscopy.

As at the KIPHO, many organizations were represented among the exhibitors in Gruppe IV of the DPA, particularly those to be found in the host city. For example, "Diapositive hervorragender Qualität in Röntgen- und Mikrophotographie," were shown by the Universitäts-Klinik and Städtischen Krankenhaus Frankfurt, and microscopic photographs of metals were displayed by Prof. Fränkel of the department of Physics and Physical Chemistry at Frankfurt University. Also shown
were criminological photographs taken by Popp in association with the Frankfurt Police Department, zoological photographs by Dr. K. Priemel from the Frankfurt Zoo and Max Steckel of Kattowicz, sport pictures by P. Feller of Hanover, aerial views by Zeppelin-Luftschiffbau and the Südwest-deutsche Luftverkehrs, A.G., nature photos and "Heimatschutzaufnahmen," by Naturbild Hubert Schonger, G.m.b.H., and astronomical photographs by Max Wolf of the University Observatory in Heidelberg.57

Next to Gruppe IV was the section of the exhibition devoted to "Fachschulen," another locus for the display of scientific photographs.58 As at KIPHO, at the DPA the Lette-Verein showed a "rich" selection of scientific works by its students, indeed it was the only photographic training college to do so.59 One reviewer, unaware of the Verein's specialization in scientific work, complained about the lack of "artistic" photographs:

Die Photogr.(sic) Lehranstalt des Lette-Vereins, Berlin, hatte bei ihrer Ausstellung die künstlerische Photographie zugunsten der Röntgen- und der wissenschaftlichen photographischen Abteilung in den Hintergrund gestellt. Wohl zu unrecht, denn wir haben auf der "Kipho" gute Bilder aus der Lette-Anstalt gesehen, von denen wir zwei oder drei in Frankfurt wiederfanden.60

Still, this reviewer particularly praised the radiographs: "Die Röntgenaufnahmen beweisen die vorzügliche Ausbildung, die den Schülern der Anstalt zuteil wird." The excellent training of the students is indicated by the following statement: "Wie uns die Leiterin der Anstalt sagte, sind alle Schülerinnen der obligen Abteilungen nach beendeter Ausbildung bisher immer in der Praxis untergebracht. Ein Beweis, dass die Lette-Anstalt einen guten Ruf geniesst."61

Finally, scientific, especially medical photographs, were to be found in the industrial section of the DPA.62 The Agfa company, for example, in addition to the film Das Blumenwunder (more about which below), displayed microscopic and x-ray
photographs, including Prof. König’s composite radiograph of woman, a full-body x-ray image which Moholy would also exhibit at the FIFO.43

Eugen Classen, the reviewer for the Deutsche Werkbund’s journal Die Form, who approved of "Neue Sachlichkeit" aesthetics, held that "Gruppe II," the section of the exhibition devoted to "amateur," that is art photography, was not significant. According to Classen it was dominated by photographers employing traditional Pictorialist aesthetics, since it was selected by "industry types" rather than people with serious training in the arts.64 Classen cites the portraits of Hugo Erfurth and Walter Hege’s photographs of ancient Greek statuary as examples of sachlich work which called attention to the mediocre quality of the bulk of the material.65 In the manner of Moholy-Nagy, Classen cites the sachlichkeit of the exhibition’s applied photography display as putting the "aesthetic" work into a bad light:

Es soll hier nicht behauptet worden, dass die verschiedenen Darstellungsformen, deren sich die Ausstellung bedient, sich stets glücklich zu einem einheitlichen Eindruck zusammenfügen. Bruchstellen sind in einer Zeit, in der eine hochgesteigerte, rein auf präzise Zwecke eingestellte wissenschaftliche und technische Photographie mit einer raffinierten sich "künstlerisch" gebenden Lichtbildkunst konkurriert, unvermeidlich.66

Classen seems not to have noticed that the work of younger Neue Sachlichkeit practitioners such as László Moholy-Nagy and Erna Lendvai-Dircksen were also shown in the art section, and that followers of the new aesthetic, albeit its more conservative, officially acceptable variety, won prizes; thus Erfurth, Lendvai-Dircksen, Schensky, and Walter and Curt Hege.67 Still, it is true that the DPA’s "amateur" section was dominated by an outdated Pictorialist aesthetic, and that it largely omitted the work of avant-garde photographers. This is important, because the overall arrangement of the exhibition -- industrial products in one wing, and applied, scientific,
historical and art photography displays in the other -- was such that it made comparisons such as those which Classen made between applied and art photography a simple matter. In any case, for those photographers and artists who were becoming interested in Moholy's New Vision, or who were concerned with applied work as potential visual source material, the DPA provided an opportunity to view an impressive array of scientific photographs aesthetically.

The prominence given scientific imagery at the DPA was also indicated by the fact that at the opening on 14 August 1926, the Agfa-produced film "Das Blumenwunder" was shown to great acclaim. "Hat sich die Photographie einerseits zum Kunstgewerbe edelster Bedeutung entwickelt," wrote one anonymous reviewer, "so ist sie andererseits zum unentbehrlichen Hilfsmittel für alle Wissenschaften geworden. Ein kleines Beispiel nur dafür ist der Film 'Das Blumenwunder', der das Wachsen und Werden der Blumen den Gästen zeigen wird." This accelerated view of plant development employed the latest in time-lapse filming techniques developed by Roman Vishniac, and made a deep impression on reviewers of the show. As another anonymous reviewer wrote, "die Zuschauer des Ausstellungs-Kinos sitzen vor der Leinwand und wohnen staunend der Entwicklung einer Pflanze vom Keim zum Wachsen, zur Blüte und zum Welken bei." This impression is echoed by Hannah Höch in her memory of her exploration of the film medium together with Moholy-Nagy during the early years of their friendship, soon after his arrival in Berlin in 1920:

"...im Verfolgen und Beurteilen des sich in neuen Formen entwickelnden Films ergänzten sich unsere Meinungen immer. Auch, dass die ästhetischen Gesetze nie ausser acht gelassen werden sollten, spielte eine Rolle in unseren Anschauungen. Dokumentarfilme, die ersten, liessen uns den Atem anhalten, wenn sich da etwa Kristalle, das Wachsen der Pflanzen etc. enthüllten. Zeitraffer und Zeitlupe brachten die neuen Aspekte."

More advanced in its artistic tastes than the Frankfurt
exhibition, but providing fewer opportunities for the viewing of applied photographs, was "Hundert Jahre Lichtbild," held in Basle in April and early May of 1927. Here one could see, in addition to the by now standard historical display curated by Stenger, an array of Swiss and Budapest photographers, plus the work of avant-garde practitioners such as Frantisek Drtilkol of Prague, Man Ray of Paris, and László and Lucia Moholy-Nagy of the Dessau Bauhaus, plus the more conservative Neue Sachlichkeit photographers Erfurth, Lendvai-Dircksen, and the Hegé brothers. While this show did not contain a separate scientific section, it did include a display of applied photography which included microscopic and other natural scientific photographs and slides, including work from the Franck’sche Verlag of Stuttgart, one of the principal publishers of popular scientific imagery. Though the display of scientific photographs was not as large and varied as at the DPA, visitors to the Basle show had the chance to compare them with a greater selection of avant-garde works.

The KIPHO, the DPA and the Basle show were significant not because their organization reflected in a systematic way the new photographic aesthetic as theorized and codified by Moholy-Nagy; they did not. They potentially achieved other results: On the one hand, by carrying on the 19th century tradition of the integration of applied and art photography in grand photographic displays, they gave visitors interested only in the fine arts the chance to view the products of applied photography, and thus to expand their aesthetic range of appreciation, as proposed by Moholy-Nagy. On the other, they gave avant-garde painters and sculptors the opportunity, even if only inadvertently, to see scientific imagery. Meanwhile, judging by the number of book reviews, the success of Painting, Photography, Film induced the publication of a second, revised edition of the book in 1927, which received even more attention than the first edition had.
c. Moholy-Nagy and *Das Deutsche Lichtbild*

In 1927, the year that *Malerei, Photographie, Film* was republished as *Malerei, Fotografie, Film*, Hans Windisch launched his German photographic yearbook *Das Deutsche Lichtbild*. While Moholy-Nagy did not initiate this project, his New Vision was Windisch's inspiration in its production. The appearance of *Das Deutsche Lichtbild* marked the spread of *Neue Sachlichkeit* in general, and of New Vision in particular, within the German photographic discourse. As Rolf Sachsse writes, "eine innerphotographische Debatte zur Neuen Sachlichkeit begann erst in breiter Form nach 1927, mit dem Erscheinen des ersten Bandes von 'Das Deutsche Lichtbild,'" as well as the appearance of Moholy's article on photography and advertising in *Photographische Korrespondenz*, and Renger-Patzsch's book *Die Welt ist Schön* in 1928. The spread of the New Vision was marked by the general trend towards the aestheticization of scientific imagery in photographic publications; the regular publication -- for the first time in an art photographic rather than a general trade context -- of art micrography, art telescopy and art radiography; and most importantly perhaps, the juxtaposition in layouts of these various genres of photographic production: of applied scientific photography with art photography, of art microscopy with scientific microscopy. By 1929, the *Neue Sachlichkeit* had supplanted the former dominance of old-style, that is, pictorialist "art photography" in German photographic magazines, annuals and exhibitions.

That Moholy was crucial to the conception of *Das Deutsche Lichtbild* is evident from an examination of its first volume. Windisch included a series of statements in this first yearbook, the order of presentation of which tells us much concerning the importance he placed on Moholy's approach to photography. First among the statements -- after his own -- was that of Erwin Redslob, the *Reichskunstwart* -- a kind of political guardian of culture -- of the Weimar Republic.
Redslob, known to be a supporter of Modernist culture, gives a noticeably Moholyan account of photography as "die Erfassung der Lichtwirkung eines Objektes durch Mittel des Lichtes." Windisch follows this with a statement on amateur telescopic photography by the German master of the subject, Adolf Miethe, of the Charlottenburg observatory in Berlin. This placement may seem curious until one realizes that not only is the promotion of amateur photography, particularly amateur photography employing unusual means of production such as those employed in scientific research, one of Moholy's principal messages, but the placement of Dr. Miethe's statement after his own and the politician's, was a sign of respect by Windisch for the recently-deceased Miethe and this, his last manuscript. It was Moholy-Nagy's statement, "Die beispiellose Fotografie," which was the first to follow those privileged by protocol. This article is, in effect, a manifesto version of Painting, Photography, Film, the programme for his "New Vision." And as if this privileged placement were not sufficient, Windisch added a note to Moholy's article recommending Painting, Photography, Film to his readers, the only such recommendation made by Windisch among the introductory texts. Only after these four statements did those of P. V. Neugebauer on craftsmanship in photography; the decidedly Moholyan statement of M. von Grundherr, the Chair of the Union of German Amateur Photographic Societies; and those of Franz Grainer on "Das neuzzeitliche Damenbildnis;" of Karl von Schindling on a traditional approach to "Lichtbildkunst;" of Dr. Kröhnke on amateur art micrography; and of Albert Renger-Patzsch, appear, in that order. While this array of texts and their sequence communicates a tension between traditional and sachlich approaches to the aesthetics of photography within Das Deutsche Lichtbild, the predominance of Moholyan New Vision aesthetics over the more traditional ones is apparent. All the statements but the first
three -- i.e. those placed in order of protocol -- are bracketed by texts from the two most prominent representatives of Neue Sachlichkeit photography, Moholy-Nagy and Renger-Patzsch. Furthermore, the inclusion of the statements promoting the aesthetic use of scientific instruments in the production of art photography by amateurs (Grundherr, Miethe, Kröhnke) reflects Moholy-Nagy's program of New Vision put forward in Painting, Photography, Film. If one counts these contributions with those of the Neue Sachlichkeit photographers Moholy and Renger-Patzsch, they easily outnumber the statements made by authors (Neugebauer, Grainer, Schintling) with traditional photographic aesthetics.

Moholy's "Die beispiellose Fotografie" was an aesthetic explication of New Vision and a program for working with scientific technologies to make art photographs. As early as in his first article on photography, "Produktion-Reproduktion," Moholy-Nagy -- here in conjunction with his wife Lucia -- suggested, even if obliquely, the possibility of employing x-ray and telescopic technology in the production of art, a suggestion reiterated the following year in "Light -- A Medium of Plastic Expression." These ideas were systematized in Malerei, Photographie, Film, the manuscript for which was ready by 1924, but which was first published in 1925. Moholy was not the first to advocate the use of the microscope for creative purposes. J. Edward Barnard in England, and Romanus Schmehlik in Germany had been advocating the production of amateur photomicrographs since the early 20th century. For example, in the introduction to his 1911 handbook, Practical Micro-Photography, J. Edwin Barnard recommended photomicroscopy to the "photographer who has exhausted his interest in landscape, work, portraiture, or what is usually referred to as ordinary photography, and is looking for a new field of work." Thus, in calling for the creative use of photomicroscopy and radiography, Moholy -- whom Andreas Haus has described as an amateur in the best sense of the word when it
comes to photography -- was participating in an amateur tradi-
tion which advocated the use of photomicrograph-ic equipment
in the production of what was in effect aesthetic imagery. And let us remember that well into the 20th century, most of those who displayed their work in photographic exhibitions were amateurs. Simultaneous with the development of Moholy's own theory, artists such as the German Karl Strüwe and the French Laure Albin-Guillot were engaging in the practice of art microscopy.

We have seen in Chapter Four that in addition to the formal dimension of Moholy's theory, there is inherent in *Painting, Photography, Film* and in his other documents of the time, a Francéan biocentric text and subtext rooted in Haeckel's Monist promotion of scientific images as models for art, communicated directly through words as well as through his choice of images to be illustrated and the visual rhetoric of his layouts. This biocentric content is emphasized by Renger-Patzsch's text "Ziele," which promotes photography as a means of exploring nature's structures, and is made explicit in Windisch's introduction to the second, 1928-29 edition of *Das Deutsche Lichtbild*. Windisch discusses the question as to whether photographs can be used as "Naturkunde" [documents of nature]. Using the camera, he notes,

we are much more likely to obtain a view of the hidden things in nature's secret places, views of an unfamiliar world, with as complete an existence of its own as that with which we are familiar. He who is able to discover all these things shows himself the real artist.... He is nearer to earth, and it is he who is seeking to penetrate her secrets.... But perhaps his friends consider his photographs as mere copies from nature what to him was a revelation or may be a great symbol of life. Yes it is a document, but a document which is at the same time an attempt to solve [the mystery of nature].

Windisch took Moholy's suggestions to heart, imitating the Bauhaus professor's image juxtapositions made in *Painting, Photography, Film*. Thus -- to use examples from the first
volume of Das Deutsche Lichtbild -- the juxtaposition of Renger-Patzsch’s close-up of steam locomotive wheels with Dr. Bergner’s close-up of a spoked dandelion gone to seed; the placement of Mario von Bucovich’s seascape with flying birds opposite Charlotte Rudolphi’s shot of the dancer Palucca taking a flying leap with wing-like outstretched arms; and an image illustrating the structure of the Zeppelin next to Ernst Krüger’s photograph of grasses in winter; are illustrations of Francé’s concept of Biotechnik akin to Moholy’s equivalent juxtapositions. (Figs. 5-1, 5-2, 5-3) As Windisch himself wrote in the next, 1928/29 issue of Das Deutsche Lichtbild:

all that is around us, even the most complicated phenomenon, harks back to primitive form elements. It is on these that we base our conceptions of beauty, although we are no longer conscious of this elementary fact. Leaving mathematical [Grundformen] out of consideration: the construction of a blade of grass accords with the principals of modern statics; only a talented mathematician would have been able to design the honey-comb; the very first plant was patterned on the [Golden Section]; the [sphere, as the conception of perfection, completion and peace [Vollkommenen, in sich ruhenden] by which are determined] the domed vault of the skies...; briefly, it will be found that it is always the elementary forms on which our conceptions are based.46

But there are further parallels. In the 1927 yearbook Miethe’s photograph of the moon is placed next to colour-enhanced microscopic photographs by Dr. Kröhnke in the round format typical of photographs taken through the lense of a microscope, while Renger-Patzsch’s close-up shot of an Aasblume juxtaposed with G. Jähne’s image of a landscape formation, emphasizes equivalent textural and pattern qualities invoking the biocentric Monist topos of self-similarity.47 (Figs. 5-4, 5-5) The decorative qualities of Dr. Bergner’s microscopic photograph of a flea are emphasized, furthermore, by its juxtaposition with F. Wasow’s image of a seated male Balinese dancer and the Neo-Vitalist crystallographer Otto Lehmann’s microscopic photograph of trapezoidal fluid crystals. (Fig. 5-
6) In the 1928-29 edition, the self-similarity topos was again illustrated through the placement of Max Wolf’s photo of the Milky Way opposite A. u. P. Neiner’s close-up of a spider’s web; a point emphasized by Windisch’s statement made in that same volume that "the smallest creature is a centre around which the world moves." (Fig. 5-7) The publication of Karl Hansen’s micrograph of a cross-section of a hair was one of the first in a clearly artistic context of an example of amateur art microscopy. This artistic intention is indicated not only by Hansen’s writing on the subject, but also by the avoidance of the traditional round format of micrography, replacing it with the rectangular frame of the art photograph or the painting. (Fig. 5-8) This choice in format works to emphasize the pictorial and textural qualities of the image over its scientific or merely wonderful ones. (Fig. 5-8) In the 1930 edition of Das Deutsche Lichtbild, Windisch included Blossfeldt’s beautiful close-up images of plants, and the stunning radiograph of a fish produced by the women of the Lette-Verein in the 1927 yearbook and in a 1928 article by Windisch, reappears in an advertisement designed by Moholy the following year. (Figs. 5-9, 5-10, 5-11) Windisch aligns himself with Moholy’s "New Vision" as opposed to Neue Sachlichkeit generally when he writes that "it would be quite a superficial pronouncement to label these ‘documents of nature’ as the [New Objectivity]. If such a photograph is [objective, it is out of purity that it is so]; if it is new, it is because we have brought a new method of seeing to bear on it." (Fig. 5-11) Despite Windisch’s commitment to Neues Sehen, his own tastes were eclectic and allowed for late pictorialist art photography, embodying a tension with Moholy’s more consistently avant-garde aesthetic. By the second volume of Das Deutsche Lichtbild, Windisch -- perhaps in response to negative reaction from the wider, more conservative German photographic community to his emphasis on Moholy-Nagy’s ideas in the first volume, clearly stated that "’Das Deutsche Licht-
bild' ... is by no means bound to any particular school or tendency." The tensions between Moholy's avant-garde and Windisch's conservative tastes became apparent within a few years, and they erupted into a polemical exchange with Moholy-Nagy on the pages of i10 (of which Moholy was the photographic editor) in 1929. In his piece Windisch protests against the use of sharp, close-up shots in portraits, and writes "so must a portrait be as blurred as possible, or do we even have to cheat a bit? No -- but photography must not become microscopy." In his answer Moholy pulls out the big gun of biological authority when he answers that "we must remind ourselves that there is a biological way of looking at man, where every pore, every wrinkle and every freckle is of importance." An indication of the extent to which Moholy had cooperated with Windisch is suggested by Moholy's reply to Windisch, in which he says "It is staggering for me to see Windisch -- whom I thought so far to be my comrade-in-arms -- using such outdated arguments." The rift was not total, however, as the publication of two of Moholy's photographs in the 1930 edition of Das Deutsche Lichtbild indicates.

d. The First Exhibitions Based on "New Vision"

Rehearsed in Painting, Photography, Film and Das Deutsche Lichtbild, and paralleled unconsciously in the great Weimar German photographic exhibitions, by 1928-29 Moholy's aesthetic principles were incorporated into three art exhibitions. The first of these, "Foto -- Malerei -- Architektur," opened on 12 February 1928 at the Itten Schule, Johannes Itten's private Berlin art school founded in 1926, three years after he had been replaced at the Bauhaus by Moholy-Nagy. While it has not proved possible to ascertain the identity of the curator(s), the material and conceptual linkages with Moholy and the Dessau Bauhaus are apparent. Adopting both the Bauhaus' and the Itten Schule's interdisciplinary approaches, the curator(s) integrated modernist art and architectural drawings
with avant-garde and applied photographs in the show. Both Kállai's review of the exhibition and the text of the invitation to the opening indicate that the groupings of paintings, photographs and architectural drawings were proximate, with the intention of evoking interdisciplinary comparisons:

Die Veranstaltung der Kunstschule Johannes Itten sollen zur Beurteilung moderner Gestaltung und Produktion Gelegenheit geben und -- soweit das durch Vorträge und Ausstellungen möglich ist -- zur Klärung der Probleme beitragen.
Durch die Gegenüberstellung von: FOTO -- MALEREI -- ARCHITEKTUR
Soll die Abgrenzung und Verschiedenartigkeit der einzelnen Gebiete deutlich werden.96

This emphasis on the differentiation of media echoed Moholy's warning in Malerei, Photographie, Film against the "blurring of boundaries" between creative techniques, and his concomitant emphasis on the organic emergence of works from the materials and technologies employed to make them.99 Of course in these cases stressing difference called attention to the integrative intentions of multidisciplinary projects such as Moholy's book and this exhibition, and of the interdisciplinary schools that hosted them. Such a dialectical pairing would have been appreciated by Leftist intellectuals such as Moholy and some members of the Itten Schule.

The array of art and architecture in the Itten Schule show reflected its Bauhaus orientation, and the crucial link here may have been -- rather than Itten himself -- Otto Umbehr, the former Bauhaus student who was then teaching photography at the Itten-Schule, and who would have been familiar with Moholy's ideas on photography.100 The architectural exhibit consisted of the competition entries for the Geneva League of Nations Building and the Peterschule in Basle by the Swiss Bauhaus instructor Hans Wittwer and his partner, the new Bauhaus master and soon-to-be director, Hannes Meyer. In addition to works by the two most prominent Bauhaus masters Kandinsky and Klee, "Foto -- Malerei -- Architektur" included
paintings by Otto Meyer-Amden, a Swiss friend of Hannes Meyer and Ernő Kállai, and sculptures by Ewald Mataré, an artist supported by Kállai, whom Hannes Meyer was soon to name as the Bauhaus’ publicist.\textsuperscript{101}

The selection of photographs was more advanced in Berlin than in the Basle show of the previous year, and omitting the more conservative Neue Sachlichkeit photographers Erfurt, Lendvai-Dirksen and the Heges, as well as foreign practitioners, focused on photographers associated with the Bauhaus (Umbehr, Lászlo and Lucia Moholy-Nagy, Heinrich Spaemann, and Karl Staub\textsuperscript{102}). The exhibition of work by Albert Renger-Patzsch leads one to recall that he was first drawn into the discourse of the avant-garde by Moholy-Nagy, who published his work in \textit{Malerei, Photographie, Film}.\textsuperscript{103} The crucial innovation in this show, and its aspect that most clearly calls to mind Moholy’s book, is the exhibition of nature photographs, scientific x-ray and microscopic photographs from sources such as the Photographische Lehranstalt of the Lette-Verein, Lufthansa’s photographic office, and film stills from the avant-garde Soviet cinema.\textsuperscript{104} Thus, not only was this one of the (if not the) earliest group show(s) of the German photographic avant-garde, it was the first to display applied, including scientific, photographs in an avant-garde artistic context. In \textit{Das Kunstblatt}, Paul Westheim noted these developments:

\begin{quote}
In der Itten-Schule eine programmatische Zusammenfassung heutiger Kunstmöglichkeiten ... Architektur ... und daneben gleichwert und gleichberechtigt die aus der heutigen Technik erwachsene Kunst der Photographie und des Films. Diese Photographen: Renger-Patzsch an der Spitze, haben es aufgegeben, Malerei zu imitieren; mit der Linse ihrer Kamera, die präziser, objektiver, bestimmter sieht als das Auge, haben sie angefangen, den Sachwert der Dinge zu fassen. Mit den Röntgen-aufnahmen des Lettevereins beginnt man in sie hineinzudringen. Es wird Welt erschlossen, die immer da war; aber so noch nicht erkannt werden konnte. Keine Frage, auch das ist schöpferisches Gestalten; die Photographie ist im künstlerischen Sinne schöpferisch geworden, als sie aufhörte, Kunst nachzumachen.\textsuperscript{105}
\end{quote}
Though he does not explicitly refer to Moholy’s theory of New Vision, Westheim has read its principles from the exhibition: not only do the works of a Neue Sachlichkeit photographer such as Renger-Patzsch, and of applied practitioners such as the unnamed female students of the Lette-Verein, objectively reflect reality, they are equally capable of creative expression. While Kállai’s review of the Itten Schule show could be read as suggesting that the applied photographs were integrated with the art photographs in the installation, he does not specifically say they were. Whether or not this was the first exhibition in which scientific photographs were integrated with art photographs in a single installation, it was, to my knowledge, the first show in which scientific photographs were shown in close proximity to works of modernist art within an avant-garde artistic context, and so it likely inspired Kállai’s 1931 proposal for the juxtaposition of scientific photographs and works of modernist art in the planned Leipzig "Kunst und Wirklichkeit" exhibition, finally realized in the "Új világkép" show held in Budapest in 1947.

At about the time that the show was on view at the Itten Schule, Moholy published a resumé of his ideas on the New Vision, "Neue Wege in der Photographie," in the mainstream photographic journal Photographische Rundschau und Mitteilungen, devoting particular attention to the production of photograms. Both the title of this article and its synthetic impulse were adopted by the managing director of the Jena Kunstverein, the avant-garde artist and designer Walter Dexel, for an exhibition of Neue Sachlichkeit and applied photographs based on the Itten Schule show which took place in Jena from 25 March to 6 May 1928. "Neue Wege der Fotografie" was to be the last major exhibition arranged by Dexel for the Jena Kunstverein, where he had worked since 1916. Members of the Board of Directors, apparently under pressure from the Carl Zeiss firm of precision optics -- the Kunstverein’s financial supporters -- failed to nominate Dexel to the posi-
tion in 1928. The Zeiss firm's position is ironic, as it was precisely the use of sharp-focus lenses such as Zeiss's which was being promoted by Dexel in this exhibition.

"Neue Wege der Fotografie" has been described as the "erste Zusammenstellung zeitgenössischer neuer Fotografie," the first in which "die fotografischen Ergebnisse aus den Bereichen Industrie, Technik und Wissenschaft mit bewusst gestalteten Fotografien gezeigt [waren]." As we have seen, this is not the case, for though the Itten Schule show was not exclusively photographic, its photographic part had already done all this. In fact there is evidence that "Neue Wege der Fotografie" was an adaptation of the relevant section of "Foto -- Malerei -- Architektur," though it must be kept in mind that as yet, no installation photographs, exhibition lists, or other documents on either of the two exhibitions have come to light, and so my proposal remains hypothetical. Most of the artists whose works were displayed in Jena were those Berlin and Bauhaus photographers shown at the Itten Schule; Renger-Patzsch, László and Lucia Moholy-Nagy, Otto Umbehr, Errel (Richard Levy), and Walter Peterhans. Added at Jena were the works of the Dresden progenitor of Neue Sachlichkeit photography Hugo Erfurt and of the Frankfurt photographer Hannah Reeck, while those of the Atelier Nolte and of the Spaemann and Straub team were omitted. The list of categories of applied photographs in the Jena show reiterates that of the "Foto -- Malerei -- Architektur" exhibition almost exactly. While the Jena brochure refers to "Porträts -- Naturaufnahmen -- Fliegeraufnahmen -- Wissenschaftliche Aufnahmen -- Filmphotos -- Photomontage -- Reklamephotos -- Photogramme," the Itten Schule opening invitation refers to "Naturaufnahmen, Porträts -- Fotomontage, Reklamefotos / Wissenschaftliche Aufnahmen, Röntgen und Mikrofotos, Farbfotos, Filmfotos der Sammlung Marianoff." The Jena exhibition opened 25 March, three weeks after the Itten Schule exhibition closed on 13 March, an optimal interval for the
transport of materials from Berlin and their reinstal-lation in Jena, and in his article "Neue Wege der Photographie" Dexel refers to the exhibition in a manner which suggests that he had not curated it himself.\textsuperscript{114}

Even if not an adaptation of the Itten Schule show, "Neue Wege der Fotografie" was certainly closely modelled on it, and as the very title indicates, on the ideas of Moholy-Nagy and his "New Vision." Dexel, one of Moholy’s earliest acquaintances in Germany, would have been familiar with Moholy’s ideas as they developed at the nearby Weimar and Dessau Bauhaus-es,\textsuperscript{115} and the previous November 18, he would have had the opportunity to hear Moholy’s slide-illustrated talk on "Male-rei und Fotografie" held at the Arbeitsgemeinschaft für das graphische Gewerbe in Magdeburg, a city near Jena.\textsuperscript{116} The fact that the Jena press devoted attention to Moholy’s work displayed at the exhibition is a further indication of his importance with respect to it.\textsuperscript{117}

That "Foto -- Malerei -- Architektur" preceded "Neue Wege der Fotografie" does not, however, detract from the latter’s historical importance. Dexel’s exclusion of painting and architecture focused attention on photography, and hence on the visual and structural relationships between its artistic and applied practices.\textsuperscript{118} As Dexel pointed out in an article published after being fired, his exhibition program at the Jena Kunstverein -- much like Itten’s program at his school and the Bauhaus program -- had been one which attempted to integrate applied arts with new artistic developments. In effect, it had been an integrative, interdisciplinary program, which wished to connect art to everyday life.\textsuperscript{119} The integration of art photography with applied photography was a natural outgrowth of this goal.

An exhibition integrating art with scientific photography, took on a special meaning for being staged in Jena, Ernst Haeckel’s long-time home. The continued presence of both the "Phyletisches Museum" which Haeckel helped establish in 1907,
and the "Ernst Haeckel Museum," established by the Karl-Zeiss Stiftung in his house -- the Villa Medusa -- after his death in 1919, made available for permanent public viewing an array of scientific images, including Haeckel’s. The Ernst Haeckel Museum reminded residents and visitors that Moholy’s project of the aestheticization of scientific photography was to be situated within the context of the fin-de-siècle incorporation of scientific imagery into the discourse of art initiated by Haeckel himself through his Kunstformen der Natur. That Dexel was aware of Haeckel’s relevance to the show is suggested by the fact that he included in it portraits by Hugo Erfurth, including one of old man Haeckel himself.

Still, Dexel’s description of the exhibition suggests with less ambiguity than does Kállai’s review of the Itten Schule show, that art photography was not integrated with applied work in the hanging. Thus, the first room showed the portraits by Erfurth (one can imagine Erfurth’s image of Haeckel’s formidable visage facing the arriving visitor...), the second featured the work of Renger-Patzsch, and in a third were to be found Bauhaus works: Umbo’s portraits, Moholy-Nagy’s photograms and Lucia Moholy’s architectural photographs and portraits. While Dexel mentions aerial views, film stills, and advertising photos, he does not mention the location of the scientific photographs, nor does he suggest that they were installed with the art photographs, and it is to be assumed that they were exhibited in another chamber. Though Dexel does not ascribe importance to the way in which the aesthetic appreciation of applied photography can inspire art work in his description, his account of Renger-Patzsch’s work indicates that he understood the design principles underlying Moholy’s assertions in this regard: "Die Photographie hat sich gelöst von ihrem bisherigen Stoffgebiet, das nur uns geläufige Vorwürfe des Malers umfasste und kann plötzlich alles. Sie fasste den Blick des Tieres ebenso wie Stoff und Struktur seines körpers.... Solche Photographien erschlossen uns eine
Within a year of the Jena show’s closing, the first large-scale exhibition devoted to *Neue Sachlichkeit* photography was mounted from 20 January to 17 February 1929 at the Museum Folkwang in Essen.\textsuperscript{124} Given Albert Renger-Patzsch’s connections with the museum dating back to the early 20s, his work for the museum’s first director Ernst Fuhrmann, and his continued proximity to it, it is not surprising that the Museum Folkwang mounted "Fotografie der Gegenwart." In a statement published in *Photographische Rundschau und Mitteilungen* in 1929, the director and curator Kurt Wilhelm-Kästner, like Dexel and others, expressed the view that a new photographic movement was in formation, and his intention to give expression to this development even though

\[\text{es ist aber durchaus noch kein einheitliches Bild, das sich hier bietet, es sind viel mehr mehrere nebeneinander herlaufende Strömungen zu beachten. Verschiedene Einzelerscheinungen treten auf, die erst in ihrer synthetischen Zusammenfassung den neuen Weg ergeben werden. Als Reaktion zur bisherigen Einstellung muss zunächst die sich fast allenthalben ausprägende Neigung zu klären, streng gegenständlichen Bildauffassungen angesprochen werden.}\textsuperscript{125}

While no documentation of this exhibition survived the war,\textsuperscript{126} so we cannot be certain of the institutional and personal connections involved in its preparation, the concept of exhibiting *Neue Sachlichkeit* photography in conjunction with applied photographs initiated in the two 1927 exhibitions was adopted in this undertaking. That the overall concept of the show was based on Moholy’s New Vision was made apparent by the fact that he was invited to give a slide-illustrated lecture on "Fotografie und Film der Zukunft" on the occasion of the closing of the show on 17 February 1929.\textsuperscript{127}

A list of exhibitors in the original Essen venue has not as yet come to light, but the exhibition toured Germany during 1929, and the exhibitors’ list prepared for the last, Magdeburg showing in November and December of 1929 has, and will do
as a basis for analysis, for though some works were added, the bulk of the exhibition seems to have remained the same.\textsuperscript{123}

This list reads like a who’s who of the contemporary German avant-garde photographic world, with important additions from Paris such as Berenice Abbott, Eugène Atget, André Kertész, Germaine Krull, and Man Ray. Important also is the display of works by photographers who engaged in the contemporary fashion for close-up nature photography, such as Anne Biermann, Karl Blossfeldt, Hein Gorny, Eli Lotar, Albert Léon, Walter Peterhans, Albert Renger-Patzsch, and Paul Wolff.\textsuperscript{125}

The avant-garde works in the show were included in the section entitled "Freie fotografische Gestaltung" and "Fotomontage." Presumably most of the art photographs were installed in the sections "Das schöne fotografische Bild (künstlerisches Sehen)." The range of applied photographs was similar to those of the Berlin and Jena shows of the previous year and were located in the section "Die Aufnahme im Dienst der Wissenschaft und Forschung."\textsuperscript{120} Film stills (including Russian film stills as in Berlin and Jena) were arranged in a special section ("Filmaufnahmen").\textsuperscript{121} The greater financial resources available also allowed films to be shown "in einer Auswahl, dass die verschiedenen technischen und künstlerischen Möglichkeiten [des Films zeigen]: Zeitlupen- und Zeitrafferaufnahmen, Zeitwendeaufnahmen, abstrakte Filme (Eggeling, Richter, Man Ray), Tierfilme, chemische Filme (Mikroskopie), Trickfilme, Reisefilme, Künstlerfilme."\textsuperscript{122}

Again, besides lists of sections, no information is available as to the installation of the exhibition, but it seems that works of the different categories were installed in separate displays. But as before, the very fact that a wide range of applied photography, including scientific imagery was included in a mainly art photographic exhibition is significant.

This series of exhibitions induced a discourse on photographic aesthetics, one of whose major players was Moholy-Nagy’s old friend Ernő Kállai. In his review of the Itten
Schule exhibition, Kállai approved of the comparative curatorial intention, and he was enamoured of the "grosse Anzahl hervoragender" photographs and photo-based art works, even though he thinks that the show did not entirely succeed in defining boundaries between media: "Trotzdem diese Gegenüberstellung nicht genügend unmittelbar und eindeutig erfolgt, wird einem aufmerksam Betrachten dennoch Gelegenheit geboten, wesentliche Einblicke zumal in die besonderen Möglichkeiten der modernen Photographie zu gewinnen."

In his article "Malerei und Photographie" (which appeared in 1927 in the Dutch periodical *i10* for which Moholy was photography editor) Kállai had dealt with some of these possibilities. Indeed this article prefigures the types of comparisons the curators had intended in the Itten Schule show; it recapitulates Kállai's critical predilections to a surprising extent. Not only does it feature works by artists he was supporting, but it avoids the currently fashionable Neue Sachlichkeit painting, while promoting Neue Sachlichkeit photography and applied photographic prints of nature and reality, just as Kállai was arguing in his current writing.

Concerning the inevitable comparison between Modernist painting and Neue Sachlichkeit photography, in his 1927 article Kállai privileges painting over avant-garde art photography as a creative medium because of its ability to render facture or surface qualities. As Kállai wrote in this article, "freely floating immateriality can be attained only by light emanations, in particular the nonobjective light formations of photography. ... They strip the vision of things of its materiality." This view proved to be highly controversial, and set off a well-known debate on the subject in *i10*, with most responses, notably Moholy’s, affirming the presence of facture in photography. "But with this loss in creative life" continues Kállai, photographs "acquire in turn the wonderful, vibrant asset of movement and arrive at the moving photograph, that is film." As a kinetic and thus intensified form of
photography, for Kállai, the central cultural opposition of his time becomes that of painting and film. He concluded "Painting and Photography" with:

"Painting or film? -- that is the fateful question of visual creation of our time. This alternative is an expression of the historical turning point in our mental existence. We stand at the frontier between a static culture that has become socially ineffectual and a new, kinetic reformulation of our world picture that is already penetrating the sensibility of a mass audience to an unheard-of degree."

Despite the possibilities of photography and film, as early as his article "Malerei und Film" of 1926, Kállai expressed the view that painting continued to represent values unattainable through any other medium:

Die unbeschränkte Extensität des Films ist durch die photographische mechanisierung des Bildes ermöglicht. Demgegenüber bleibt das Gemälde selbst in seiner intellektuell und sachlich strengsten Form immer noch eine organische Gestaltung mit der ganzen Unmittelbarkeit menschlicher Selbstäußerung und mit der ganzen Hoheit geistige Synthese.

The installation at the Itten Schule show also offered the possibility of comparing representational photographs, both Neue Sachlichkeit photographs and applied -- including scientific -- photographs on the one hand, with avant-garde art photographs and photograms on the other. Because of their unparalleled ability to represent the world, and because of what he saw as the lack of facture in photography, Kállai valorized the former over the latter. In "Malerei und Film," commenting on the decreasing public interest in painting, Kállai noted the power of photography and especially of film to represent nature: "er vermag das Erblühen des kleinsten irdischen Lebewesen mit einer strahlenden Deutlichkeit vor unser Auge zu führen, die absolut naturgetreu wirkt, ohne sentimental objektbehäftet zu sein wie die Malerei, wenn sie genau darstellen will." Because he saw these possibilities as inadequate, Kállai was more interested in the ability of these media to image nature and to induce the wonder of nature
in their viewers, than he was in their tonal, textural or other formal possibilities the way that Moholy-Nagy was.

This engagement with photography’s and film’s ability to represent what Kállai later termed the "demonic" in nature went back as far as 1923, and the appearance of the "Schelpen-nummer" of Wendingen discussed in Chapter Four. As we have seen, this was the first occasion on which art photographs made using means normally reserved for scientific or medical purposes were produced and distributed within avant-garde artistic circles. In his 1928 review of Karl Blossfeldt’s book Urformen der Kunst, Kállai referred to "the sonderheft der holländischen zeitschrift ‘wendingen’ mit dem herrlichen röntgenaufnahmen nach muscheln ... die naturformen so offenbarungsreich zu zeigen vermocht hatte...." Based on the foregoing we can safely assume that seeing Moholy-Nagy’s book Malerei, Photographie, Film when it first appeared in 1925, Kállai would have been more impressed with Renger-Patzsch’s photographs than he was with Moholy’s photograms. Later, in his glowing review of "Die Welt ist schön," Renger-Patzsch’s book of photographs, Kállai remarked on the cheapness of the snapshots and photographic images of popular and mass cultural organs and on the facile quality of abstract photograms. By employing the medium for what he saw it as doing best, Kállai saw Renger-Patzsch as opposing this trend.

In 1929, in his review of the "Film und Foto" exhibition which, as we shall see, Moholy-Nagy was largely responsible for, Kállai made the same point, extending it specifically to scientific photography. Kállai again warns against the facile nature and cheapness of the profusion of reportage photos in the show. Similarly, he sees Moholy’s photograms as empty "lichtspielerei" even if they are masterfully executed. Dismissive of avant-garde art photography because of its lack of facture, Kállai reserved his praise for applied, especially scientific photography, for example, the X-ray images produced anonymously by students and teachers of the Lette-Verein:
"Kein Wort gegen die tatsächlich dokumentarische Photographie, wie man sie in illustrierten Wochenschriften, in Kinoberichten, Kulturfilmen und erst recht in wissenschaftlichen Publikationen auch volkstümlicher Art zu Hunderten und Tausenden sehen kann," including photographs of this kind in the exhibition itself. Among art photographers, Kállai praised those such as Blossfeldt, Albert Renger-Patzsch, August Sander and Werner Gräff, who -- in the manner of the art photography which came to be seen as "neusachlich," that is as part of the 'New Objectivity" in Weimar German art -- utilized what he saw as the virtues of applied photography to objectively reflect reality in their work, in a manner impossible to artists working in other media. "In solchem optischen 'Dienst am Objekt," writes Kállai, "kann der Photograph sich bis zum Bekenner einer hohen Welt- und Werkgesinnung steigern."

And this is the point at which Kállai articulated what -- as we have seen in Chapter Four -- was clearly implied but left largely unspoken in Moholy's biologicistic aesthetic writings: the ability of photography and film to induce the feeling of wonder for nature, of the kosmische Einheitsgefühl. In his article "Bildhafte Fotografie," in a paragraph on Renger-Patzsch, Kállai articulates these thoughts:

In the end, photography can attain its most enduring and profound effects only through the pursuit of reality, especially natural reality. Nature offers countless constellations of a vast variety of forms, each the product of innermost necessity, each with its own uniquely powerful expressiveness and order, and all of them able to be understood in spatial-pictorial terms. The camera can give sensory immediacy to the most hidden germ cells as well as the most monumental phenomena in this abundance of organic life; it satisfies our sensibilities with the subtlest stimuli and the most vehement sensations.... The most sophisticated photogram cannot match the wondrous chiaroscuro structures of a simple X-Ray.

Thus, it was Neue Sachlichkeit, especially close-up nature photography and scientific imaging that Kállai valorized in
his discourse on photography. It was also Kállai who articulated most clearly the biocentric sense of such images. Moholy-Nagy, true to his biologicist-functionalistic predilections, tended to avoid vitalmystisch enunciations despite his biologicist rhetoric. But while they espoused different brands of biocentrism, and while he disagreed with Moholy on the aesthetic specifics of the various photographic genres, it was the integration of various types of photography effected by Moholy’s biocentric New Vision that encouraged Kállai to make such comparisons in the first place.

Still, while Moholy’s aesthetics and even his phrasing were adapted in these three exhibitions, they do not seem to have been carried to their logical conclusion in the hanging of the shows. The introduction of a new visual rhetorics of juxtaposition into a three-dimensional display, first rehearsed in Malerei, Photographie, Film in 1925, and then on the pages of Das Deutsche Lichtbild, awaited the direct curatorial involvement of Moholy in an exhibition project.

e. Film und Foto and the "New Vision"

It was the German Werkbund’s "Film und Foto’" exhibition first held in Stuttgart from 18 May to 7 July 1929, that involved Moholy directly in the curating and hanging of such a photographic exhibition. Up to that time, the "FIFO," as it was commonly known, offered the most important opportunity for a mass audience to view contemporary avant-garde photographic practice in conjunction with a wide variety of applied photographs. FIFO was conceived by and organized under the direction of Gustav Stotz and his Würtemberg working group of the German Werkbund in Stuttgart. In this discussion of FIFO, I will first demonstrate Moholy-Nagy’s central role in the project, then I will show how his concern with showcasing his conception of a New Vision led to the aestheticization of the scientific and other applied images included in it.

An official version of the project’s organizational
structure is given in the Gliederungsplan included of the exhibition catalogue. At the apex is Gustav Stotz, Gesamtleiter of the undertaking. Next is the Selection Committee, which consisted of three prominent members of the South German artistic community: Hans Hildebrandt was an art history professor at the Technische Hochschule in Stuttgart; the Werkbund pioneer Bernhard Pankok was an artist, architect, designer and director of the Stuttgart Kunstgewerbschule; and Jan Tschichold — whose influential book Die neue Typographie had appeared in 1928, just as work on the show began — was a prominent Modernist graphic designer working in Munich. Following this were the "Mitarbeiter," leading figures of the avant-garde who acted as national curators in Germany and selected foreign countries (France was notably not among them). Thus Lazar El Lissitzky selected and designed the installation for the Soviet gallery, Edward Steichen and Edward Weston chose the American material, Piet Zwart did so for the Netherlands and Siegfried Giedeon for Switzerland. Moholy-Nagy and Otto Baur, Geschäftsführer of the German Werkbund, were responsible for Germany, while Hans Richter was listed separately as artistic director of the film program. If one were to depend only on this plan for a picture of the project's organizational structure, one would get the impression that Moholy-Nagy played an important, but by no means central part in it. But as historians who have dealt with this exhibition have realized, both textual and circumstantial evidence indicate that while somewhat ambiguous, Moholy's role was a leading one in the curating of the show. The fact, for example, that an entire gallery was devoted to Moholy's own work, containing no fewer than 97 photographs, photograms and photomontages — by far the largest representation by any one artist in the show — is an indication of the weight Moholy pulled, as well as of his capacity for self-promotion. I would go a step beyond this view however. As in the case of Windisch and Das Deutsche
Lichtbild, I wish to demonstrate that Moholy exercised a decisive effect on Stotz' conception of the entire project, and on its overall organization and installation as well. I will suggest that he used his influence not only to promote his own work, but to shape the show into what was in effect a three-dimensional restatement of Malerei, Photographie, Film, of his theory of "New Vision." Furthermore, I wish to propose that Moholy's presentation of the "New Vision" in FIFO had the effect -- through the actual installation strategies he deployed -- of aestheticizing applied, especially scientific photography for a mass audience.

According to the memory of Mia Seeger, the German Werkbund's administrative assistant in Berlin, FIFO was realized over a year-and-a-half period at most, with a staff in Stuttgart consisting of Stotz, his wife, and a secretary; and another in Berlin including Otto Baur, Moholy-Nagy and Seeger herself, who dealt mostly with customs and film censorship problems.\textsuperscript{15} Seeger's statements make clear that despite the placement of the Berlin office on the same level as foreign Mitarbeiter in the Gliederungsplan, it was in fact -- along with Stotz's Stuttgart office -- the centre of the project's organization. If this is true, then it is easy to see how Moholy-Nagy, the only specialist in photography among those listed as working at the Berlin office, and arguably the leading photographic theorist in Germany at that time, would have largely determined the show's conceptual drift. In following Jan Tschichold's advice to hire Moholy-Nagy, furthermore, given Moholy's high profile on the contemporary German avant-garde art scene, Stotz must have been aware of what he was doing.

Besides the implications of Seeger's remembrance, Moholy's centrality to the aesthetic program of the show is documented by selection committee member Hans Hildebrandt, who published at least two articles on the FIFO. Given his position and his proximity to Stotz in Stuttgart, these statements
bear authority. In one of them Hildebrandt wrote that "[d]ie Zusammenbringung und Zusammenstellung des Materials nach systematischen Gesichtspunkten wurde Professor Moholy-Nagy anvertraut....". As the *Gliederungsplan* and contemporary photographs indicate, the exhibition was designed in elegant Modernist style by Ernst Schneidler, professor in the Graphics Department at the Staatliche Kunstgewerbschule of Württemberg in Stuttgart. But Hildebrandt -- diplomatically including his colleague on the Selection Committee -- wrote that "Prof. Schneidler ... hat die Schau ebenso reizvoll wie übersichtlich nach Moholys Organisationsplan in den geräumigen Pankokschen Ausstellungshallen der Stadt gehängt." Hildebrandt also writes that the "Sammlung und Bearbeitung des Materials lagen in den Händen des Malers Prof. Moholy-Nagy, Berlin...." While this latter statement made in *Photographische Rundschau und Mitteilungen* was later qualified by a correction presumably originating in Stotz' office which read "Bemerkt sei ferner, dass der grösste Teil der ausgestellten Bilder von Gustaf Stotz (nicht Moholy-Nagy) besorgt wurde," it is noteworthy that the statements on Moholy's responsibility for the conception and overall organizational plan of the exhibition were not corrected. Thus, we can safely state that Stotz in effect gave Moholy-Nagy responsibility for curating the German portion of the material -- by far the largest -- and, in conjunction with Schneidler, for designing its layout and organisation. The critic Prodest, who seemed to have been well informed of the inner workings of the exhibition's organization, summed up the contradiction between Moholy's official and actual roles in a popular photographic journal: "Stotz erfreute sich der Hilfe gleicheingestellter Mitarbeiter, unter denen Professor Moholy-Nagy genannt sei, der nicht nur sichtend, sondern auch aufbauend in der Ausstellung beteiligt ist." Stotz's failure to give Moholy credit may have been the result of rivalries amongst the organizers now impossible to reconstruct. Despite this, the popular perception seems
to have been that Moholy was "der Leiter oder Arrangeur der Stuttgarter Ausstellung," as one critic put it. ¹⁵⁹

As Hildebrandt stated, Moholy's role was more essential than merely being responsible for the exhibition's layout. Stotz and his selection committee's intentions were to present the results of the so-called "new photography" or "neue Sachlichkeit,"¹⁶⁰ catch-phrases for several different genres of Modernist art photographic work, principally sharp-focus art photography (as opposed to the Pictorialist Kunstphotographie in vogue since the turn of the century), avant-garde art photography such as Moholy-Nagy's and Man Ray's photograms, and journalistic and propaganda photography, such as Sasha Stone's work and the imagery of Soviet photojournalist-propagandists on display in Lissitzky's Russian gallery. Stotz's programmatic statements on the exhibition indicated, however, that his intentions went beyond the mere presentation of new photographic styles; the show was conceived of as a presentation of Moholy-Nagy's "New Vision."¹⁶¹

An examination of Stotz's two conceptual statements on the exhibition reveal that they were constructed according to Moholy-Nagy's theory of a New Vision, as outlined in the two editions of Painting, Photography, Film, and in a number of articles. That the show was more than a presentation of the results of Neue Sachlichkeit photography was underlined by further projects assigned to Moholy: First, as the designer of the overall layout of the thirteen successive galleries in the exhibition, and as curator of "Raum 1," the programmatic introductory space, Moholy was responsible both for the conceptual introduction, and in effect, for the determination of the viewers' experience as she or he passed through the show. Second, Moholy designed the cover of the exhibition's prospectus and its poster, jobs which set the visual tone for the FIFO project and which were emblematic of it as a manifesto of New Vision. (Figs. 5-12, 5-14) The montage of the four-times repeated image of Georg Muche's photograph of himself and his
assistant at the Weimar Bauhaus reflected from below off the surface of a metallic sphere proclaimed its New Visual and Modernist thematics by virtue of its illustration of at least three characteristics of the New Vision according to Moholy-Nagy: the "worm’s eye" view, the fish-eye distortion on the convex surface of the sphere, and the employment of photomontage technique to create novel spatial relationships, emphasized by the diagonals of the text above it.¹⁶²

Raum 1 received the most media attention of all the exhibition spaces in this highly successful and publicized event. Moholy-Nagy mounted a text panel at the entrance to Raum 1. On this panel, fortunately quoted and so preserved by Prodest, Moholy summarized his program for the New Vision:

In this room the most important stages in the history of photography are shown. The emphasis is on the presentation of photographic elements, whose mastery can lead to synthetic photographic results. These elements are essentially the following: The possibility of producing genuine documents: static, kinetic in the modulation of light intensities, novel points of view, enlargements, microscopic and X-ray photographs, mechanical distortions of reality, direct design with light (photograms), penetrations and simultaneous projections whose predecessor is the photomontage.¹⁶³

Because of its positioning, this text -- like Raum 1 as a whole -- functioned as an introduction to the entire exhibition. On the rear wall of Raum 1, just as the visitor exited it and entered the twelve galleries which comprised the main body of the show, Moholy mounted the enlarged text "Wohin geht die photographische Entwicklung?" The use of the interrogative both invites the visitor to speculate on the future of photography in light of its past, and to judge the works in the show by the standards of Moholy's New Vision. (Figs. 5-13, 5-14) Thus the whole experience of FIFO was determined by Moholy's organization of Raum 1. As Prodest noted, "[g]leichsam einen Führer durch die Ausstellung bildet der erste grösste von Moholy-Nagy ausgestaltete Raum...."¹⁶⁴
According to descriptions Raum 1 opened with an historical overview of the development of photography assembled from Erich Stenger's collection. While Moholy employed Stenger's material, unlike the big photographic exhibitions which preceded this one, he integrated it into his overall concept of the installation. He posted a text panel which maintained that "Daguerre konnte nicht retouschieren und nicht kopieren. Daher besitzen seine Aufnahmen die starke dokumentarische Eindringlichkeit." With Talbot and Hill this purity declined and painterliness entered the picture, the text held. Prodest notices one of Moholy's rhetorical strategies:

Moholy wished to justify the sachlich approach of some of the new photography by showing its similarities to the earliest examples of the medium.

The historical preview was followed by an array of applied photographs interspersed with art photographic work utilizing material from Moholy's own collection, a good portion of it used in his book. According to one description, "[i]n diesem Saale nehmen Tatbestandsaufnahmen und Reporterphotographien einen grossen Raum ein, auch Tierdarstellungen, Pflanzenbilder, Mikroaufnahmen, Röntgendiapositive und Bilder aus dem Weltkriege." According to the FIFO catalogues Moholy showed pictures from Karl Blossfeldt's book Urformen der Kunst, microscopic and x-ray photographs by I.G. Farbenwerke (Agfa), the Lette-Verein and the Kaiser-Wilhelm Institut, aerial photographs by the Luftschiffbau Zeppelin and the Hansa Luftbild, astronomical photos by the Treptow Observ-
atory, and zoological photographs by Hedda Strauss and the Berlin Zoologischer Garten. One of Moholy’s points in juxtaposing early photographs with applied ones was that they shared in the quality of directness, and were both better for them. In their reviews Haceel and Mathies-Masuren misunderstood Moholy’s intention and complain that the curators acted as though applied photography had never been appreciated for its own, sharp, unretouched qualities in the past.

But Moholy was not suggesting this. He was suggesting that art photography should learn from applied photography to conform to the inherent qualities of the medium. The emphasis on "sachlich" applied photography was commented upon by one reviewer who noted that because the exhibition as a whole focused on sachlich photography, which is a return to its true origins of a century earlier, its focus on contemporary scientific and criminological photography is understandable.

Not only is a list of most of the exhibited works reconstructable, but in this case we know more about the installation of the works than in the previous shows because there are photographs of both the Stuttgart and Berlin showings. (Figs. 5·13, 5·15) If we look at the Stuttgart installation photograph, we see that Schneidler and Moholy designed the display stands in a modular fashion for maximum flexibility. Moholy certainly controlled the placement of the individual photos, which were arranged in three-tier rows, on panels which are either affixed to the walls, or stand freely in the space, and are easily rearranged, so that he would have been able to vary the visual effects of his arrangements. This flexibility
allowed Moholy to go beyond the standard types of installations we have seen, to do more than merely group like photo with like. Prodest has noted one of Moholy’s installation devices:

Moholy schlug einen neuen Weg ein, den Beschauer zu fesseln und auf das geeignete Ausstellungsobjekt hinzuweisen, ihn zur Betrachtung kleiner Einzelbilder zu zwingen: er brachte einzelne, besonders charakteristische Darstellungen in ganz starken Vergrösserungen auf aus den Ausstellungswänden vorspringenden Säulen an, und unmittelbar unter oder neben diesen grossen Bildern die eigentlichen zur Ausstellung gebrachten Aufnahmen.¹⁷¹

But Moholy went further than employing given architectural features and enlargements for emphasis. As we can see from the one installation shot available to us of Raum 1 at the original Stuttgart showing, as well as a view of the equivalent room at the Berlin installation that fall, Moholy embarked on a radical installation strategy in Raum 1 which recapitulated the layouts in Malerei, Photographie, Film and of his storyboard for the unrealized film The Dynamics of the Metropolis of 1924–25.¹⁷² In effect Raum 1 was a restatement of the visual rhetorical points made in these earlier projects in which he integrated scientific and other applied photographs with art and documentary photographs to produce a new artistic ensemble.

The Berlin installation demonstrates Moholy’s integration of various kinds of photographs. Here Moholy combined an historical group from Erich Stenger’s collection of Daguerreotypes, a group of art historical pictures (one can just make out a photograph of Leonardo’s Mona Lisa) and a selection of close-up plant photographs by Karl Blossfeldt, all on the wall at the left. To the right of the Blossfeldt display, at a 90-degree angle to it, are visible parts of what seem to be scientific photographs. On the wall to the right, meanwhile, is a display of Momentaufnahmen, including streetscapes taken from high points of view, photographs of animals and
Eleanor Hight calls Moholy to task on this unconventional installation practice:

These photographs by amateurs and professionals, both anonymous and known, were placed side by side without a distinction drawn between which ones were "art" and which were not. Nor was a point made about which ... were documentary, ... made with the intention of recording information or conveying a message of social relevance. In *Malerei, Photographie, Film*, Moholy had no captions at all for some photos, and for others captions that stressed solely formal elements. As a result the photos in his book, as well as those in the Fifo exhibition, were divorced from their original contexts. Despite Moholy's desire to include the work of non-artists, there is a contradiction in the way he displayed the photos as art objects within an exhibition setting. In spite of his social consciousness, he clung to the aesthetic presentation of photography; his own works were not reproduced in periodicals for the masses, but rather in art, architecture and photography journals. And he analyzed his works in aesthetic, formalist terms. In *Fifo* Moholy was providing a new context and function for photography that conformed to what he called "the new vision."  

Hight chides Moholy for decontextualizing non-aesthetic photographs, i.e. recontextualizing them in an artistic setting. But he was not interested in de-contextualizing, or in pretending that the applied photographs were meant as art. Rather, he was interested in offering them as didactic visual models for artists. Of course, one of the -- perhaps unintended -- results of Moholy's practice was an "aesthetization" of applied photographs. But he also succeeded in his original intention and contributed to the shift in the aesthetics of art photography towards a sharp, unmanipulated documentary style. Given that Moholy's subtext was the biocentric Monist concept of the unity of the world, rather than decontextualizing them, he was recontextualizing them within the biocentric discourse.

Returning now to the Stuttgart installation photograph, at the right we see a panel with X-ray transparencies from I.G. Farben and the Lette-Verein of an applied nature, the
individual pieces artfully arranged in four sections. One section contains a near-life-size x-ray of a human being, and the others asymmetrical arrangements of three to six x-ray images each. A panel at left contains criminological shots, and the end of the free-standing display stand at left contains what look like four aerial views. Adjacent to this Moholy set up a panel including three of his own photomontages of the mid 20s: Traum des Mädchenpensionats of ca. 1925 at top, Huhn bleibt Huhn, also of 1925 at centre, and Pneumatic of ca. 1923, apparently a poster design for a tire company, at bottom. Huhn bleibt Huhn incorporates a found x-ray of a swan and is an example of how an applied x-ray image can be incorporated into the structure of a bona fide art work. (Fig. 5-16) By placing such an aesthetic usage of a found x-ray photograph across from purely applied x-ray images, Moholy made the point that applied photographs can either be utilized or regarded aesthetically. Also, by placing what is clearly an artwork incorporating an applied photograph, among what are evidently applied photographs, and by locating this display of mostly applied photographs within a show of art photography, Moholy constructed a kind of Chinese box of alternating artistic and non-artistic elements, an interplacement so complex as to effectively blur discursive boundaries. In this sense the whole installation functioned as a signifier for his opposition to the compartmentalization of knowledge. But Moholy also warned against the blurring of boundaries between fields of creative activity; each should stay true to its conditions of production. Applied photos were to be studied because they were the unselfconscious products of imaging technologies. By opening them to formal scrutiny while respecting them as non-art, Moholy succeeded in enriching art without miscontextualizing scientific imagery.

While this installation participated in the general discourse of what we now refer to as photography of the New Vision, itself seen already at the time as part of the Neue
Sachlichkeit trend, there was something here that differed from typical Neue Sachlichkeit views of the world as beautiful or as ugly, but in any case as familiar or recognizable, and this was the "strangeness" of botanically-inspired close-up nature photography, such as the work of Blossfeldt (also included in this room), and of scientific photography. As Hight has pointed out in Picturing Modernism, this is parallel to Schlovsky’s notion of "making strange."

That Moholy succeeded in making these rhetorical points is confirmed by the (sometimes negative) contemporary critical reaction to Raum 1. Indeed the radicality of Moholy’s installation strategy was intuited by reviewers, some of whom called him to task for implying that applied photos could be appreciated for their formal rather than their documentary value. Some, like "Professor Spörle," did not understand: the Frankfurt exhibition showed more scientific photography, the curators value purely documentary photography aesthetically, "Ein Chaos!" he writes. Others, such as Haceel and Mathies-Masuren understood Moholy’s intentions better, but disagreed with them. They see art and applied photography as separate realms and protest the usage of the latter as models for the former:

The importance of photography for ‘science and technology’ is a fact that has been recognized for some time. The exhibition contains valuable examples as proof of this, that do not, however, distinguish it from previous exhibitions.... [He now speaks of criminological photographs:] They should not be seen as anything but functional, and should certainly not lay claim to be seen to be "aids to the development or education [Erziehung] of a photographic culture" as proposed in the text panels.

In one negative review of the Stuttgart installation of the show, while discussing the new trends in art photography shown in the exhibition, such as photograms, abstract photos and Neue Sachlichkeit, E. Haceel wrote in the next paragraph:

Die in Stuttgart gezeigten Arbeiten aus dem umfangreichen Gebiet der wissenschaftlichen Photographie
bleiben ausser Diskussion. Sie sind Zweckgebilde und haben daher mit Photogrammen und 'neuer Sachlichkeit' keine Berührungspunkte, höchstens hier und da formale. Trotzdem finden wir unter den wissenschaftlichen Arbeiten manches ausdrucksvolle Stück. Doch hätte man derartige Arbeiten nicht erst heute zeigen können. Es handelt sich bei ihnen also kaum um Werke der 'modernen' Photographie.279

At least one critic, Dr. Ludwig Neundörfer, however, saw the applied photographs as the most interesting images in the show, and bemoaned the fact that such images were not distributed beyond Raum 1, throughout the exhibition.380 Picking up on the biocentrism inherent to the New Vision, Willy Rietzler of the Deutsche Werkbund emphasized that scientific images were to be appreciated as reminders of the perfect harmony of nature rather than for their formal values.381

This aestheticization of applied photographs subsequently made it possible for imagery produced by amateur photomicrographers employing equipment normally utilized in scientific activity such as telescopy, radiography and photomicrography, to enter the discourse of art photography. While the imposition of Nazi cultural policy drove the avant-garde underground or into exile (as it did Moholy), this new aesthetic of art micrography, art telescopy and art radiography survived Nazism even in Germany, where disguised -- as scientific photography, whose publication in art photographic periodicals such as Das Deutsche Lichtbild had been legitimized by virtue of Moholy's writings -- Karl Strüwe was able to publish his art micrographic images in 1937 and 1938. Thus, and this is an important point to make, Moholy did not "appropriate" scientific photography to the discourse of modernist art photography, but rather he made it worthy of attention. This attention was not merely formal, but also treated such images as signifiers of biocentric ideas of world harmony. He did not commodify them as Nierendorf did Karl Blossfeldt's Musterbilder and as the Surrealists did the work of Eugène Atget in 1925, for he was not interested in making these images into art.382 Moholy was
interested in them as signifiers of the unity of the world and as means to extend the complexity, richness, and scope of the senses, to educate a new vision.

Thus New Vision emerges from the interpenetration of the discursive spaces of art, applied, and amateur photography, scientific imaging, biocentric Constructivism and biocentrism. Moholy meant it to promote interdisciplinary understanding while respecting the distinctness of creative methods. The contemporary reception of New Vision, positive and negative, indicates that viewers understood the radicality of Moholy’s message.

In these installations, Moholy combined the images in new ways to make points about the locus of aesthetic enjoyment and the boundaries between art and non-art. What the curator of the Itten-Schule exhibition, what Walter Dexel at the Jena Kunstverein, and what Ernst Wilhelm-Kästner at the Museum Folkwang had not done in their exhibitions over the previous year-and-a-half, Moholy now had the chance to do. As suggested, it was his own book which acted as the principal precedent to the installation of photographs in Raum 1, and not other photographic exhibitions of the 1920s, as has been previously assumed. While exhibitions such as that in Berlin in 1925 and Frankfurt in 1926 did include both scientific and art photography, works of different genres were installed in separate rooms, often in separate wings of the exhibitions halls. While the exhibition at the Itten Schule of 1927 was significant in that it integrated art, architecture, art photography and applied, including scientific photography in one small show, as far as one can tell, they were not installed in an integrated fashion, but rather in separate groupings, as was "Neue Wege der Fotografie," held at the Jena Kunstverein in 1928.

It is safe to assume that a cultural event of this prominence in Germany and Central Europe at a time when photography was the fashion, would have been visited not only by those
interested in photography per se, but by a broad range of arts-related professionals such as painters, writers and musicians, even if it is impossible to document just who saw it. While Stuttgart may seem marginal to artistic centres, it is worthwhile pointing out that France and Switzerland were nearby, that the FIFO was remounted in Berlin later that same year and that the material subsequently toured to Zurich, Zagreb, Vienna, and Danzig [today's Gdansk]. I would hold that this dissemination of scientific imagery contributed to the surge in the production of biomorphic Modernist art starting around 1930 noted by art historians.

3. Kállai from Technoromantik to Bioromantik

A crucial example of the effect that Moholy's installation in Raum 1 had on art professionals is his -- at this point, former -- friend Ernő Kállai. For Kállai Raum 1 was the site of an epiphanic experience in which the visual analogy between abstract art and scientific photography first became apparent to him. This experience led Kállai to speculate on the reasons for this visual conjunction. The biocentric world view which he had adopted in stages since 1925 led him to the psychobiological conclusion that these analogies were due to the rootedness of human activity in the Bios. The trend in artistic production which he saw as evincing this phenomenon -- mostly biomorphic Modernist works -- he termed Bioromantik. "Bioromanticism" was, in effect, the first coherent theory of biomorphic Modernist art. As we have seen, in 1931 Kállai proposed, and in 1947 he realized an exhibition juxtaposing the products of scientific self-imaging technologies and abstract art, in order to legitimate the art as an accurate reflection of reality.
a. A Gradual Disillusion

We have seen in Chapters One and Four that during the early 20s Kállai privileged the technological side of what he saw as the nature/technology dialectic, rejecting nature as a model for artistic creativity, distancing himself from the biocentric Constructivism of his friends and colleagues such as László Moholy-Nagy, Lazar El Lissitky and Mies van der Rohe, and siding instead with the Paris Purists and the de Stijl artists on this issue.\(^{184}\) However, like Moholy, Kállai's familiarity with the Nietzschean, \textit{lebensphilosophisch}, Monist and Neo-Vitalist discourses would have dated from his Hungarian avant-garde days. Indeed, as a teacher interested in \textit{reformpedagogisch} approaches to the teaching of art to children, he would have been aware of aspects of the \textit{Reformbewegung} that Moholy had known of. As with Moholy, it was more than likely this pedagogical concern that brought him into contact with the work of Hans Prinzhorn and his book \textit{Die Bildnerei der Geisteskranken}.\(^{385}\) As mentioned in Chapter Four, a Monist undertow is discernable in Kállai's "anti-natural" Communist-Constructivist writings of 1922-23. But it was Kállai's engagement with contemporary art and with Prinzhorn's Klagesian biocentric psychology that led him to what he saw as technology's antithesis, to a biocentric view of "nature."

Éva Forgács dates the start of Kállai's disenchantment with technocentric Constructivism to the summer of 1923, with the appearance of "Korrekturát! (a de Stijl figyelmébe)."\(^{186}\) While this text does proffer a "corrective" to a purely aesthetic variant of Constructivism (what he designates as the "Exclusive Constructivism" of, e.g., the artists around de Stijl), it does not propose a re-spiritualization of nature or even of the biological ground he assumes in the article, however. Rather, it promotes Leftist social engagement as a corrective measure. While at the end of his article "E-T-I-K-A?" [E-T-H-I-C-S?] Kállai reaffirms the importance of a social-utopian orientation for Constructivism, he does not do
so at the expense of a concern for nature. This orientation, he writes, still "leaves open the question of relations to nature and psychological problems, as anyone's private affairs."\(^{187}\) And in his article on Wilhelm Lehmbruck published at the end of 1923, he displays this nuanced approach. While criticizing the pathos into which he saw Lehmbruck's art descending towards the end of his life, he nevertheless valorized the ethical intent and its formal realization in the artist's work.\(^{188}\) Such a valorization, even if equivocal, marks the shift in his thinking from thesis to antithesis.

The nuanced approach he was taking by late 1923 evolved by 1925 into a fundamentally new, antithetical position. In his 1924 treatments of the Hungarian artists József Egry and Aurél Bernáth, Kállassi emphasizes their close link with nature, seeing it as a characteristically "pagan Magyar" trait. In the short piece on Bernáth, he articulates for the first time -- and without judgement -- a full-blown biocentric position:


When writing of Moholy-Nagy's Constructivist art Kállassi concludes by describing it as a "refreshing view of an as healthy a decentralization of community spirit and communitarian life as is possible."\(^{190}\)

By early 1925 Kállassi had developed this anti-doctrinaire position into what was in effect a psychobiological stance, necessitating the rejection of utopian ideology as a directive force of art. In its stead he specified technical ability,
"quality," and a promotion or embodiment of awareness of the dialectical complexity of reality (its "divine" as well as "demonic" sides), as the characteristics of good art.19: "The artistic dictatorship of Constructivism, or any other tendency, just as much as architecture or film or theatre, is an ideological castle-in-the-air, a utopia, a fiction. Opposed to it is the multi-faceted reality of objective and psychological determinants." He questions the ability of the Marxist project to be able to change this. "The duality of intellect and feeling, technology and art, profit-motivated goal-directedness and free impulsiveness, still stands."192 This psychologically based epistemology was the turning point, at which as Forgács points out, Kállai "gave up political involvement."193

For the time being, however, Kállai occupied a critical position analogous to that of biocentric Constructivism with respect to his views on architecture. That this was a fluid, equivocal position is demonstrated by the fact that in 1925, in "Organisation, Natur, Gestaltung," Kállai began to formulate an alternative to a purely technocentric Constructivism's obsession with organization.194 As the biocentric Constructivists had, in this article Kállai called for a synthesis of the utilitarian and the organic:

Unstreitig haben diese konstruktivistischen Plastiken und Gemälde ... ein beispiellos abgewogenes, schwebendes Gleichmass der Proportionen, eine leuchtende Klarheit im Zusammenspiel aller Teile. Doch sie besitzen nicht das Moment der Spannung zwischen intellektueller Disziplin und triebhaften Ungestüm, zwischen Organisation und Natur. Auch diese Spannung aber gehört zum Wesen technischer Zweckformen ... von denen der Konstruktivismus seine entscheidenden Anregungen empfing. Dieser Mangel erklärt den empfindlichen Rückgang an Vitalität ... den der Konstruktivismus bereits nach wenigen Jahren seines Wirkens erleiden muss, so fruchtbar er auch im übrigen ... noch sein mag. Das System von klar und exakt organisierten, aber abstrakten Spannungen im konstruktivistischen Kunstwerk muss die stoffliche und gegenständliche Fülle des Einmaligen, Bestimmten, Natürlichen in sich aufnehmen und verarbeiten. Gelingt die Synthese, so haben wir eine neue Klassik.
Occupy a biocentric Constructivist position with respect to architecture, in 1926 Kállai developed his earlier tendency to "vitalize" Constructivism in his critical writing. In an article on Gropius' former employee, the Modernist Hungarian architect Fred Forbáth, Kállai identifies him as working in the tradition of functionalist organic architecture, and he refers to a vital force working through the individual architect, resulting in a period style; what he would later term a "constructive" or "technoid drive."

Kállai did not espouse a biocentric Constructivist position in the realm of the fine arts, however. The combination of pessimism and optimism inherent to the position outlined in "Organisation, Natur, Gestaltung," prevented Kállai from espousing the Francéan/Uexküllian variant of naively optimistic functionalist biocentrism alone. In his writings on the visual arts, it was the kulturpessimistisch, Klagesian/Prinzhornian variant of biocentrism cognizant of a "demonic" side to "nature" and critical of "unsere technomaniakischen, kapitalistischen Zeit," which Kállai tended towards.

The earliest manifestation of a clearly articulated Kállai's renewed interest in artistic form and quality is his 1927 article on the German sculptor Ewald Mataré, Josef Beuys' future professor. This marks the start of his valorization of a "synthetic" art which culminated in his definition of Bioromantik as a trend. "Die Natur ist Matarés Alpha und Omega," writes Kállai approvingly, "er kann selbst das obligate abstrakte Baugesetz entbehren und bleibt trotzdem streng und sachlich bis zur letzten Geschliffenheit der Form." He continues the development of this line of thought in his review of the Itten Schule exhibition of February 1928 in which Kállai observed, "Die Plastik beschränkt sich auf einige
Arbeiten von Ewald Mataré. Eine glückliche Wahl allerdings, denn diese harmonischen Köpfe und Tiere gehören zu den sehr wenigen Beispielen moderner Holzplastik, die ein vollrundes Volumen von sparsamster, beinahe abstrakter Formung mit tiefstem Naturgefühl vereinen." Of Mataré’s wooden statue of a cow he wrote in 1927 that:

Er hat feines Empfinden für die Verschlossenheit selbst des Haustieres in einer Welt, die wir nur erahnen können als tief beharrungsvolles Dasein von triebhafter innerster Notwendigkeit und ewig gleichmässigen Ablauf. Mataré folgt mit hingebungsvoller Bewunderung. Beobachtet tag- und wochenlang, um die ganze Erscheinung des Tieres in einem letzten plastischen Vollklang regungsloser Statik zu erfassen.\textsuperscript{100}

It is with a discussion very close to this one of Franz Marc’s painting Der Stier, that Kállai would open his article "Bioromantik" in 1932. (Fig. 3-1) Indeed it is this expression of a link between compact, rounded forms and a feeling for nature, that constitutes his bioromantic conception in its earliest form, before his discovery of the naturamorphic analogy, and it appeared just weeks before he was hired to the Bauhaus by Gropius’ successor Hannes Meyer, early in April 1928.

b. Kállai at The Hannes Meyer Bauhaus

A change in the collective feeling of universality is first visible in art and science because they are the freest human activities and least connected with the social associations of an era. When man changes his fundamental attitude towards life, this new mentality reveals itself primarily in artistic and scientific creations. (Ortega y Gasset)\textsuperscript{202}

After his resignation in 1928, Walter Gropius chose the radically biologistc Swiss architect Hannes Meyer as his successor at the Bauhaus. Meyer in turn hired Kállai to be the editor of bauhaus and the school’s publicist.\textsuperscript{203} (Fig. 5-17) That Kállai still espoused a biocentric Constructivist posi-
tion in the realm of architecture and city planning is demonstrated by the fact that he accepted the job offer. We have seen in Chapter Four that Meyer drew on the English Garden City movement -- particularly on the Anarchist biocentric urban theory of the Scottish writer Patrick Geddes -- and on the functionalist biocentrism of Raoul Francé, as transmitted by El Lissitzky to the Swiss avant-garde architectural circle around the journal ABC. But there were other reasons Kállai would have been attracted to Meyer's Bauhaus. First, Kállai admired him. In a letter to Naum Gabo he wrote that "Hannes Meyer ist ein Mensch, vor dem ich tiefsten Respekt habe. Sein Wissen ist einfach phantastisch, und dabei hat er eine wirklich unverbaute, warme Menschlichkeit." Also, like Kállai, Meyer was keenly interested in the biocentric psychological theorizing of Prinzhorn and Klages.

Around the time of his appointment to the Bauhaus faculty early in 1927, the technological utopianism of Meyer's 1926 manifesto "Die neue Welt" tempered as his belief in an organic Socialist utopia based on biological determinism and Francéan functionalism intensified. Meyer published two articles in the Kállai-produced bauhaus, of which he was the publisher and editor-in-chief during his directorship of the school. Both display a continuation of the thoroughly Francéan conception of architecture he had adopted in Switzerland. In Meyer's "bauen," which appeared in the June 1928 issue of bauhaus, soon after he assumed this position, Meyer declared that

all life is function and therefore unartistic. ... building is a biological process. building is not an aesthetic process. designed in an elementary way, the new dwelling house becomes not merely a machine for living in but also a biological apparatus serving mental and bodily needs ... we organize ... constructional elements according to economic rules into a constructive unity. thus the only possible form arises automatically, determined by life.... this functional-biological conception of building as forming life processes leads logically to pure construction.... pure construction is the basis and marker of the new world of forms.
Meyer concludes the article with the thoroughly anti-aesthetic slogan "building is merely organization: social, technical, economic, psychical organization." As long as Meyer limited his discussion to the realm of building, this totalizing functionalism harmonized with Kállai's views. However, inasmuch as Meyer began to apply it to other realms, or rather, to deny the importance of the fine arts, and after -- in 1929, with a closer reading of Prinzhorn -- Kállai began to apply Prinzhorn's system to architecture -- the tensions between the two began to mount.

Nevertheless they did agree on the fundamental biological rootedness of humanity and our activity. Indeed despite Gropius', Moholy's, Bayer's and Breuer's resignations, the more Klagesian biocentric figures such as Schlemmer, Klee and Kandinsky -- though wary -- remained, and Schlemmer's shifts in attitude over time may reflect those of his colleagues. As Paul Klee wrote in the first issue of bauhaus published under Meyer -- invoking the Klagesian dichotomy between Geist and Seele -- "Wir konstruieren und konstruieren und doch ist Intuition noch eine gute Sache," a synthetic position identical to Kállai's. Kállai found his place in the company of the Schlemmers, with whom he lived after his arrival, in whose company he was photographed by Josef Albers, and with whose resignation from the school his own coincided.

Meyer is usually seen to be a materialist Marxist tout court. And indeed, in his article "bauhaus und gesellschaft" published in the January 1929 issue of bauhaus, Meyer writes that "as designers our activity is socially determined...." However, rather than a Marxist dialectic, underlying this manifesto is an epistemology that is undialectical, indeed totalizingly biologic. The ethics emerging from this biologism sees social harmony in Francéan terms as resulting from the imitation of harmony and optimal balance in nature:

all life is a striving for harmony. growth is the striving for a harmonious consumption of oxygen +
carbon + sugar + starch + protein. work is the search for a harmonious form of existence. ... the goal of our bauhaus activity is the pulling together of all life-forming energies to effect a harmonious development of our society. ... the new architectural model is an existential epistemology, as a model of design it is a lofty song of harmonics. as a social model it is a strategy of balance [ausgleich]. ... its design means are -- consciously applied -- the results of biological research. since this architectural model is so close to life, its theses are in constant flux; since its realization is situated in life, its forms are as abundant as those of life itself are.

Meyer could not have made his Francéan functionalist biologism more apparent. His goals are -- like Francé's -- social harmony, and the model on which to base such harmony is -- again like Francé's -- biological. Unlike Francé, who leaned to the Right, however, Meyer was a committed Leftist, another instance of the political variability of biocentrism discussed in Chapter Two. Also unlike Francé, but like Moholy, Meyer lacked kosmische Einheitsgefühl; he lacked Vitalmystik, and this distinguished him from other Bauhaus biocentrics such as Kállai, Klee, Kandinsky and Schlemmer, and no doubt contributed to the split between Meyer and them.

During his first months at the Bauhaus, Kállai celebrated and promoted Meyer's sachlich, utilitarian, social organicism as a necessary element of the world's dialectic as he saw it. This celebration was articulated not only in biocentric functionalist terms, however -- and this highlighted their differences -- but in clearly vitalmystisch ones as well. Thus, in 1928 Kállai wrote that "Hannes Meyer sees the image of a multi-layered, yet unified, ensouled, collective organism before himself."

Kállai was not the only one to understand Meyer's social project as based on an Organicist, Holist view of the world. Stefan Kraus points out that "Meyer wollte Funktionalismus nicht als Ausdruck formaler Prinzipien verstehen, sondern als Ergebnis einer Auseinandersetzung mit den Strukturen des
This structure of life was to be understood through a systematic program of study outlined already in "Die neue Welt" and developed in subsequent texts. Meyer propounded a holistic and complex strategy of study -- what we would now refer to as an ecological approach -- involving psychology, philosophy, biology, physics, sociology and the application of these to the teaching and understanding of architecture. The realization of this approach at the Bauhaus made for an exceptionally lively intellectual atmosphere and gave Kállai the opportunity to immerse himself in the debates around biological determinism, psychobiology, and "free" art versus organization and efficiency-driven activity then raging in Weimar Germany. Thus, while there, the development of Kállai's biocentric worldview was nurtured.

Meyer sought to realize this program through two major means. First, he asked the three full-time Bauhaus masters, Oskar Schlemmer, Paul Klee and Wassily Kandinsky (all of who, we have seen in Chapter Three, were biocentrically minded), to teach one semester each of a three-semester basic course. Schlemmer was assigned the third semester, the subject of which was to be "man" or "mankind in the world." Second, Meyer undertook an ambitious lecture program.

That Meyer meant Schlemmer's course to educate the students in his own complex approach is indicated by Schlemmer's trepidation expressed in a letter to Baumeister that his "duties [under Meyer] are to include publishing, public relations, and unfortunately also pedagogy-demagogy." Schlemmer's initial concerns seem not to have been justified. Shortly after he first began teaching the course, in May of 1928, it still seemed open-ended, and so it was bound to reflect his own brand of biocentrism. Schlemmer was teaching areas which may not be absolutely essential but which fascinate me: internal anatomy, physiology, and especially psychology, not to forget philosophy in general. I have to dig all this out for myself; some of it is hard to get at, due to the complexity of the various branches.
I am curious to see where it leads, what picture of the world emerges by the end of the semester, and whether anything both personal and universal can be extracted from the contradictory opinions of the scientists and philosophers.213

Indeed Schlemmer’s organic slant within his avowedly synthetic ideal discussed in Chapter Four is attested to by his diary entry of 26 March 1928, around the time he was asked to start planning his new course:

Manet-metaphor: oyster, asparagus, peach. Léger-metaphor: clamp. One cannot ask the former to be the latter, and vice-versa. But one can say that although the oyster, the asparagus, and the peach may not be "more beautiful," they are eternal. The clamp, though made of iron, will "pass," made obsolete by a newer invention, but the peach will remain, demonstrating each year anew the law of organic growth.216

The concept of this course, along with Schlemmer’s famous "Schematic Summary of the Subject ‘Man’," was published in the first Meyer/Kálai issue of bauhaus, which appeared on 1 July 1928.217 (Fig. 5-18) "Für das ‘neue leben’," wrote Schlemmer ist die kenntnis des menschen als kosmisches wesen unerlässlich. seine existenzbedingungen, seine beziehungen zur natürlichen und künstlichen welt, sein mechanismus und organismus, seine materielle, spirituelle und intellektuelle erscheinungsform.... es gliedert sich ... dem naturwissenschaftlichen aufbau und der transzendenten ideenwelt in drei teile, den formalen, den biologischen und den filosofischen teil. im unterricht laufen die drei teile wechselweise nebeneinander, um sich zuletzt zur totalität des begriffes mensch zu vereinen.218

Schlemmer based the course in the Monist biocentric philosophy of Ricarda Huch, an important figure in Klages’ and George’s "Kosmische Runde" in fin-de-siècle Munich, and her dictum that "Der Kosmos ist eine Dreieinheit aus Geist, Natur und Seele."219

Like Meyer’s Bauhaus lecture series, the curriculum included instruction in the natural sciences, philosophy and psychology, Schlemmer’s readings for which reflect the larger biocentric discourse of the time. The Haeckelian Monistic,
i.e. biocentric nature of Schlemmer’s position is underlined by his plans to teach "heredity, racial theory, reproductive biology, ethics and so on" in his course, a list of topics and concerns typical of the contemporary biocentric discourse. The philosophical instruction ("naturphilosophisch" as Kuchling points out) focused on the history of the Monistic versus the Dualistic conceptions of nature. Schlemmer’s teaching of psychology also articulated the Monist/Dualist controversy in the field, coming out squarely on the Monist side, as indicated by the fact that half of the psychology reading list consisted of Klages’ works and those of his avowed master Carl Gustav Carus. Kuchling characterizes this curriculum accurately. For Schlemmer

... der Mensch ist eine Ganzheit für sich und zugleich Teil einer größeren Ganzheit, des Kosmos, der als universales Bezugssystem gedacht werden kann. Der Begriff ‘Kosmos’ birgt den Gedanken einer universalen Ordnung in sich.... Um diese Weltschau ... den Schülern begreiflich zu machen, baute Schlemmer d[ie] ... "Lehre vom Menschen" aus.... Die Wissenschaften sollten ... den Menschen als "kosmisches Wesen" ausweisen. Die Naturwissenschaften sollten zeigen, dass der Mensch integrierender Bestandteil der Natur ist. Die philosophischen Lehren sind ein Versuch ... alles Exzisterende als eine Einheit zu begreifen. Die Psychologie sollte einen Einblick in die seelische Struktur des Menschen und in sein Verhalten zur Welt geben. Though without employing the terms, Kuchling describes Schlemmer’s program as Holist, Organicist and Monist, that is, as a biocentric one.

The lecture series -- assembled by Meyer with Kállai’s assistance -- reflected Meyer’s interests and -- as the pages of bauhaus did -- echoed the tensions between Kállai and Meyer. Leaving the lectures by artists, critics, filmmakers and architects aside, the non-aesthetic component of the series opened with a series of talks on the subject of the functionalist organization of life and work. On 29 November 1928 the physician Rudolf Neubert spoke on "Lebendige und
This technical lecture on body and health-centred design was followed in February 1929 by Hanns Riedel’s talks on the related theme of "organisation der arbeit." Still on this subject, on June 6 the biologic and anti-anthropocentric agricultural labour theorist Konrad von Meyenburg, one of whose promoters was Raoul Francé, spoke on the "Grundlagen der Arbeit und Arbeitsforschung".

But it was not only Francéan functionalism that Meyer espoused within the biocentric discourse. Probably through a reading of Prinzhorn’s 1927 book Leib-Seele-Einheit. Ein Kernproblem der neuen Psychologie, Meyer became interested in Prinzhorn’s Klagesian biocentric psychology and the intention to invite Prinzhorn to the Bauhaus was announced in the 1 October 1928 issue of bauhaus already. Possibly encouraged by Meyer to publicize the upcoming lecture, Kállai reviewed Leib-Seele-Einheit in his article "Bauen und leben," which appeared in the following, 1 January 1929 issue of bauhaus. This proved to be a crucial encounter for Kállai, and it contributed to his eventual split with Meyer.

Though Prinzhorn was not new to Kállai (he had reviewed Die Bildnerei der Geisteskranken in 1923), it was through a close reading of this book that Prinzhorn and his thoroughly Klagesian biocentrism came to exercise a profound effect on Kállai’s view of architecture. If Meyer’s enthusiasm encouraged Kállai to review Prinzhorn’s book, Kállai turned his understanding of the book back on Meyer’s architectural instrumentalism. Kállai opens "bauen und leben" with an exposition of Prinzhorn’s thesis:

"Hans Prinzhorn spricht in seinem ausgezeichneten Buch "Leib-Seele-Einheit" von der notwendigen vollendung des gerüstes für ein weltbild, das "die erlösung vom alpdruck des abendländischen intellektualismus böte". Er gebraucht den begriff des "bewusstlos bildenden lebens" und behauptet mit klages, dass "alle echten lebensvorgänge ihrem wesen nach unbewusst, zweckfrei, zwangsläufig, in sich geschlossen seien. Er sieht den menschlichen geist in feindlicher spannung zu solchen lebensvorgängen. "alle
verzerrungen des daseins aus ressentiment, aus fal-
scher vergeistigung, aus übermass von bewusstem
zweckdenken, aus schliefem moralischen zwang, aus
willensüberspannung in machtiger oder selbstquäl-
ischer askese -- kurzum alle schwächungen des lebens
von unschuld und fülle zu schlechtem gewissen und
kargheit" sind auswirkungen jener grossen gegen-
macht, des geistes, der uns in die seit der fran-
zösischer revolution währende kultur- und mensch-
heitskrise gestossen hat.230

Kállai is here referring to Prinzhorn's articulation of Klages' ideas which would soon receive monumental expression as Klages' Der Geist als Widersacher der Seele. Kállai, furthermore -- and this is crucial -- accepts Prinzhorn's call for a new Lebenslehre (a term also employed by Francé), which will lead people to a Weltsicherheit (a sense of being secure in the world), a model for living which, and he again quotes Prinzhorn, would be "'im einklang mit den grossen rhythm en des naturlaufs und mit allem lebenden gebilde': "prinzhorns forderung nach einer neuen lebenslehre ergibt sich aus unbe-
dingt stichhaltigen, wesentlichen erkenntnissen unseres leb-
ens."231:

Developing his earlier biocentric Constructivist writings
on architecture, Kállai goes on to examine the implications
this kulturpessmistisch Klagesian biocentrism had for a purely
functionalist Francéan-Meyerian understanding of the new
architecture. Accordingly he issued the warning that even the
functionalist architecture he supports is subject to the
geistig transgressions against and blindness to Leben outlined
by Prinzhorn, that in its practice it should take into con-
sideration the deep, unpredictable, nature-rootedness of human
life: "ob luxushäuser im sinne le corbusiers oder volkswohn-
ungen im sinne ernst mays, ob traditionalistisch oder modern-
istisch: man baut im sich praktische fiktionen der ordnung und
übersichtlichkeit vor, während das leben in unberechenbaren
wucherungen gegen unsere konstruktionen antreibt."232

In mid-March Prinzhorn gave his lectures. On the 15th he
spoke on "Leib·Seele·Einheit," the Monistic and biocentric
tradition of psychology, and the next day he lay the "Grundlagen der neuen Persönlichkeits-psychologie" in his presentation.\textsuperscript{231} After hearing these talks Meyer could hardly contain his enthusiasm. In an outline prepared a month afterwards for a lecture on the Bauhaus to be given in Vienna and Basel that same year, Meyer wrote of the importance of psychology for teaching architecture: "Die neue baulehre ... muss seelenkunde vermitteln, und auf der grundlage der leib - seele - einheit (carus - nietzsche - klages - prinzhorn - adler - freud), psychologische unterlage zur kenntnis vorbauen ...."\textsuperscript{234} It was biologistic psychology in general, and a Klagesian biocentric variant of biologistic psychology in specific, that Meyer was promoting.\textsuperscript{235}

In "Das Bauen und die Kunst," the follow-up article to "bauen und leben," Kállai was also enthusiastic concerning Prinzhorn's thought, but less so with respect to Meyer's particular understanding of it, even concerning architecture. Thus, while Kállai explored the implications Klages' and Prinzhorn's biocentric critique of Geist had for painting and sculpture, he also commented on the futility of rational planning in the face of universal life -- an implicit critique of the architectural and social strategies Meyer was (and Kállai was supposed to be) promoting. Thus it is not surprising that this article appeared in Kállai's independent journal, \textit{Der Kunstnarr}, whose only issue appeared in April 1929, rather than in bauhaus.

It was in this article that the ideas Kállai had been developing since 1925 in "Organisation, Natur, Gestaltung," in his writings on Mataré, and in "bauen und leben," coalesced into an expression of his Bioromantik conception of art. As an indication of their importance to him, this text repeats passages from \textit{Leib-Seele-Einheit} he had quoted already in "bauen und leben":

\begin{quote}
Malerei und Plastik ... [können] aus reichstem Mit- erleben aller realen Zwangsmomente erfolgen und die
\end{quote}
To an even more radical extent than in his writing on Mataré, Kállai passed over from technocentrism to biocentrism; to the promotion of art the way Francé conceived of it, i.e. as an activity which reminded us of our essential groundedness in the rhythms of Life and Nature.237 That Kállai was anti-Nazi, while Francé and Prinzhorn later associated themselves with Nazism, that Kállai's aesthetic was determinedly Modernist, while Francé's was conservative, did not alter the basic identity of their views on the role of art.

Prinzhorn's and Klages' books also would have informed Kállai of psychological and scientific discourses which subsequently made their appearance in his writings, and which informed his biocentric position. Thus, through Prinzhorn's writings and lectures Kállai could also have become aware of the related psychology of Carl Gustav Jung, whose concepts of the "collective unconscious" and of the "shadow" (the latter perhaps first used by Kállai in conjunction with a critique of Moholy-Nagy's art in "Das Bauen und die Kunst"), affected the development of his idea of the "demonic."238 Klages' and Prinzhorn's biocentrism also drew on contemporary science to justify its position. In Leib-Seele-Einheit Prinzhorn dealt in detail with the latest research results in biology and the natural sciences, which he saw as supporting the Monism of body and soul.239 Thus, Prinzhorn noted important developments in medicine and the natural sciences, especially physi-
ology, *Biologie der Person*, endocrinology, and genetics made since the turn of the century which indicated the grounding of the psyche in the physical and vice-versa, and this must have acted as an incentive to Kállai to start to follow these fields in the press himself. Indeed, in conjunction with the expression of his disillusion with a purely functionalist architecture and with politics in general in "Das Bauen und die Kunst," echoing the Spanish Vitalist philosopher Ortega y Gasset, Kállai pinpointed art and science as fields of activity where an "inner freedom," and hence progress, was still possible: "Diese Disziplinen reichen trotz ihres Missbrauchs durch wirtschaftliche, politische und soziale Machtfaktoren in jene Sphäre rein geistiger und seelischer Wesensschau, die eine idealistische Gestaltung nicht nur möglich, sondern auch notwendig erscheinen lasst."

As the crisis among the faculty over Meyer's leadership deepened after the Prinzhorn lectures, Meyer broadened the base of the lecture program. Around the time that Schlemmer and Kállai resigned, he embarked on a set of lecture series to be given by members of the "Verein Ernst Mach," the "Viennese School" of logical positivism: Herbert Feigl, Rudolf Carnap, and Otto Neurath. The sociologist and long-standing Bauhaus supporter Otto Neurath initiated this series with a lecture on 27 May 1929 concerning the public presentation of statistics as social indicators, in his lecture "Bildstatistik und Gegenwart." Carnap and Feigl, like Prinzhorn, addressed more philosophical issues. Indeed some of their topics seem to have been chosen as challenges to the types of views presented by Prinzhorn. The philosopher of science Feigl came for a week in July. On the 3rd he presented his "Wissenschaftlich Weltauffassung," one which he would have opposed to the biocentric position of Prinzhorn even though Prinzhorn's was also based in contemporary science. In his lectures of the 5th ("Naturre[...], 27th ("Leib und Seele"), Feigl addressed important issues common to Monist biocentrism
and Monist logical positivism (his "mind-body Monism"\textsuperscript{242}), namely the question of free will within a context of biological determinism, and of the body-soul problem within a scientific and materialist Monism. But Feigl placed an emphasis on the new physics and mathematics of Albert Einstein and Hermann Minkowski, lecturing on "Physikalische Theorien und Wirklichkeit" (4.7.29), "Zufall und Gesetz" (6.7.29), and "Raum und Zeit" (8.7.29).\textsuperscript{243} In the series of lectures Carnap gave in October, he also addressed Minkowski’s time-space continuum in "Die vierdimensionale Welt der modernen Physik" (18.10.29). Carnap, furthermore, offered introductions to what have since become known as essential elements of Logical Positivism, "Der logische Aufbau der Welt" (17.10.29), and "Der Missbrauch der Sprache" (19.10.29). Finally, he spoke to the question of the relation between science and society, a central concern of the Mach Society, in "Wissenschaft und Leben" (15.10.29) and "Aufgabe und Gehalt der Wissenschaft" (16.10.29).\textsuperscript{244}

As Galison has pointed out, Rudolf Carnap’s lecture series in October 1929 landed the philosopher right in the centre of the debate between Meyer’s radical anti-aesthetic functionalism, and other Bauhaus faculty members’ -- including Kállai’s -- defence of the aesthetic realm as a means of expressing Leben or, as Klee expressed it, "intuition." In fact it may have been the heightened tensions around Carnap’s lecture series in mid October that finally induced Kállai to leave that month. It was not long after Karel Teige’s replacement of Kállai and his departure from the Bauhaus, that the intrigues against Meyer escalated, and partly due to Kandinsky’s influence, he was forced to resign as director the following summer.\textsuperscript{245}

While their radically anti-metaphysical -- as Galison terms it "right wing" -- would have opposed the de facto metaphysical aspects of both Francéan and Klagesian biocentrism, as their name -- "Verein Ernst Mach" -- indicates, the Viennese logical positivists shared with biocentrism common
roots in the turn-of-the-century Monistenbund. And Meyer continued to be concerned with those aspects of holistic and Klagesian psychology which did not contradict his radical functionalism. He extended invitations to two prominent Gestalt psychologists from Leipzig, and as a consequence Karlfried Count von Dürckheim spoke on "Gestalt Psychologie" on 6 June 1930, and his mentor, the holist "psychologist of vision," Felix Krüger, was invited to lecture on "Seelische Strukturen," scheduled for 22 October 1930. While a Dr. Rudert was invited to speak 2 October on "Charakterologie" (a field in which Klages was highly influential) Meyer had also scheduled a course to be given by Dürckheim on "Psychologische Grundlehre" for the winter of 1930-31. This finally took place during the summer of 1931, after Mies had taken over as director, and included a talk on Klages' Der Geist als Widersacher der Seele. The lectures were normally followed by discussions which sometimes went on "half the night."

Given this array of speakers, one might qualify Peter Galison's statement that "the logical positivists were more prominent as visitors to the Dessau Bauhaus than members of any other single group outside art and architecture." If one counts Prinzhorn, von Meyenburg, the Gestalt psychologists Krüger and von Dürckheim as biocentric, and keeping in mind Moholy-Nagy's teaching of Francé, Friedrich Ebeling's Francé-inspired activities, and Prinzhorn's efforts for the Bauhaus under his old friend Mies van der Rohe's direction in 1932-33, it would be more accurate to speak of a balance between biocentric and "logical positivist" ideas at the Dessau Bauhaus. Looking at the entire history of the Bauhaus -- even after Itten's departure -- with Driesch's, Ostwald's, and Prinzhorn's lectures in mind, and with the strong influence of the ideas of Francé and Klages, it was biocentrism rather than Logical Positivism that was the single most powerful outside ideological presence at the Bauhaus.

The articulation, elaboration, and application of Kál-
Klagesian biocentrism to the realms of architecture and art led to a break with Meyer. While both were biologicistic, Meyer's anti-metaphysical and doctrinaire optimism and Kál-lai's open, pragmatic, and more pessimistic position were bound to lead to disagreement. It may have been this, combined with Meyer's anti-aestheticism, that engendered the final rift between the two. It was not first and foremost ideology, but rather Meyer's willingness to sacrifice art to ideology, which finally drove them apart, and Kállai -- like Schlemmer -- away from Meyer's Bauhaus.

Their conflict first received public expression in articles published in the 1 January 1929 issue of bauhaus. In "wir leben nicht um zu wohnen" Kállai warns against an overly naive and optimistic view of what the "neues Bauen" can do to solve the housing crisis, while, as mentioned, "bauen und leben" criticized this new architecture in the light of Prinz-horn's concept of body-soul-unity, despite Meyer's enthusiastic and poetic presentation of its ecological version in his "bauhaus und gesellschaft." In "goldene ketten -- eiserne ketten," meanwhile, Kállai attacked the submission of art to purely economic ends in capitalist countries and political uses in the Soviet Union. He ends the article with the ironic reformulation of Marx's slogan from the "Communist Manifesto": "Kitsch-makers of the world, unite!" This implicit (rather than explicit) controversy between the publisher and the editor of bauhaus took on a new dimension with the publication of Kállai's "Das Bauen und die Kunst" in which he gives up hope on Gropius' "new unity" of technology and art, and petulantlly concludes that "Das neue Bauen und die Kunst müssen notwendigerweise getrennte Wege gehen" despite the fact that it was he who brought the Klagesian critical apparatus he had been applying to the fine arts to bear on architecture. While recognizing that Meyer was the one who had set up separate painting classes at the Bauhaus (under Kandinsky and Klee), Kállai criticized the essentially negative attitude Meyer's
radical anti-aesthetics represented towards the fine arts at this time.\textsuperscript{253} Though -- like Prinzhorn's and Klages' biocentrism, Meyer's biologism recognized the rootedness of humans in nature -- like Francé -- it assumed that we could learn from nature and do something about improving our lives. Kállai's position, like Klages', came to be less optimistic.

Given that Meyer had hired Kállai to be the Bauhaus' publicist rather than its critic, it is not surprising that he would have been upset at Kállai's anti-ideological and pro-art polemizing in Bauhaus. The very fact that Kállai was championing the work of the student Fritz Kuhr, who had publicly opposed Meyer's replacement of Gropius at a memorable Bauhaus dance on February 4 of 1928, was a sign of the rift between the two.\textsuperscript{254} Kállai defended his critical attitude on the pages of the July-September 1929 issue of Bauhaus in "sie wundern sich," but by the time this issue had appeared on 15 July, he had resigned from his position, and he refrained from writing for the last October-December issue he nevertheless dutifully edited. The fact that this last Kállai-edited issue was devoted to the work of Oskar Schlemmer, who -- as everyone knew -- left the Bauhaus because of his disapproval of Meyer's ideologically-driven leadership, renders it a kind of silent protest on Kállai's part.

Their common background in International Constructivism and their interest in biocentrism, had initially drawn Meyer to Kállai, but basic differences in attitude eventually drove them apart. While sharing an interest in Prinzhorn's philosophy and biocentrism in general, Kállai and Meyer integrated these ideas into their respective world views in radically different ways. Meyer saw the ideas of Prinzhorn and Klages as contributing to the development of a Monistic "biological" functionalism informed by the teachings of von Meyenburg and the logical positivists. Their ideas exercised quite a different influence on Kállai, who combined the ideas of Klages and Prinzhorn with those of Jung and, as we shall see, Edgar
Dacqué's concept of the "demonic," in developing his more pessimistic biocentric world view. Meyer's understanding of Prinzhorn and biocentrism was largely instrumental -- to be used in the teaching and practice of architecture and urban planning -- while Kállai's was intuitive, intellectual and to be used for the understanding of an art which Meyer rejected. While Meyer's biocentrism led him to a biological determinism which eventually resulted in a rejection of the fine arts, Kállai employed biocentrism in understanding and explaining the visionary and "abstract" nature of the contemporary avant-garde. While Meyer was a somewhat naive optimist and a Communist who was able to remain a Stalinist throughout his life, even after his experiences in the Soviet Union during the 30s and the Hitler-Stalin Pact, Kállai -- no friend of Capitalism himself -- was a pessimistic biocentric Leftist who smelled a rat in Moscow as early as 1928, and was able to integrate such a perception into his thinking through his recognition of the "demonic" being as much a part of the organic whole as is the "good." While Kállai emphasized the German Romantic heritage of Klages' biocentrism and Prinzhorn's Monistic "Leib-Seele-Einheit" -- the identity of the spirit of humanity and the spirit of nature -- for Meyer it was a biocentric variant of a materialist philosophy he was able to harmonize with his Marxism. These were the deeper grounds of the conflict between the two, and -- like the divisions in the Bauhaus discussed in Chapter Three, they reflect the division within the biocentric discourse itself: between the functionalist biologistic approach of Francé and von Uexküll on the one hand, and the pessimistic biocentrism of Klages and Prinzhorn on the other, the same grounds that had led to the split between Kállai and his old friend Moholy-Nagy.
c. Kállai and the Naturamorphic Analogy

i. Blossfeldt / Benjamin

Around the time of his resignation from the Bauhaus in early July 1929, most of the elements of Kállai’s conception of Bioromantik were in place. However, though Kállai had by this time recognized the power of scientific self-imaging and of Neue Sachlichkeit close-up nature photography, he had not yet noted the naturamorphic analogy. An important role in preparing him for this realization was played by Kállai’s encounter with the work of the applied artist and pattern-book illustrator Blossfeldt.

As Kállai does not seem to have seen the 1925 exhibition held at the Galerie Nierendorf in Berlin, it was in 1928 that he become acquainted with Blossfeldt’s photography. In the January 1929 issue of bauhaus Kállai wrote one of the earliest reviews of Blossfeldt’s book of 120 close-up photographs of plants, Urformen der Kunst. Then, from 11 to 16 June 1929, Kállai would have seen Blossfeldt’s photographs in the original, at "Pflanzenfotos: Urformen der Kunst," their exhibition held at the Dessau Bauhaus. Echoing the ideas expressed in his article "Dämonie der Satire" Kállai wrote:

"die kunst liegt in der natur, wer sie holt, der hat sie": dieses wort hat blossfeldt mit bildidokumenten von überwaltigender schönheit belegt.... [D]er gesamte "magische realismus" kann sich vor der stahlene präzision und mitunter wahrhaft dämonischen ausdrucksgewalt dieser naturfotos ins letzte loch verkriechen.

Blossfeldt’s work stunned Kállai, and -- despite Kállai’s predilection for painting as a medium of intellectual and spiritual expression -- reconfirmed his opinion that such photography was far superior to Neue Sachlichkeit painting, the "magische realismus" he referred to. This only heightened his efforts to find painting and sculpture that could do what Blossfeldt’s photographs could. He found it in the work of artists such as Ewald Mataré, Paul Klee, Georg Muche, and the
Bauhaus students Fritz Kuhr and Fritz Winter.

Also important for the development of his conception of Bioromantik would have been Kállai’s exposure to the critical literature on Blossfeldt’s work. Karl Nierendorf’s introduction to Urformen der Kunst framed it in biocentric terms. Nierendorf assembled reflections on, inter alia, the growing interest among young people in nature, the new organic architecture, the new worlds which the microscope and telescope were revealing, and the unity of humanity and nature shown in Blossfeldt’s photographs:

"Far more enchanting ... is the final realization of the hidden powers of Creation -- in the ebb and flow of which we, as creatures of Nature, are inextricably caught. The work produced by successive generations as witness to their existence, and the most transient and delicate of natural forms, each must conform to the natural laws which fashion everything."²⁶⁰

Most important of all was Walter Benjamin’s review of Urformen der Kunst, which Kállai will have read, as it is likely that he was a regular reader of a Berlin intellectual journal as important as Die Literarische Welt.²⁶¹ Benjamin produced a text marked by a Francéan conception of the Grundformen of nature, one which remarked upon the naturamorphic analogy, linking this analogy to Moholy-Nagy’s New Vision and embedding it within a biocentric matrix:

[Blossfeldt] has proven how right Moholy-Nagy, the pioneer of the new photography was, when he says ‘Die Grenzen der Photographie sind nicht abzusehen...’ Whether we accelerate the growth of a plant through time-lapse motion photography or enlarge its image forty-fold, myriad images swoosh up geyser-like in the place of these phenomena when we least expect it. These photographs disclose an unsuspected wealth of analogies and forms. Only photography can do this. .... Urformen of art -- true enough. But what are they other than Urformen of Nature? Forms which were never mere models for art, but were from the start the Urformen at work for all creation. Even the coolest observer would be given pause by the way that the enlargement of plant parts at the macroscopic level ... displays forms as extraordinary as
those at the microscopic level.... And if ... avant-garde painters such as Klee and ... Kandinsky, have long been concerned to familiarize us with realms which the microscope so brusquely and forcefully wished to abduct us to, these enlargements of plants contain, even moreso, vegetal Stilformen.\(^\text{262}\)

What is astonishing in this review is not only that Benjamin recognizes the analogy between scientific photography and the art of Klee and Kandinsky, but that he embeds this recognition within a Francéan awareness of the "Urformen at work for all creation," natural forms which "have developed from one of the deepest, most unfathomable forms of creation -- from the mutation in which the element of genius has always resided -- the collective creative power of Nature.... One is tempted to call it the feminine, organic, principle of life -- yielding -- infinite -- artful -- ubiquitous."\(^\text{263}\)

As Detlef Mertens has subtly shown, however, "without relinquishing hope for the return of experience, organicity, and aura, but also without pretence to depict it or create it, [in the early 30s] Benjamin adopted a radically anti-organic perspective aimed at working through the problems of capitalism, industry, and the technological environment they were producing."\(^\text{264}\) Given his praise for Klages' Den Geist als Widersacher der Seele in 1930, however, I would qualify this by saying that with the historical situation of the early 30s, Benjamin tended to repress his Organicism, indeed his biocentric tendencies, but that they erupted every once in a while. His review of Blossfeldt's photographs was one such eruption.\(^\text{265}\)

Benjamin was not the first to note the naturamorphic analogy. We have seen in Chapter Three that a key Bioromantic artist such as Kandinsky anticipated the naturamorphic analogy prior to the First World War, and that he articulated it clearly in 1926. We have noted in Chapter Four, furthermore, that biocentric Constructivist artist-theorists such as Lazar El Lissitzky and (more obliquely) Moholy-Nagy, were articulat-
ing the naturamorphic analogy by about 1924. In the introduction I noted that in 1928, when Benjamin was writing, Kállai’s eventual replacement, Meyer’s close friend, Karel Teige, compared the Surrealist paintings of the Czech artists Jan Styrsky and Toyen to undersea film stills from the UFA film Wunder des Blauen Golfes in a layout of his magazine *ReD.* Benjamin was not the first, furthermore, to imply a psychobiological explanation for this analogy. In Chapter Four I pointed out that Lissitzky did so directly, and Moholy did by implication. If it were any one of the few examples of the naturamorphic analogy available at the time, Benjamin’s would have inspired Kállai to notice it himself. Benjamin’s Francéan and Neo-Vitalist frame, furthermore, makes it the earliest -- even if brief -- conceptualization of the major components of Kállai’s own construction of Bioromantik.

ii. Epiphany

On page twelve of the 1947 booklet *A természet rejtett arca* [The hidden face of nature] Kállai describes a formative experience he had in Germany:

Many years ago, at an exhibition of scientific photography, I saw microscopic photographs of the scales of a butterfly wing, and a section of a snake’s jawbone. In both of them, a fabric of extremely thin fibres lay before me, and this material, displaying itself in its basic structure, conveyed to me its pulsating life through the transparency of its paired-down structure, much as the filaments of a tungsten light-bulb do electricity. I happened upon a phenomenon which displayed a surprisingly parallel structure to the microphotographs in a coloured graphic work by the young German painter Fritz Kuhr. It depicted a figure reminiscent of a gas mask.... It was a work of extraordinarily fine sensitivity; one could call it an x-ray of the soul. But it would be a mistake to suppose that this work was created on the basis of scientific photographs. The artist simply followed the images emerging from his subconscious in order to conceive this mask-like phenomenon. Meanwhile, he involuntarily produced ... a painterly fabric resembling the inner structure of plant and animal organisms.
While we have seen in the passage from "Bioromantik" quoted at the start of this chapter that Kállai was proposing that artists were looking at scientific images, here he limits his explanation of the analogy to a psychobiological one, to humanity's rootedness in nature. Kállai mentions that it was at an exhibition of scientific photographs that he -- presumably shortly after having seen a work by the Bauhaus student and instructor Fritz Kuhr -- came to this realization. This would have been the FIFO show.

When discussing the work of Fritz Winter, Kuhr and the others in the spring of 1929, at the time of their travelling exhibition "Junge Bauhausmaler," Kállai did not make use of scientific image similes. Rather, much as the Dessau art critic and Bauhaus supporter Ludwig Grote did, he referred to their work as "spiritual," "irrational," "metaphysical," and "romantic." 45 Though Kállai was aware of the power of microscopic photographs and films by 1926, the earliest microscopic analogy with a work of art I can find in his writings is on page six of the September 1930 catalogue of the "Vision und Formgesetz" exhibition at the Galerie Ferdinand Möller, whose final form Kállai developed and conceived, and which he helped Möller curate: "Man beobachtete, wie besonders bei Fritz Winter, Formen, die an Mikroorganismen erinnern, einen Raum und Bild schaffenden Sinn erhalten, der mitunter ins Monumentale geht." 269

Since Kállai's naturamorphic epiphany occurred in relation to a work by Fritz Kuhr, it would be likely that Kállai had ready access at the time to Kuhr's works. As it happened, a show of Fritz Kuhr's graphic work was on display at the Bauhaus between the 5th and 10th of June in 1929. 270 Thus, it is safe to assume that this epiphany occurred sometime between about May-June 1929, the time of Kuhr's exhibition at the Bauhaus, and the summer of 1930, when his text of Winter's work appeared.

As it happens, the "Film und Foto" exhibition's original
and largest showing at Stuttgart (18 May-7 July) was cotermi-
nous with Kuhr's Bauhaus exhibition.271 Moholy's "Raum 1" at
the FIFO exhibition contained x-ray and microscopic photo-
graphs, though we do not know precisely which ones, so it is
impossible to confirm whether there was a cross-section of a
snake's jawbone, and a micro-photograph of a butterfly wing,
though Kállai included a micrograph of a snake's jawbone in an
exhibition he curated in Budapest, and this resembles Fritz
Kuhr's work Die Idee.272 (Figs. 5-19, 5-20, 5-21) We have
seen that Kállai saw the FIFO and gave it a bad review, criti-
cizing Moholy-Nagy and the photographers of the New Vision,
while having "Kein Wort gegen die tatsächlich dokumentarische
Photographie, wie man sie in illustrierten Wochenschriften, in
Kinoberichten, Kulturfilmen und erst recht in wissenschaftli-
chen Publikationen auch volkstümlicher Art zu Hunderten und
Tausenden sehen kann," including photographs of this kind in
the exhibition itself (my emphasis).271

If the epiphany escaped Kállai at the FIFO's Stuttgart
showing, furthermore, it could have happened at its Berlin
venue between 19 October and 17 November, just after Kuhr's
second Bauhaus exhibition of the year, on display from 13 to
15 October, and shortly after Kállai must have returned to
Berlin from Dessau.274 While there were other showings of
scientific photographs at the time, because of the coincidence
of the two Kuhr exhibitions with the Stuttgart and Berlin
showings of the FIFO, and because we known Kállai saw it in
Stuttgart and easily could have seen it in Berlin, they must
remain as the most likely alternatives.275

iii. Bioromantik

Man bekommt also einigermassen verweilende Aufnahmem
der vulkanischen Ausbrüche zu sehen. Stossweise
werden ungeheure schwere kochende Wolkenmassen in
die Höhe geschleudert, woher sie breit und gravitá-
tisch auf den Meeres-spiegel niedergehen, um neuen
Eruptionen zu weichen. Das Schauspiel ist von voll-
endeter Rythmik der räumlich-zeitlichen Entfaltung.

By 1930 ... as in this review of the film "Maha" about Bali, Java and the Krakatoa volcano -- Kállai’s biocentrism was the basis of all his critical writing. Away from the Bauhaus, during the early 30s, Kállai developed his Klagesian biocentric conception of artistic production and meaning in a remarkable series of articles published in Germany and Czechoslovakia which remains to this day the most comprehensive treatment of the theme in the critical literature: "Kunst und Wirklichkeit" and "Kunst und Technik" of 1931, "Zurück zum Ornament" and "Bioromantik" of 1932, "Zeichen und Bilder" of 1933, and finally "Ornament und Bild" of 1935. Though unsystematic, Kállai’s writings constitute a coherent corpus of biocentric art theory and criticism.

In "Kunst und Wirklichkeit," Kállai discussed the deep drives discussed in his review of the Krakatoa documentary as erupting into contemporary art production unconsciously:

nach einer neuen Lebensordnung aus, die das mörderi-
sche Wuchern der mechanistisch-quantitativen Kräfte
in Wirtschaft und Technik zu meistern und den Men-
schen zur seelisch-geistigen Selbstbesinnung zu
führen weiss. 27

Kállai applied the Klagesian category of rhythm in nature
to the artistic production of his day in his 1930 articles
"Rhythmus in Bildern" and "Vision und Formgesetz." In them he
held that some of the best recent art expressed this rhythmic
nature of reality. Concerning such work he wrote of

Ihren utopischen Glauben an eine kühle geistige
Vollendung des Lebens. Zugleich aber auch ihre er-
weiterte und durchdringende Tiefenerkenntnis von
leib-seelischen Beschaffenheiten. Ihr heiss über-
strömendes Gefühl, jeglicher Kreatur in Wesensge-
meinschaft innigst verbunden zu sein. Der Mensch ist
geistige Potenz, Erkenner und Konstrukteur hohen
Ranges. Doch er treibt im gleichen Kreislauf von
Naturgewalten des Blutes, des Geschlechts und des
Hungers, der Keimung und des Todes wie Tier und
Pflanze. 27

This reality was also visible in scientific images of
nature. We have seen that in "Vision und Formgesetz" Kállai
employed the naturamorphic analogy in his critical writing on
Fritz Winter. He developed this idea further in the 1931
article "Kunst und Technik," linking this biocentric attitude
to Surrealist biomorphic style:

Die Surrealisten überraschten mit der pessimistisch
trockenen Umdeutung harmloser, wenn nicht banalster
Motive zu einer phantastisch verödeten Welt, in die
Natur und Menschenwerk, vornehmlich grade techni-
sches Menschenwerk, nur noch als armselige Bruch-
stücke vereinzelt hineintragen. Oder sie lassen in
Gestalt und Antlitz des Menschen die biologischen
Urgründe seines Wesens, seine Unerlöstheit von Tier,
Pflanze und Erdreich hervorstarren (Giorgio di Chi-
rico, Max Ernst, G.H. Roux, Jean Miro, Jacques Lip-
schitz). Sie versuchen die verschiedensten Lebens-
vorgänge in eine gemeinsame rhythmische Formel einzu-
fangen (André Masson) ... Arp, Poltyn, Fritz Winter,
Constantin Brancusi, Richard Haizmann und Henry
Moore schliesslich bringen naturhaft organisches
Wachstum zur äussersten elementaren Verdichtung
seiner Energie und seiner Gestalt, die in einer
weiter nicht zu motivierenden, unerklärlichen Weise:
eben irrational, lebendig ist. Durch Formen, die, wenn überhaupt, an Gegenständliches nur noch ganz ungefähr oder embryonal erinnern und trotzdem von klarster Spannung beherrscht sind. 279

A pedagogue by training and character, Kállai was eager to communicate his insight concerning the way that Modern art, both Bioromantik and Constructivism, reflects what he saw to be "reality" -- the ways in which it communicates the essential dialectic of Geist and Seele, reason and intuition, a love of technology and organization on the one hand, and an awareness of and love for our rootedness in the natural, on the other -- at work in the world. Kállai wished to speak of the biocentric "truth" about humanity's rootedness in the biological, in nature.

In May of 1931, as an outgrowth of "Vision und Formgesetz," Kállai prepared an exhibition proposal in conjunction with Ferdinand Möller for the Leipzig Museum entitled "Kunst und Wirklichkeit. Das neue Weltbild der Kunst." 280 Kállai intended it as a large didactic exhibition including 400 works by 70 to 75 artists, in which he hoped to demonstrate to a wide audience -- and in contrast to popular belief -- the direct links to reality that modern art movements such as Expressionism, Surrealism, Cubism and Constructivism had. In order to illustrate his thesis, Kállai intended in the first room, just as in the FIFO, to include "eine Reihe von photographischen Aufnahmen verschiedener Themata. Sociales, Arbeit, Vergnügung, Geburt, Tod, Krieg, Revolution, Kriminelles ... Natur, Stadt, Technik, biologische Aufnahmen, Röntgenfotos, Zellengebilde, Astronomisches usw.," and to refer in text panels to the new research results of psychology and the natural sciences, providing evidence of the deep structures of reality. 281 In the proposal he also pointed out how relativity theory and the "new post-Darwinian" biology had replaced the materialist world view and how the theory of evolution had been superseded by the neo-Lamarckian teleological position that every living creature contains within itself the blue-
natural sciences, providing evidence of the deep structures of reality. In the proposal he also pointed out how relativity theory and the "new post-Darwinian" biology had replaced the materialist world view and how the theory of evolution had been superseded by the neo-Lamarckian teleological position that every living creature contains within itself the blueprints of its own full development. Important in this connection were the writings of the eccentric palaeontologist Edgar Dacqué, who, as we saw in Chapter Two, had a following among some biocentric art figures such as Kandinsky, Mies van der Rohe and Hugo Häring. Kállai proposed to include, as a text panel, Dacqué's post-Darwinian definition of the Urform, in a quotation from his book Urwelt, Sage und Menschheit.

While including works by Impressionists, Cubists, Expressionists and others, the exhibition was to focus on the work of artists he referred to as "Surrealists" and "Constructivists." Works by the latter (essentially the geometric abstract painters) were to show, on the one hand, the harmony and deep structures of nature (accompanied by a quotation from Albert Einstein), and on the other, their feel for the possibilities of new technologies. As we have seen, these he referred to as Technoromantik. Works by "Surrealists" were to represent the creative powers of nature as rendered in organic abstract works (Arp, Fritz Winter, Brancusi), and their expression of the -- in a Dacquéan sense -- "demonic" in humanity and the world. As in the Itten Schule show of 1928, scientific photographs were to be included in the exhibition. But now the works of the artists were to be displayed in direct, rhetorical conjunction with "Vergrösserungen von biologischen Aufnahmen ... (auch Mikrofotos), in denen die formalen Analogien zwischen Tier, Pflanze und Mensch deutlich waren." Thus, Kállai was able to systematize what he considered the important Modernist art of his day into a schema which anticipated Barr's "biomorphic abstract" and "geometric abstract" categories, while placing them into a context much richer than
that which Barr was able to provide in his framing work.\textsuperscript{286}  

For financial reasons, the Leipzig Museum was not able to accept his proposal.\textsuperscript{287} However, some of its ideas were presented in "Zeichen und Bilder," a lecture Kállai held in 1932 for the opening of an exhibition in Wiesbaden. This exhibition adopted "Zeichen und Bilder" as its title and travelled to the Museum Folkwang and to Frankfurt in 1932-33.\textsuperscript{288} Its proposal to juxtapose scientific photographs and modernist art was realized -- even if modestly -- in Budapest at Kállai's Galeria a Négy Világtájhoz [Gallery to the Earth's Four Quarters], as the 1947 exhibition "Űj Vilákgép" [New world image]. (Figs. 5-19, 5-22, 5-23) This systematization culminated in Kállai's article "Bioromantik," in which Kállai constructed the biomorphic Modernist and biocentric category of art-making in his time, and which has been discussed in detail in Chapter One.\textsuperscript{289} (Fig. 5-24)

At this point Kállai tended to valorize Bioromantik over Constructivism because of what he saw as the "technomaniac" nature of society. One of the reasons Kállai promoted Bioromantik was that -- unlike geometric abstraction, which had become fashionable -- he saw it as being resistant to stylishness and therefore to commodification.\textsuperscript{290} He identified it as a zone of resistance to the exaggerated expression of Geist in Capitalism. While prescient in his identification of Bioromanticism as trend, he could not have been more wrong in this regard, as the biomorphic styles of the 40s and 50s of everything from cars to sinks amply demonstrates. The experience of the recent commodification of what Lucy Lippard termed the "dematerialized art object" of the late 60s shows that literally nothing can resist commodification in Capitalism.\textsuperscript{291}

While warning the reader to remain aware of our deep connection with nature's forces despite our life in technologized societies, however, in "Grenzen der Technik" Kállai states his opposition to an anti-Modernist rejection of technology:

Auch dem Primitiven sind die Segnungen seiner leib-like...
seelischen Harmonie nicht im Schlaf gegeben und nicht unbestritten. Auch sein Dasein ist der Notwendigkeit des materiellen und geistigen Kampfes unterworfen. Also keine sentimentale Rückkehr zu ihm, zur Natur, sondern Vorwärts! Der Mensch muss den Weg zu Ende gehen, den er mit seinem Erscheinen auf Erden betreten hat, auch wenn er die Verheissungen des technoiden Optimismus zu den Wunschträumen einer neuen, materialistischen Glaubenslehre zählt:292

It is important to emphasize that despite his utopian hope that it would resist the commodification that the geometric/Constructivist Formenwelt had undergone through the popularization of the "Bauhaus Style," Kállai was not necessarily valorizing Bioromantik as a trend in art above all others. Thus, in "Zurück zum Ornament" of 1932, Kállai legitimized the "ornamental" nature of much Modernist art as the expression of the essential rhythms and structures of the "natural" ground, and therefore of our essential rootedness in nature, whether that art be biomorphically or geometrically abstract.291 In fact, while he saw it as crucial to maintain an awareness of our rootedness in nature, as shown in Chapter One, he saw Bioromantik as comprising only one half of a necessary dialectical pairing of art-making which reflected the Klagesian division of Seele and Geist:

Wir glauben nicht an Götter und Teufel, aber wir haben ein Wissen von ungeheuren dialektischen Spannungen im Dasein, von denen die sozialen nur eine Resultante nebst vielen andern sind. Wir wissen um das Schöpferische des Widerspruchs, um das Grundbedingte der dissonantischen Paarung von Trieb und Geist, von Chaotik und Konstruktion im Gefüge unserer Welt. Dieses Weltbild, das alle Grenzen des bürgerlichen Vergleichs zu 50% genannt Materialismus-Idealismus zersprengt, war Jahrhunderte verschüttet, kam durch Nietzsche zum gewaltigen neuen Anbruch und wird noch unerhörte Triumphp der Kultur feiern. Was in der visionär und konstruktiv bestimmten Kunst des letzten fünfzig Jahre an entscheiden-schen schöpferischen Leistungen zustande kam, ist schon sein Triumph.294

Just as the "social" is just one resultant of the forces which shape reality, as an art which reflects an "awareness" of our
rootedness in nature, i.e. a biocentric Weltanschauung, or as an art which reflects such a rootedness unconsciously, Bioromantik for Kállai is only one half of a dialectical pairing within Modernism. The other half of this coupling is art which celebrates technology and rationalism, i.e. "Constructivism" in its widest sense. Though based on the Klagesian schema of Seele vs. Geist, unlike Klages, Kállai does not demonize Geist absolutely. Rather, he speaks of Bioromantic art as part of an antidote to rampant Geistig technologism in modernity, whether that modernity take form as Capitalism, Stalinism or Fascism. We have seen that Klee wrote in Kállai's first issue of bauhaus that "Wir konstruieren und konstruieren und doch ist Intuition noch eine gute Sache." Like Klee, Kállai avoided the totalizing tendencies of biocentrism in his writing.

Kállai's conception of "Bioromantik" was -- as we saw in Chapter One -- the first coherent, and developed formulation of ideas which had been circulating in central Europe for a decade, and to this day it is the most extensive. While this series of articles was not widely read due to the time and place of their publication, it was a crucial marker of a complex cultural pattern involving the fine arts, photography and scientific photography, both reporting on and informed by biocentrism. "Bioromantik" is, in my view, a useful conceptualization of some aspects of the artistic culture of the period, and is therefore to be retained and developed. Particularly important will be the more detailed investigation of the encounter between major Bioromantic artists and scientific photography on the one hand, and a more detailed analysis of the art, on the other. Finally, Bioromanticism can form a basis for the historical contextualization of those artistic forms gaining ground today, from Eco-Art to Body Art and art that deals with the phenomenon of genetic engineering, which deal with biological and ecological issues, but which at present float in an ahistorical vacuum, much the way that environmentalism itself does.
Endnotes


21. On the "Film und Foto" (or "FIFO") exhibition, and Kál- lai's remembrance of it, see below.


28. On this subject, which awaits systematic investigation, see the Introduction, endnote 77.


31. The two men were close during the early 1920s, when Kállai was one of Moholy’s chief critical supporters. The relationship cooled later in the decade, as Kállai became increasingly critical of Moholy’s artistic practice. This cooling may also have contributed to Kállai’s lack of emphasis on the importance of Moholy’s ideas to his own theory. On this relationship as it relates to photography, see Eva Forgács, "Seifenblasengleich: Der Konflikt zwischen Kállai und Moholy-Nagy in der Diskussion um das Verhältnis von Malerei und Fotografie in i10, 1927," in Gassner, Kopanski and Stengel, eds., *Die Konstruktion der Utopie*, 197-202.

In addition, some artists were exposed to scientific films. While I cannot explore this subject here, let me just point to the projection of scientific films in conjunction with the Bauhausausstellung of 1923 and the FIFO in Stuttgart in 1929, as well as to the Surrealists’ fascination with the films of Jean Painlevé in France from the mid 20s on.


34. Ibid. Buerger writes, "In the exhibitions, the works of scientists were frequently judged on their artistic merit -- in fact, no distinction was made between photographs of scientists and those who called themselves ‘artistes-photographes.’"

35. On Hamburg: Erste Internationale Amateurphotographieaus- stellung, Hamburg, 1893. Note: This exhibition, organized by Alfred Lichtwark, director of the Hamburg Kunsthalle, was innovative in that it marked the beginning of Pictorialist photography in Germany, and was organized at the museum, an innovation at the time."The public was astounded to find over seven thousand photographs on display in the painting galleries of an art museum." The Hamburg exhibitions became annual events. Newhall, *The History of Photography* (1964), 100, 102. On Berlin: "2. Internationale Ausstellung für Ama-

36. Hansen, "Photographische Ausstellungen," T41. Eugen Claassen agrees that this was the most important German photographic exhibition until the "Deutsche Photographische Ausstellung" held in Frankfurt in 1926. "Deutsche Photographische Ausstellung 1926, Frankfurt a. M.,” Die Form 1, no. 12 (September 1926): 275.


42. Hans M. Wingler, in his Editor’s Note to the reissue of the 1927 edition Malerei, Fotografie, Film of this book. (Mainz and Berlin: Florian Kupferberg, 1967), 141.

43. Eskildsen and Horak, Film und Foto der zwanziger Jahre, 190. See also Fritz Hansen, "Photographie und Presse. Das Zeitalter des Bildes auf der Kipho," Photographische Chronik, 32, no. 66 (6 October 1925): 467-68 and Fritz Hansen, "Kipho-

44. No author, "Die 'Kipho', Kino- und Photo-Ausstellung Berlin 1925," *Die Photographische Industrie* no. 40 (5 October 1925): 1089. Endowed by Wilhelm Adolf Lette, the Lette-Verein was a proto-Feminist school founded in Berlin in 1866 to train women in occupations that would help them support themselves. By 1926, the 60th anniversary of the school, it had 2800 students. The photographic training institute (photographische Lehranstalt), established by Schultz-Hencke in 1890 (x-ray photography was introduced at the early date of 1896), built up an archive of images which formed the basis for a photo-agency. By the 1920s this agency was one of the primary sources for scientific imagery in Germany. Sadly, the archive was destroyed during the Second World War, though the Verein survives to this day as an institution. On the Lette-Verein, see Eskildsen and Horak, eds., *Film und Foto der 20er Jahre*, 87 and "E-n," "60-Jahre Lette-Verein," *Photographische Chronik* 33, no. 18 (2 March 1926): 98.


49. Fritz Hansen, "Kipho-Nachruf."


53. Dr. Seddig, "Wissenschaftliche Photographie," in Deutsche Photographische Ausstellung (exh. cat.) (Frankfurt/Main: Messe- und Ausstellungsgesellschaft, Frankfurt and the Zentralverband Deutscher Photographenvereinen und Innungen, 1926), 38. The list of exhibitors in Gruppe IV, including many of the scientific research institutes in and around Frankfurt, its universities and its hospitals, also suggests this. See pp. 100ff in the catalogue. Also: Eskildsen, "Fotokunst statt Kunstphotographie," 9.


60. "E-n." "Quer durch die Hallen der Frankfurter Ausstellung": 431.

61. Ibid.


63. Ibid., 401.
64. Classen, "Deutsche Photographische Ausstellung 1926, Frankfurt/Main": 275-76.

65. Erfurth's work was also singled out by Von Grienwaldt in "Die Gesellschaft Deutscher Lichtbildner auf der Frankfurter Ausstellung," Photographische Chronik 33 (1926): 410.

66. Classen, "Deutsche photographische Ausstellung 1926, Frankfurt a.M."


70. The pioneer of scientific time-lapse techniques was Roman Vishniac, who claims to have invented the technique in 1918 and apparently produced the first such film, A Flower Opening in Berlin in 1921. See: Roman Vishniac (New York: Grossman, 1974), 95. Since the original German title of Vishniac's film is not provided in this source, it is unclear whether Das Blumenwunder is in fact this film.

71. No author, "Das Blumenwunder": 389.


75. Sachsse, Lucia Moholy, 32, Albert Renger-Patzsch, Die Welt ist schön (Munich: Kurt Wolff, 1928). There was also a noticeable increase in Neue Sachlichkeit material in the 1927 volume of Photographische Korrespondenz (63), with the publication of Renger-Patzsch's "Photographie und Kunst" (no. 3: 80-82), Moholy-Nagy’s "Die Photographie in der Reklame" (no. 9: 257-
60) as well as examples of Neue Sachlichkeit art and scientific photography. This tendency intensified over the next few years in this journal. Note that while he is not wholly credited with the rise of Neue Sachlichkeit photography, Moholy-Nagy is credited as the initiator of the Neues Sehen. See Andreas Haus, Moholy-Nagy: Photographs and Photograms, Frederic Samson, trans. (New York: Pantheon Books, 1980), 7.


77. Edwin Redslob, "Photographie und Kunst," Das Deutsche Lichtbild 1927: VII.

78. See the note -- presumably by Windisch, the editor -- to Adolf Miethe, "Himmelsphotographie des Liebhabers," Das Deutsche Lichtbild 1927, VIII.


80. As we have seen in Chapter Three, it was Moholy-Nagy -- by including his work in Malerei, Photographie, Film (Munich: Albert Langen, 1925) -- who first incorporated Renger-Patzsch's work into the discourse of high art.


84. This is a subject to be explored in a future publication.

85. "Eine Urkunde, die eine Frage ist an das Rätselhafte ringsum, das Leben heisst." Windisch, "German Photography 1928/29," Das Deutsche Lichtbild (1928-290), unpag. Translator not indicated. Note that the English translation provided in Das Deutsche Lichtbild is imprecise and obscures the biocentric rhetoric of the original.
86. Ibid.

87. On art micrography for amateurs, see: Dr. Kröhnke, "Mikrophotographische Ausblicke für den Liebhaberphotographen," Das Deutsche Lichtbild (1927), XVII. In this article, Dr. Kröhnke actually refers to "mikrophotographischen Kunst."


91. Windisch, "German Photography 1928/29." Again, the original English translation is garbled, and had to be revised.

92. Ibid.

93. See: Moholy-Nagy, "Scharf oder Unscharf?" i10 2, no. 20 (1 April 1929): 163-167. Windisch' soft right biocentrism and Modernism in Das Deutsche Lichtbild was transformed into a pro-Nazi stance when the previous publisher, Bruno Schultz, took over as editor in the 1934 edition of the yearbook. In this edition, Schultz greeted the Nazi takeover. Despite this he continued to provide a forum for Neue Sachlichkeit photography during the years of National Socialism. The publication in the 1937 and 1938 editions of a selection of Karl Strüwe's art micrography, furthermore, was one of the few ways in which what was essentially abstract art was published, under the guise of it being scientific photography. The publication of Das Deutsche Lichtbild was suspended in 1938, and resumed only in 1955.


95. Ibid., 165.

96. Ibid., 167.

97. Das Deutsche Lichtbild 1930, 23, 78.

98. Invitation to the opening of the exhibition Foto -- Malerei -- Architektur, (Berlin: Privat Kunstschule Johannes Itten, 12 February 1928). Papers of László Moholy-Nagy,

99. Moholy-Nagy, Malerei, Fotografie, Film (1927), 17.

100. Umbehr was a student at the Bauhaus from 1921-23, after which he worked free-lance on films and photography in Berlin. He was hired by Itten, his professor at the Bauhaus, to teach at the Itten Schule, where he was succeeded by Lucia Moholy in 1929. See: Eskildsen and Horak, Film und Foto der 20er Jahre, 245; Rolph Sachsse and Sabine Hartmann, Lucia Moholy. Bauhaus Fotografin (Berlin: Bauhaus-Archiv, 1995), 12. See also Herbert Molderings, "Umbo und das Bauhaus," in Fotografie am Bauhaus (Berlin: Bauhaus-Archiv, 1990), 34-43.

101. Ernst Kállai, "Der Plastiker Mataré," Das Kunstblatt 11 (February 1927): 67-8. "Meyer-Amden" Por Oskar Schlemmer’s account of the opening -- in which he focuses on the work of his friend Otto Meyer-Amden, see Tut Schlemmer, ed., The Letters and Diaries of Oskar Schlemmer (Evanston: Northwestern University Press, 1990), 226. On Meyer-Amden see Michael Stettler, Otto Meyer-Amden (Lausanne: Editions Rencontre, 1970), 52. One can imagine the vernissage, which took place on a Sunday morning, and for which the Schlemmers went into Berlin, was a site of heavy-duty wheeling and dealing concerning the make-up of the new, Meyer-led Bauhaus. (If the major players -- and known reviewers -- attended, then Meyer and Ernó Kállai will both have been there, as well as the Moholy-Nagys, Klee and Kandinsky, Itten, Paul Westheim and Albert Renger-Patzsch.) Gropius had only just announced his intentions to step down in favour of Meyer earlier that same month, and Meyer was already planning his radically altered version of the institution. At this stage it is interesting to note that Meyer envisages Schlemmer as the school’s publicist. See Schlemmer’s diaries, 226-7.

102. In his review in Das neue Frankfurt, Kállai refers to "Spaemann-Straub," presumably students of Moholy-Nagy who made photograms, identified as a team of Bauhaus students by Kees Broos, in "'Zu wenig, um unser Gesicht zu wahren': Die niederländischen Photographen auf der 'Fifo'," in Eskildsen and Horak, Film und Foto der zwanziger Jahre, 173. Walter Peterhans, who was hired to the Bauhaus in 1929 by Meyer, was also included in the exhibition.

103. It was only in 1925, the year Moholy’s book was published, that Renger-Patzsch began work as an independent photographer, that his first book of photographs Das Chorge-
stühl von Cappenberg was published, and that he had his first exhibition, at his new home of Bad Harzburg. On this, see Chapter Three.


109. Maria Schmidt, Leiterin, Romantikerhaus, Städtische Museen Jena, letter of 22.7.94 to Oliver Botar. See also Volker Wahl, "Austellungen, Vorträge...," 71. On the Itten Schule show, see the list or reviews (not including Källai's) in Willy Rotzler, Johannes Itten. Werke und Schriften. (Zurich: Orell Füssli, 1972), 437.


111. The lists are from the above-mentioned invitations, the identities of some of the -- to me -- unknown photographers are from Vitt, ed., Hommage à Walter Dexel, 71.

112. Invitation to "Neue Wege der Photographie" reproduced in Wahl, Jena als Kunststadt, 289. Thanks Ute Eskildsen of the Museum Folkwang, Essen, for photocopying her copy of the invitation for me.

114. Dexel uses the impersonal mode when writing that "Die Ausstellung ist sehr lehrreich zusammengestellt." (p. 138) and his concluding remark that the show would be of particular interest in Jena suggests that it might have originated elsewhere. Walter Dexel, "Neue Wege der Photographie," originally published in the Jena newspaper Das Volk (14.4.1928), it was reprinted in Walter Dexel, Der Bauhausstil -- Ein Mythos. Texte 1921-1965. Walter Witt, ed. (Starnberg: Josef Keller Verlag, 1976), 137-140.

115. Moholy-Nagy first exhibited in Germany with Walter Dexel at the Fritz Gurlitt Gallery in Berlin. It is likely that they met at this time. See Krisztina Passuth, "Ungarische Künstler und die "Konstruktivistische Internationale," in: Konstruktivistische Internationale -- Schöpferische Arbeitsgemeinschaft, 1922-1927: Utopien für eine Europäische Kultur exh. cat. (Düsseldorf: Kunstmuseum Nordrhein-Westfalen, 1992), 238 and Schöne Tage im Haus Dexel... -- Das Gästebuch -- Walter Dexel zum 100. Geburtstag (Cologne: Galerie Stolz, 1990), 88. Moholy first visited the Dexels on the occasion of the "Dada-Constructivist" congress in Weimar in September 1922, when a party was organized in the Dexel house on the 24th of that month (Konstruktivistische Internationale, 206); and again in July 1923 at the time of the opening of the Constructivist exhibition at the Jena Kunstverein. (Schöne Tage in Haus Dexel, 29) A cooling in relations between Dexel and Moholy is suggested by the dearth of visits to Dexel’s house after 1923, Moholy’s sparse participation in exhibitions at the Kunstverein in Jena (Wahl, Jena als Kunststadt, 223) and Dexel’s close friend Adolf Behne’s negative attitude towards Moholy expressed in a letter to Dexel of 2 November 1925. (Vitt, Homage à Dexel, 96)

116. Note that as a prominent graphic artist himself, Dexel would have been aware of the Magdeburg organization, and as an acquaintance of Moholy’s, likely of the talk as well. The invitation for the Magdeburg talk is reproduced in Catherine David, ed., László Moholy-Nagy (exh. cat.) (Marseille: Musée de Marseille/Réunion des musées nationaux, 1991, 367.

117. Wahl, Jena als Kunststadt, 223.


119. Dexel’s article in Das Volk is cited in Wahl, 'Walter Dexel als Ausstellungsleiter des Kunstvereins Jena," 60.

121. Walter Dexel, "Neue Wege der Photographie." Originally published in the Jena newspaper Das Volk (14.4.1928), it was reprinted in Dexel, Der Bauhausstil -- Ein Mythos, 137-140.


123. Ibid, 138.

124. See Eskildsen, "Fotokunst statt Kunstphotographie, 10. The exhibition included scientific material. "Fotografie der Gegenwart," with a section entitled "Die Aufnahme im Dienst der Wissenschaft und Forschung," also travelled during 1929 to Hannover (10 March-17 April); Berlin (20 April-20 May); Dresden (15 September-6 October); and Magdeburg (28 November-19 December). The Essen show of January-February 1929, where Moholy-Nagy gave a lecture, seems to have been a model for Raum 1 of the Fifo.


126. Information courtesy of Ute Eskildsen, Museum Folkwang, Essen, August 1994. Dr. Eskildsen has informed me that the museum staff are in the process of gathering contemporary newspaper announcements and reviews of the Museum's exhibitions, but they have not yet completed the task for this particular exhibition.


129. It could be argued that since many of these photographers were biocentric in their views (Renger-Patzsch, Blossfeldt, and Wolff as well as Fuhrmann, Renger-Patzsch's mentor), there existed a photographic equivalent to Källai's "Bioromanticism," and that this was the first important display of such "Bioromantic Photography."

130. The sources of the scientific photographs included Rheinisches Mineralien-Kontor F. Krantz, the Röntgeninstitut der photographischen Lehranstalt [des Lette-Vereins?] in Berlin, and the Techno-Photographisches Archiv in Berlin.


133. Kállai’s references to obscure photographers such as the Spaemann and Straub team in both his review of the show and in this article, as well as other coincidences, make this clear. Kállai, "Malerei und Photographie," i10 1, no. 4 (April 1927): 148-157.

134. One might speculate that Kállai was involved in organizing the Itten-Schule show, but there is no documentation to prove this, and despite the extent to which his writing and interests prefigure it, his critical comments on the installation make this unlikely.

135. For these texts in English, see Christopher Phillips, ed., Photography in the Modern Era (New York: The Metropolitan Museum of Art and Aperture, 1989), 94ff. Moholy replied as well. See also the marginal notes to Kállai’s article in his own copy of i10, now in the library of Hattula Moholy-Nagy. On this controversy, see Forgács, "Seifenblasengleich."


137. Ibid., 134.


139. See Kállai, "Malerei und Film," 165. See also his review of Walter Ruttmann’s Berlin, Symphonie der Groβstadt in Sozialistische Monatshefte 72 no. 9 (September 1930): 943, in which he writes about the possibilities of film: "[Der Film] hat, wie jedes andere Gestaltungsmittel, ihre besonderen Grenzen. Aber innerhalb dieser Grenzen ist heute bereits ein unabsehbarer Reichtum schöpferischer Kombinationen, sind organischeslebendiges Wachstum, stetes Aufblühen und volles Ausschwingen tiefster innerer Notwendigkeit möglich."

140. Kállai, review of Karl Blossfeldt’s Urformen der Kunst, bauhaus 3, no. 1 (January 1929), 27. The review is unsigned, but we know from its style, its critique of "magischer realismus," and from the fact that unsigned articles in bauhaus derived from the pen of the Schriftleiter, that Kállai was the author. The "Schelpennummer" of Wendingen no. 8/9 (1923), had texts by Roland Holst and Th. Wijdeveld, and photographs by Bernard Eilers and J. B. Polak. Kállai would in any case have been informed of the Wendingen photographs through Moholy-Nagys’s Malerei, Photographie, Film (1925), which reproduced two of Polak’s x-ray photographs of sea shells from this issue. (pp. 61, 64) If Kállai was a regular reader of Wendingen, he would also have seen the special "Kristallen" issue, no. 11/12 (1924).

142. Ernst Kállai, "Schöne Photos, billige Photos," Die Weltbühne, 25, no. 46 (1929). By this time -- perhaps as a result of Kállai having accepted the job Moholy-Nagy had just vacated as editor of bauhaus, and as a result of his sometimes critical views of Moholy's art -- Kállai and Moholy-Nagy seem no longer to have been friends.

143. Ibid., 736.

144. Ibid., 736-7. See also Kállai's unsigned "nachträgliches zur foto-inflation," bauhaus 3, no. 3 (October-December 1929): 20. This, and Renger-Patzsch's "hochkunjkutz" which follows, suggests that Kállai was in direct contact with Renger-Patzsch. The unsigned laudatory review of Gräff's book Es kommt der neue Fotograf in bauhaus 3, no. 3 (July-September 1929): 31, is likely by Kállai.


146. On the make-up of the Selection Committee: Karl Steinorth, "Die Internationale Werkbundausstellung 'Film und Foto' und ihre Organisation," introductory essay to the extended reprint of the catalogue of the show: Internationale Ausstellung des Deutschen Werkbundes Film und Foto Stuttgart 1929, Karl Steinorth, ed., (Stuttgart: Deutsche Verlags-Anstalt, 1979), unpag. See also the "Gliederungsplan" on page 10 of the catalogue facsimile.


148. While we cannot discuss this aspect of the FIFO here, I wish to point out that Richter's inclusion of Mol's microscopic films in the program, effected a parallel aestheticization of scientific film.

149. Eleanor Hight writes that "Moholy's exact role in the selection and organization of the over one thousand photographs in Fifo is unclear, but his influence seems to have been substantial. (Hight, Picturing Modernism: Moholy-Nagy and Photography in Weimar Germany, (Cambridge, Mass.: MIT Press, 1995), 203.) Lusk sees Moholy as the "künstlerische Leiter" of the show, though she does not document her statement. (Monta-
gen ins Blaue, 156). Ute Eskildsen notes that while Moholy-Nagy was not an official member of the selection committee, he played an important role in the selection process, and that he personally chose many of the works for the show. (Eskildsen, "Fotokunst statt Kunstphotographie," 14) Steinorth writes: "als den 'programmatisch' einflussreichsten Mitarbeiter für die Ausstellung verpflichtete Stotz... Moholy-Nagy." (Op. cit., unpag.)


151. Eskildsen, "Fotokunst statt Kunstphotographie," 14 and "Gliederungsplan" in the facsimile of the exhibition catalogue, edited by Karl Steinorth, p. 10. This Gliederungsplan implies that the Berlin staff were the "Mitarbeiter" for Germany, with equal responsibility for the show as the foreign advisors, but this could not have been the case since most of the material was German, and since Baur was the head of the Werkbund as a whole, and Seeger was its permanent staff member. As we see below, furthermore, Moholy also played more than a merely local role. Seeger’s memory that the "Vorbereitungszeit für die 'Fifo' [war] von höchsten 1 1/2 Jahren" indicates that the show was conceived around the time of the "Neue Wege der Photographie" exhibition in Jena in 1928.


155. Ibid.


158. In his programmatic article on the exhibition published several months before it opened, Stotz does not explicitly indicate that Moholy-Nagy played a leading role in curating


160. In his very well-informed article "Werkbund-Ausstellung 'Film und Foto,' Stuttgart 1929." Prodest refers to the FIFO as a showcase for the "neue Sachlichkeit." (p. 910) On these terms see Hight, Picturing Modernism, 97-99.

161. Stotz' theoretical statements are clearly indebted to Moholy's writings. (Karl Steinorth, op cit., unpag.) Compare Stotz, "Werkbund-Ausstellung 'Film und Foto' Stuttgart 1929," 154 and the introduction to the exhibition catalogue, "Die Ausstellung," in the facsimile of the catalogue, edited by Steinorth, pp. 11-12, to any of Moholy-Nagy's theoretical photographic writings of the mid 1920s.

162. Moholy-Nagy originally reproduced this photograph in Malerei, Photographie, Film (1925), 101. See Lusk, Montagen ins Blaue, 156-57. Photographs of the reflective surfaces of metallic spheres became common at the Bauhaus around 1929. See for example, Roswitha Fricke, ed., Bauhaus Photography (Cambridge Ma.: MIT Press, 1985) for a good number of examples.


164. Ibid.


166. Prodest, "Werkbund-Ausstellung 'Film und Foto'" Photographie für Alle: 199. That Moholy's point was not entirely correct, is discussed by contemporary critics and by Ute Eskildsen, in "Fotokunst statt Kunstphotographie," 68-69.


168. While a detailed list of what images were shown was lacking for Raum 1 alone at the Stuttgart showing of FIFO (only the sources were listed), the catalogue of the Vienna
showing of FIFO did include a more detailed list of works shown. See pp. 49-50 in the facsimile edition of the Stuttgart catalogue and the relevant pages of the Viennese catalogue in the same facsimile volume. (Steinorth, ed.) Also: Karl Blossfeldt, *Urformen der Kunst*, Karl Nierendorf, intr. (Berlin: Ernst Wasmuth, 1928).


170. "F.M.", Review of the exhibition *Film und Foto*, Deutsch... [illegible] (1 June 1929), no page number. In the Hannah Höch Archive of the Berlinische Galerie, Berlin. There is no review by "F.M." with a date of 1 June listed in Eskildsen and Horak's list of selected reviews of the *Film und Foto* exhibition in their *Film und Foto der zwanziger Jahre*, 202.

171. Prodest, "Werkbund-Austellung 'Film und Foto'" Photograph für Alle: 199.

172. Eskildsen has suggested that the book acted as a model for Raum 1. "Fotokunst statt Kunstphotographie," 15. Moholy installed Raum 1 at the Berlin showing as well. See his postcard to Erich Stenger of 17.7.1929 (Stenger Nachlass, Agfa Foto-Histororama, Cologne) and page 8 of the Berlin catalogue of "Fifo."

173. "Historische Einführung," Documentary photograph in the Staatliche Museen Preussischer Kulturbesitz, Kunstbibliothek, Berlin. Thanks to Janos Frecot and Inka Graeve at the Berlinische Galerie for showing me a copy of this photograph.


175. In *Picturing Modernism*, Hight introduces this translation, which more accurately reflects the gendered meaning of the work than does the traditional translation *Once a Chicken, Always a Chicken*. (p. 165) See Lusk, *Montagen ins Blaue*, 82-83, 136-37, 126-127.


177. Prof. Spörl, "Was sagt uns die 'Fifo'?", Der Photograph no. 50 (21 June 1929): 197.


183. In his article "Werkbund-Ausstellung 'Film und Foto,' Stuttgart 1929." Prodest wrote that the FIFO "übertrifft in weiten Ausmasse das, was kurz vorher von anderer Seite, vom Folkwang-Museum in Essen, erreicht worden ist." (p. 910) While Steinorth assumes that Dexels's exhibition inspired Stotz to conceive of this show, he also holds that the Essen show was so different that no influence can be assumed. (Steinorth, op. cit., unpag.)

184. He opposed, however, what he saw as the apolitical stance of the de Stijl artists. See Kállai, "Korrektúrát (A de Stijl figyelmébe)" [A correction (to the attention of de Stijl)] Ma 8, no. 9-10 (1 July 1923): unpag.


192. Ibid. This new critical perspective is first put into operation in his article on Muche. Kállai, "Georg Muche," Der Cicerone 17, no. 12 (June 1925): 584-91.


196. On his earlier tendency to "vitalize" Constructivism, see Chapter One. An important source for Kállai at this time would have been Hans Haustein’s "Biologie" column in Sozialistische Monatshefte, a journal in which Kállai was himself publishing by this time. See, e.g., his use of the term "Neo-Vitalismus" in "Biologie," Sozialistische Monatshefte 63, no. 3 (March 1926): 180. This article would also have given Kállai a complete history going back to antiquity of the Mechanism-Vitalism debate, and of the debate in the 20th century up to his time. On Neo-Darwinism, see Haustein, Sozialistische Monatshefte, 64, no. 6 (June 1927): 490-91. In fact, judging by all the articles where he discusses Ernst Haeckel, Jakob von Uexküll, Hans Driesch, Edgar Dacqué, evolution, Lamarck, Darwin, Genetics, etc., Haustein seems to have been an important source for Kállai on biocentrism during the mid to late 20s. Note that Kállai seems to have been a regular reader of Die Form, as well as of Franz Kollmann’s book Schönheit der Technik. Franz Kollmann, Schönheit der Technik (Munich: Albert Langen, 1928). Source: bauhaus 1928, no. 4: 27.
197. Kállai, "Architekturális leszerelés." He also calls for an organic-functionalist approach to housing design in "Die Wohnung," 322. On this 'drive,' see below.


203. Hannes Meyer assumed the directorship of the Bauhaus April 1, and though he had originally thought of Schlemmer in this role, he soon invited Kállai to act as Moholy-Nagy's replacement as editor of bauhaus, and as the school's publicist. (In his letter to Willi Baumeister of 15.2.1928 Schlemmer mentions that Meyer intends his duties in the new Bauhaus to include "publishing" and "public relations" in addition to teaching. See Schlemmer, The Letters and Diaries, 226. In a letter to Baumeister of 30.4.1928, Meyer mentions having hired Kállai to be the "Pressreferent" of the Bauhaus "zum methodischen Aufbau der Bauhauspropaganda." Magdalene Droste, "Unterrichtsstruktur und Werkstattsarbeit am Bauhaus unter Hannes Meyer" in Werner Kleinerüschkamp and Werner Möller, eds., Hannes Meyer 1889-1954. Architekt Urbanist Lehrer (Berlin: Ernst & Sohn, 1989), 140). Kállai arrived in Dessau by early May at the latest, for he was staying with the Schlemmers on May 7. Ludwig Grote referred to him as Meyer's "propagandist." See Grote in Eckhard Neumann, ed., Bauhaus und Bauhäsler: Bekenntnisse und Erinnerungen (Bern: Hallwag, 1971), 164.


206. One can trace the mood of the Bauhaus through Schlemmer's diary and correspondence. Schlemmer and Meyer started out as friends after Meyer arrived at the Bauhaus in 1927. At first Schlemmer greeted his appointment as director cautiously. As
late as 11 November 1928 Schlemmer wrote to Otto Meyer-Amden that "Hannes Meyer [is] well disposed and helpful but also demanding." The Letters and Diaries, 235. In his February 1929 diary entry, Schlemmer refers to "at long last another party at this troubled Bauhaus." (p. 238) By the time of his 6 March 1929 letter to Baumeister, Schlemmer writes that "I am ready to leave. People -- the students and I, too -- are dissatisfied with Hannes because of his boorish behaviour and tactlessness. The atmosphere in the house is not good," and he was referring to his attempts to get a job in Breslau. (p. 240) On June 9 he wrote to Otto Meyer-Amden that "Given the mood here, I can only say thank God [that the Breslau Academy is interested in hiring him]. I have never felt more alienated from the Bauhaus than now, thank's to Meyer's total failure as director." (p. 244)


208. See Oskar Schlemmer IV '29, im Meisterrat '28, 11 silver contact prints and enlargements mounted on card, 29.7 X 41.7 cm. in: Josef Albers. Photographien 1928-1955 (Cologne: Kölnischer Kunstverein, 1992), plate 9. Kállai resigned from his job as editor of bauhaus around early July, effective 1 October (letter, Kállai to Naum Gabo, 7.7.1929, Bauhaus Archiv, Berlin, inv. no. 3653/10). This resignation was tended around the time that Schlemmer accepted a position at the Breslau Academy. (See The Letters and Diaries of Oskar Schlemmer, 240ff.) Kállai left Dessau sometime after 6 October 1929, since postcards sent by Kállai to Elizabeth Richter (the wife of Naum Gabo) on the occasion of her birthday are dated "6.10.29," and signed "Kállai. Dessau (leider), Bauhaus (leidere-r)," indicating that he was anxious to leave Meyer's Bauhaus and return to Berlin. (Bauhaus Archiv, Berlin, inv. nos. 3653/11, 3653/3, 3653/12 and 3781/4) He may well have stayed on, however, until mid October, to see Fritz Kuhurs exhibition and hear the Carnap lecture series (on these, see below) and to deliver the last issue of bauhaus edited by him -- which appeared November 15 -- to the printer. Surprisingly, despite his admiration for Klee, Kállai does not seem to have been close to him at the Bauhaus. (Conversation with Alexander Klee.) Perhaps this was because -- like Grote -- Klee saw him as Meyer's man.

209. Hannes Meyer, "bauhaus und gesellschaft" bauhaus 3, no. 1 (January 1929), 2. In his letter to Lord Mayor Hesse of Dessau, written at the time of his dismissal as Bauhaus director in August of 1930, Meyer echoed these same ideas: "I fought constructively under my motto: all life is a striving after oxygen + carbon + starch + protein. Therefore, all design must be anchored in this life. Building is a biological and not an
aesthetic process." (Schnaidt, ed., Hannes Meyer...) These ideas echo those expressed by K. von Meyenburg in his article "kultur von pflanzen, tieren, menschen" in bauhaus no. 4 (24 October 1927), in which he writes "die sonne liefert die energie und die atmosphere liefert die vier gase: kohlenstoff, sauerstoff, wasserstoff und stickstoff, aus C,O,H,N erbaut sich das leben mit sonnenkraft fast restlos..." (p. 10) Von Meyenburg, a fellow Basler much appreciated by Raoul Francé, exercised a strong influence on Meyer's organic mode of thinking. Indeed, Meyer invited him to lecture at the Bauhaus, which he did in 1929. (On this, see below.)


215. Schlemmer, diary entry of the end of May 1928, in Ibid., 233.

216. Schlemmer, diary entry of 26 March 1928, in Ibid., 231.


218. Ibid., 23.

219. This view may also have been affected by Prinzhorn's related psychology, which Meyer and Kállai were promoting at the time. C.f. Huch and Hans Prinzhorn, Leib-Seele-Einheit: Ein Kernproblem der Psychologie (Potsdam/Zurich: Müller &

In the special theatre issue of bauhaus no. 3, Schlemmer reviewed Fritz Giese's Körperseele, an evidently Monist study of "body/soul relationships with respect to modern gymnastics and expressive dance." Janice Joan Schall, "Rhythm and Art in Germany, 1900-1930" (Ph.D. dissertation, University of Texas at Austin, 1989), 347-8.

220. Schlemmer, letter to Tut Schlemmer of 1 March 1928. On Haeckel, see also Kuchling, ed., Oskar Schlemmer, Der Mensch, p. 71-72. Both Haeckel's Natur und Mensch (1920) and Ostwald's Grosse Männer are included on the natural scientific reading list.

221. Kuchling in Schlemmer, Der Mensch, 133. Among the books listed on the related reading list is Oswald Spengler's Untergang des Abendlandes. (p. 142)

222. Six of thirteen items, to be precise. See Kuchling, ed., Oskar Schlemmer: Der Mensch, 142. On the Monistic-Dualistic topic, see pp. 144-5. The list, probably compiled in 1928, includes Klages' Ausdrucksbewegung und Gestaltungskraft (1923); Mensch und Erde (1920), Vom kosmogonischen Eros (1922), Vom Wesen des Bewusstseins (1926); and Carus' Psyche (1864) and Symbolik der menschlichen Gestalt (1925). As Prinzhorn points out in Leib-Seele-Einheit, Klages wrote the introduction to the re-edition of Psyche (pp. 189-90). Surprisingly, Schlemmer does not include Prinzhorn's history of Monist psychology Leib-Seele-Einheit, which appeared in 1927 and was reviewed in Bauhaus very positively by Ernő Kállai. On this, see below. On Goethe, Carus and their effect on Klages in this book, see pp. 54ff.

224. We know from Naum Gabo’s correspondence with Kállai, preserved in the Bauhaus-Archiv, Berlin, that Kállai first suggested Gabo’s lectures at the Bauhaus, held 2-9 November 1928. It is also likely that Kállai proposed his compatriot Pál Forgó’s Bauhaus lecture on "Neues Bauen in Ungarn," held 7 December 1928. (Kállai had given Forgó’s book Új építésszet [New architecture] a mixed review on p. 27 of the 1 October 1928 issue of bauhaus.) Thus it seems that Kállai took on an active role in organizing the Bauhaus lectures. On the series in general, see Klaus-Jürgen Winkler, Der Architekt Hannes Meyer: Anschnauungen und Werk (Berlin: VEB Verlag für Bauwesen, 1989), 122-4.


227. bauhaus 3, no. 3 (July-September 1929): 28. This lecture is also reported to have been on the topic of "Arbeit und Leben" in "Bauhausvortrag" Anhalter Anzeiger (8.6.1929). In "Interne Vorträge am Bauhaus" (Anhalter Anzeiger 4 June 1928) it is reported that von Meyenburg was to have lectured from 6-8 June, suggesting that he delivered more than one lecture. The anonymous author of "Bauhausvortrag" reported that von Meyenburg criticized Karl Marx’s and Taylor’s ideas on work, as well as the collectivization of agriculture in the USSR. One must rather -- von Meyenburg is reported to have said -- deal with the whole question of work "von rein biologischen Gesichtspunkten aus." Von Meyenburg’s biologic materialism is expressed thus in the report: "Biologisch gäbe es keinen Unterschied zwischen dem Kampf untereinander und der Arbeit. Immer handelt es sich um ein Auseinandersetzen einer Materie und um ein Zusammensetzen zu einer anderen, also um einen Umfass des Stoffes." Raoul Francé reproduced images of von Meyenburg working in Francé, Das Buch des Lebens (Berlin: Ullstein, 1924), 347 and Francé, So musst du Leben! (Dresden: Car Reissner, 1930), 33. C.f. For a clear expression of von Meyenburg’s biocentrism, see his "kultur von pflanzen, tieren, menschen," bauhaus no. 4 (24 October 1927): 8-9.


229. Tanja Frank was the first to point out the deep impression Prinzhorn’s ideas made on Kállai, in her afterword to an anthology of Kállai’s writings she edited, Vision und Formgesetz, 268. C.f. Kállai’s adoption of Klages’ idea of rhythm as an essential expression of universal vitality. For example, an
important passage on rhythm appears both in Kállai's exhibition catalogue Vision und Formgesetz. Blätter der Galerie Ferdinand Möller no. 8 (September 1930), 3-4, and in Kállai's essay "Rhythmus in Bildern" in Die Weltbühne 26, no. 41 (1930), 554-6: "Der Mensch ist geistige Potenz, Erkennen und Konstrukteur hohen Ranges. Doch er treibt im gleichen Kreislauf von Naturgewalten des Blutes, des Geschlechts und des Hungers, der Keimung und des Todes wie Tier und Pflanze." C.f. the clippings in Kállai's collection: "Takt und Rhythmus. Ludwig Klages in der Kant-Gesellschaft" [no author or date; ca. 1934] Unterhaltungsblatt der Vossischen Zeitung (concerning Klages' lecture "Vom Wesen des Rhythmus" held at the Berliner Ortsgruppe of the Kant-Gesellschaft), and Georg Burckhardt, "Geist und Seele," review of vol. 3 of Klages' Der Geist als Widersacher der Seele, [no source or date; book published in 1932].


231. Ibid.

232. Ibid.

233. Ibid. Prinzhorn's lecture "Leib-Seele-Einheit" was evidently based on Leib-Seele-Einheit. Ein Kernproblem der neuen Psychologie, while "Grundlagen der neuen Persönlichkeitspsychologie" seems to have been an early version of the ideas Prinzhorn later expressed in Persönlichkeitspsychologie. Entwurf einer biozentrischen Wirklichkeitslehre vom Menschen (Leipzig: Quelle & Meyer, 1932).

234. Hannes Meyer, Typescript of a lecture held in Vienna and Basel, 22.4.1929. Reprinted in Lena Meyer-Bergner, ed. Hannes Meyer. Bauen und Gesellschaft, Schriften, Briefe, Projekte (Dresden: VEB Verlag der Kunst, 1980), 62. On this, see also Kraus, "bauen ist ein biologischer vorgang -- Hannes Meyer," 280. For another expression of these ideas, see Meyer's "bauen und gesellschaft," 2. The listing of thinkers (with the omission of Goethe and the addition of Hans Prinzhorn) is more or less Prinzhorn's formulation. See Prinzhorn, Leib-Seele-Einheit, 179.


237. C.f.: "The despiritualization of the world is not the outcome of the unfaith of individuals, but is one of the possible consequences of a mental development which here has actually led to Nothingness.... Today, as always, art must, willy-nilly, make Transcendence perceptible, doing so at all times in the form which arouses contemporary faith. It may well be that the moment draws near when art will once again tell man what his God is and what he himself is." Karl Jaspers, Man in the Modern Age [Die geistige Situation der Zeit, 1931] Eden and Cedar Paul, trans. (New York: Anchor, 1957), 20; 141.


240. Ibid., 143-44.

241. See bauhaus 3, no. 3 (July-September 1929): 28.


The Vienna Circle's Berlin supporter Hans Reichenbach was also invited to lecture at the Bauhaus, though after Kallai's departure. Reichenbach was invited in the fall of 1929. Neurath was invited in May of 1929 and again in 1930. Galison,

246. An ignorance of biocentrism and a consequent adherence to the Left-Right taxonomy mars Galison’s informative article on the logical positivists and the Bauhaus. Galison elides the connections of the logical positivist circle to the Monistenbund. In his first letter to Carnap of 19 October 1923, Otto Neurath refers to Carnap’s involvement in the "Freideutschen," but fails to identify this as a reference to the Freideutsche Jugend of the German Youth Movement. See pp. 713-4. Galison’s attempt to discuss Logical Positivism as "left wing" is subverted by his own discussion of its "Left" (anti-metaphysical) and "Right" ("metaphysical" wings) the "Right-wing" including Schlick and Wittgenstein. (On the logical positivists as spanning the political spectrum from Left to Right despite Galison’s tendency to associate them exclusively with the Left, see Galison p. 714.) As a result, Galison absurdly classifies Hans Driesch as "one of the heros of nationalist philosophy," i.e. -- in this context -- a quasi-Nazi, for his metaphysical organicism (p. 733-4) despite Driesch’s long-standing position as one of the "Circle of Friends of the Bauhaus." (See, e.g., the list in bauhaus 3, no. 2 (April-June 1929): 27.) Because of his failure to allow for a Leftist biologism, not surprisingly Galison -- as others -- seeks to erase traces of Hannes Meyer’s radical biologism. See, e.g., Galison’s studied omission of Meyer’s references to "biology" and "life" in his quotation from Meyer’s "Bauen," p. 717. Combined with the decidedly metaphysical origins of Kandinsky’s Elementarism, and the Francéan origins of Moholy-Nagy’s, all this underlines the fundamentally mistaken nature of Galison’s thesis that "the modernist construction of form out of elemental geometric shapes and colors is a correlate of the verbal development of theories out of logic and elementary bits of perception." (p. 749) His thesis crumbles on the untenable foundation of the Bauhaus as "scientistic and machine-centred." (p. 749)


249. Neubert, Mein Arztleben, 53. After one of Carnap’s lectures, discussions continued until 1 AM. (Galison, "Aufbau/Bauhaus," 736). Von Meyenburg’s lecture was also reported to have been a success. Anhalter Anzeiger (8.6.1929).


251. On Prinzhorn, Klages, biocentrism and the Bauhaus, see Chapter Three.


254. On Kuhr’s public statement against Gropius’ resignation and his opposition to Meyer, see The Letters and Diaries of Oskar Schlemmer, 225.

255. For Kállai’s critique of what developed into Stalinism, see his "goldene ketten -- eiserne ketten" and "Das Bauen und die Kunst," 8. This prescient knowledge of Stalinism likely derived from János Mácza, who had visited the Dessau Bauhaus during the summer of 1928, and was Kállai’s guest there. Mácza was a prominent figure on the Moscow cultural scene, and would have been very well informed on developments there. Meyer (with whom Mácza later became friends during his Moscow years), accepted this totalitarianism, and soon moved to the Soviet Union, remaining a Stalinist even after his expulsion from the USSR. See: Karin Carmen Jung, "Planung der sozialistischen Stadt. Hannes Meyer in der Sowjetunion 1930-1936"; and Winfried Nerdinger, "'Anstossiges Rot' Hannes Meyer und der linke Baufunktionalismus -- ein verdrängtes Kapitel Architekturgeschichte," both in Kleinerüschkamp and Möller, eds. Hannes Meyer, 288-9 and 27-28, respectively. On Mácza, see the autobiographical fragment in Janos Mácza, Eszméiségez - avantgarde - művészet [Intellectualism -- avant-garde -- art] vol. 2 (Budapest: Petőfi Irodalmi Múzeum, n.d. [1985], 357.
256. See Kállai's critique of Moholy's set designs for the tales of Hofmann as pretty and superficial in "Das Bauen und die Kunst," 15-16.

257. Mattenklott, Karl Blossfeldt, 57, note 17. The aestheticization -- and commodification -- of these images had begun in the mid 20s, with gallery owner and publisher Karl Nierendorf's exhibition and subsequent publication of Blossfeldt's turn of the century plant close-ups in 1925 and 1928, respectively. It is possible that it was Moholy's book Malerei, Photographie, Film of 1925, which gave Nierendorf the impetus to recontextualize Blossfeldt's work. Eugène Atget's "discovery" by Man Ray and the Surrealists in 1925, and his inclusion in the FIFO exhibition, was a process exactly analogous both temporally and conceptually. See Krauss, "Photography's Discursive Spaces," 144. Blossfeldt's revival and success is coincidental with the aestheticization of scientific photography and in a sense it was a part of this trend, since previous to it they would have been seen as akin to botanical photographs. Indeed, as Mattenklott has shown, Blossfeldt's photographs were meant as tools in the applied arts rather than as an aesthetic undertaking.

258. bauhaus 3, no. 3 (November 1929), 28. He would also have seen Blossfeldt's photographs in Raum 1 of the FIFO. It is possible that Kállai arranged for the showing of Blossfeldt's photos at the Bauhaus.


261. Note that in the second issue of bauhaus which Kállai edited, there was a half-page advertisement for Die Literarische Welt, the only one of its kind in bauhaus. See bauhaus, 2, no. 4 (1 October 1928): 27. It was in the next, January 1929 issue that Kállai's review of Blossfeldt's book appeared.

262. Benjamin, "Neues von Blumen." Translation by Oliver Botar. The available English translation in Mellor, ed., Germany. The New Photography 1927-33 (p. 21) was for the most part unusable.

263. I am here quoting the translation from ibid.


Given Benjamin's probable importance in inspiring Ernő Kállai's Bioromantik conception, it is important to note his Youth Movement roots. Benjamin became an admirer of Klages at the Freideutsche Jugend's Hohe Meissner meeting of 1913, after hearing Klages' "Mensch und Erde" speech. (On this early environmentalist speech, see Chapters Two and Three.) Benjamin also befriended Gustav Wyneken, one of the leaders of the Youth Movement, and a principal figure in the Schulreformbewegung which, as we saw in Chapter Three, had a strong effect on Moholy-Nagy's pedagogical thinking. Characteristically, he wrote his dissertation on Der Begriff der Kunstkritik in der deutschen Romantik (Frankfurt/Main: Suhrkamp, 1973). On Benjamin's participation at the Hohe Meissner, see Corona Hepp, Avantgarde, 41. On Benjamin and Klages see also Werner Fuld, "Walter Benjamins Beziehung zu Ludwig Klages," Akzente 28 (1981): 274-87 and on Benjamin's affinity with German Romanticism and Paul Klee, see Mark Roskill, Klee, Kandinsky, and the Thought of their Time: A Critical Perspective (Urban, Ill.: University of Illinois Press, 1992), 134-5. On Benjamin's admiration for the organicist art historian Siegfried Giedion's writing, see Detlef Mertins, "Walter Benjamin's Tectonic Unconscious," Architecture New York 14 (1996): 31.

266. This comparison was made in a special issue of ReD on photography, clearly inspired by Moholy-Nagy's New Vision. For what I presume to be the editor Karel Teige's comparison made in a caption, see ReD 1, no. 6 (1929): 214-15. This issue also included "Architektura hmoty" [The architecture of matter] (pp. 209-210), an article by the Czech physicist and popular scientific writer Vilém Santholzer (1903 -?) of the Institute of Radiology in Prague, on physicist Max von Laue's X-ray crystallography, i.e. his pioneer imaging of atomic structure, illustrated with microscopic photographs on atomic structure by von Laue. See also Euzem Markalous, "K Mikrofotografiim," ReD 1 (1928): 351-52. Connections between Teige and the Bauhaus were especially close during Meyer's directorship. Note,
e.g., the rare reproductions of works by Kállai’s protegé Fritz Kuhr in ReD 2 (1929): 296 and ReD 3 (1929-31): 137. Thanks to Tonya Miouska of Toronto and Hanus Hemola of the National Library, Prague, for information on Santholzer, and to Miouska for translating Santholzer’s article.

267. Ernő Kállai, A természet rejtett arca [The hidden face of nature], page. "Die Idee," a 1929 coloured monotype by Kuhr which fits this description, is reproduced in Peter Hahn, Junge Maler am Bauhaus (exh. cat.) (Munich: Galerie Levante, 1979), unpag. C.f. also the abstract light photographs by Kuhr published in ReD and bauhaus 3, no. 2 (April-June 1929): 19 and the untitled watercolour in Der Kunstnarr: 3.

268. Ludwig Grote, "Junge Bauhausmaler," Das Kunstblatt (July 1929): 198-201. The article must have been written before about June. C.f. Ludwig Rote's introduction to the exhibition catalogue Junge Bauhausmaler (Hallescher Kunstverein, 1928): "Wohl zum Ausgleich gegen die strenge, bis zur industrietechnischen normgetriebenen Rationalisierung in den Bau- und Werkstattarbeiten des Bauhauses zeigen alle jungen Bauhausmaler einen unverkennbaren Hang zu lyrischen, phantastischen oder grotesken Visionen, zu erdgeistigen oder überirdischen Grenzerweiterungen der Form, zu einer Romantik...."

269. The Gallery was located in Berlin, and Kállai wrote essays for several of the exhibition catalogues of the gallery in 1929 and 1930. See the correspondence between Kállai and Ferdinand Möller in the Möller Archiv, Berlinische Galerie, Berlin. In both my opinion, and that of Eberhard Roters, Möller’s biographer, Kállai played a crucial role in the conception and organization of the "Vision und Formgesetz" exhibition, though Möller was in fact its instigator and chief organizer. (Interview with Eberhard Roters, Berlin, March 1992.) See also: Roters, Galerie Ferdinand Möller. Die Geschichte einer Galerie für Moderne Kunst in Deutschland. Breslau - Berlin - Köln. Ein Beitrag zur Geschichte der Kunst und der Kunstgeschichte im 20. Jahrhundert (Berlin: Gebr. Mann Verlag, 1984), esp. 84. On the question of Kállai’s role in the exhibition’s organization, see also a series of three notices in A bis Z: Kállai, "ankündigung" 2, no. 10 (August 1930), 40; Kállai, "zur ausstellung "vision und formgesetz" in der galerie möller - berlin schreibt uns ernst kállai" 2, no. 11 (October 1930), 48; the editors of A bis Z, "an ernst kállai" 2, no. 12 (November 1930), 48.


271. See the exhibition catalogue Internationale Ausstellung des Deutschen Werkbunds Film und Foto (Stuttgart: Der Deutsche Werkbund, 1929); Eskildsen and Horak, Film und Foto der zwan-
ziger Jahre; Steinorth, ed. Internationale Ausstellung des Deutschen Werkbunds Film und Foto Stuttgart 1929; and Beamont Newhall, "Photo Eye of the 1920s. The Deutsche Werkbund Exhibition of 1929" in Mellor, ed. Germany. The New Photography 1927-33; 77-86. Kuhr also had photographs on display at the "Fifo" in Stuttgart. (Cat. nos. 50-55, p. 53)

272. On "Raum 1," Eskildsen and Horak, eds. Film und Foto der zwanziger Jahre, 68-72 and 15-16, and Rudolf Junk, "Film und Foto" Photographische Korrespondenz 65, no 7 (July 1929), 229. While a detailed list of photographs displayed was published for the other rooms in the exhibition, this was not the case for Raum 1. (C.f. pp. 49-50 and "Nachtrag" p. I. of the exhibition catalogue.) A photograph of a part of Raum 1 (produced in Eskildsen and Horak, eds., Film und Foto der zwanziger Jahre, 191), shows a panel with medical x-ray photographs, one with criminological photographs, and some others, but neither microphotographs, nor cross-sectional photographs of animals. (The original print is in the Museum Folkwang, Essen, Photographische Sammlung.) A photograph of the equivalent section of the Berlin showing of the exhibition (see below) also does not show enough to be able to establish the presence -- or absence -- of the photographs Kállai describes. ("Historische Einführung," Staatliche Museen, Preussischer Kulturbesitz, Kunsthbibliothek, Berlin. Thanks to Janos Frecot and Inka Graeve at the Berlinische Galerie for showing me a copy of this photograph.) The scientific material may have come either from Erich Stenger's famous collection of historical and scientific photography, or from Moholy-Nagy's own collection, or both. (On this question, see Eskildsen and Horak, eds., Film und Foto der zwanziger Jahre, 68.) Stenger's collection was also shown at most of the other such exhibitions in Germany between the world wars.


275. Other displays of scientific photography which Kállai could have seen in 1929-30 include those which formed part of "Fotografie der Gegenwart," at the Museum Folkwang in Essen (20 January to 17 February 1929) and of "Das Lichtbild" in Munich (June to September 1930), which also showed part of the FIFO material. See Eskildsen, "Fotokunst statt Kunstphotographie," 8-25. For a list of such exhibitions: 190-91. Both exhibitions included scientific material. "Fotografie der Gegenwart," with a section entitled "Die Aufnahme im Dienst der Wissenschaft und Forschung," also travelled during 1929 to
Hannover (10 March-17 April), Berlin (20 April-20 May), Dresden (15 September-6 October) and Magdeburg (28 November-19 December).


277. Kallai, "Kunst und Wirklichkeit," Sozialistische Monatshefte 37, no. 10 (October 1931): 1005. In the title of this article Kallai may have been echoing the title of C. August Emge’s 1924 book Die Idee des Bauhauses: Kunst und Wirklichkeit (Berlin: Pan Verlag Rolf Heise, 1924). The cover of this little-known work was designed by Moholy-Nagy. See: Katalog 105: Bauhaus etc. (Berlin: Jürgen Holstein Antiquariat, 1987), item 1049. A shorter, Hungarian-language version of "Kunst und Wirklichkeit" was published as "Valóság és művészet" [Reality and Art] in the Budapest journal Jelenkor (15 July 1940), 12. In an undated list of slide-illustrated lectures Kallai was offering in the early 30s, the first one is entitled "Kunst und Wirklichkeit." (M.K.Cs.; inv. no. MDK-C-I-11/590.6)


280. See the unpublished typescript exhibition proposal dated 13.5.1931, prepared while Kallai was in Rauschenberg. (p. 13) (M.K.Cs.; inv. no. MDK-C-I-11/573) In published form: "Kunst und Wirklichkeit." Another published variation of the text is: "Zurück zum Ornament," Forum (1932), 226. The collaborative nature of the proposal between Kallai and Möller is suggested by his reference to the exhibition in an undated letter to Maria Möller-Garny (Mrs. Ferdinand Möller), which Kallai sent while spending the summer of 1931 in Rauschenberg near Kassel. The letter can be dated circumstantially to June. (Archiv Ferdinand Möller, Berlinische Galerie, Berlin.)

282. He again expresses this in his article "Bioromantik" of the following year (pp. 271-2): "Das Bild, das die materialistische Naturwissenschaften des vorigen Jahrhunderts von den Entwicklungsgesetzen und Formen organischem Lebens entwarf, ist gründlich überholt durch den Begriff der inneren Zielstrebwigkeit und Ideenbestimmtheit." C.f. Hannes Meyer’s critical view towards Darwin’s theories referred to by Hoffmann, "Hannes Meyer -- ökologische Aspekte seiner Lehre und deren Auswirkung," 99.

283. Die neue Biologie versteht unter Urf"orm "nicht mehr einen für die 'Entwicklung' im Darwinischen Sinn stammgeschichtlich neutralen Anfangspunkt, sondern die in allen zu einem Typus 'gehörigen Arten undGattungen, auch in den anfänglichsten schon vollständig vorhandene typenhaft konstitutionelle Gebundenheit und Bestimmtheit, die Potenz (man denke an die Bemühungen von Hans Arp organischer Lebensformen in letzter, konzientierter Potenz zu Bildern und Plastiken zu verarbeiten) "die bei allem ausserem evolutionistischem Formenwechsel als das Lebendig-Beständige da ist -- eine Entelechie wie auch Goethe wohl den Begriff Urf"orm fasste....

Edgar Dacqué, Urwelt, Sage und Menschheit. Eine naturhistorisch-metaphysische Studie Sixth edition. (Munich and Berlin: R. Oldenbourg, 1931). First published in 1924(?). It is probable that Kállai used the 1931 edition for this exhibition proposal. The ideas in this book were further developed by Dacqué in Natur und Seele. Ein Beitrag zur magischen Weltlehre (Munich and Berlin: R. Oldenbourg, 1926) and Leben als Symbol. Metaphysik einer Entwicklung Lehre (Munich and Berlin: R. Oldenbourg, 1929), Forewords of both. It is not certain that Kállai knew of these two latter volumes. The term "Entelechie" (English: "entelechy") refers to an organic system or series of events; i.e. an entity, and was a basic category of Hans Driesch’ system of thinking. In English, see, e.g. his The Science and Philosophy of the Organism (Aberdeen: Aberdeen University, 1909). Thanks to Hilmar Frank for bringing Driesch to my attention. It is noteworthy that in 1931 Kállai accepted the teleological position of Neo-Lamarckianism, which he had earlier so ardently criticized. For example in "Korrekturat. A de Stijl figyelmеbe."

284. See the chapter "Naturdemonie und Paradies" in Dacqué, Urwelt, Sage, Menschheit. Kállai’s engagement with the question of the representation of the "demonic" goes back to his "Dämonie der Satire" of 1927, and developed through his encounter with Jung’s ideas. Dacqué’s book forms an interesting parallel to the ideas being developed at the same time by
Joseph Campbell (under the influence of Jung) in the United States.


286. On this, see Chapter One.

287. It seems that the Leipzig Museum was unable to afford the show itself, but tried to get others involved, without success. In a June 1931 letter to Maria Möller-Garny referred to above Kállai writes: "Über die Pleite in Leipzig haben Sie schon gehört. Schade, wenn die Ausstellung überhaupt nicht zustande käme. Aber Dr. Teupser will ja versuchen noch andere Museen für die Beteiligung zu gewinnen. Wie finden Sie meinen Ausstellungsplan?"


289. The concept of a new, post-Expressionistic romanticism had been in the air for a few years at this point. C.f. Kandinsky’s phrase "Auch ich liebe die kahle Wand, weil sie einer der Klange der neuen kommenden Romantik ist," contained in his aesthetic statement "Die kahle Wand," written for Der Kunstnarr: 20.


293. Kállai, "Zurück zum Ornament."

294. Kállai, Vision und Formgesetz, 4-5.

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B. Science, Philosophy, Culture and their History: Selected Publications after 1945

General


-----, The Ghost in the Machine.


Selected Philosophers and Scientists

Henri Bergson


Hans Driesch


Johann Wolfgang von Goethe


Ernst Haeckel


Ludwig Klages


Ernst Mach


Friedrich Nietzsche


Wilhelm Ostwald


Hans Prinzhorn


Jakob Johann, Baron von Uexküll


C. Aesthetics, Art Theory and Criticism: Up to 1949


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Raoul Hausmann


Ernő Kállai

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Paul Klee


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Hannes Meyer


László Moholy-Nagy


Laszlo Moholy-Nagy. Alchimiste de la transparence.

Le Bauhaus de Chicago. L'oeuvre pédagogique de László
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Hans Prinzhorn


Herbert Read


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G. Photography: After 1945

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H. Selected Photographers

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Wedepohl, Paul. *Blossfeldt 1984* (no other info; xerox of intro only)


Ernst Fuhrmann


Albert Renger-Patzsch


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I. Scientific Film


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Oliver Árpád István Botar was born in Toronto, Ontario on September 2, 1957, the son of Dr. Olivér Botár and Mrs. Gabriella Králik Botár. He attended grade school in Edmonton, Alberta, and graduated from Archbishop O’Leary High School in 1975. He received a Bachelor of Arts, Magna cum Laude, from the University of Alberta in 1979, with a major in Urban Geography and minors in English and philosophy. In 1979-80 he was on scholarship in Budapest, Hungary, studying art history. After this he entered a Master of Science program in Urban and Regional Planning at the University of Toronto. He began work as a free-lance art writer and curator in 1981, and he has been publishing, curating and lecturing regularly on the history of art and on contemporary art since then. In 1982-83 he worked as an Assistant Planner for the City of Edmonton. After spending a second year on scholarship in Hungary in 1984-85 to research his thesis in Urban Planning, he graduated in 1985. In 1987 he graduated with a Master of Art in Art History from the University of Toronto, and he entered the Ph.D. program at that university the following year. He began teaching at the University of Toronto in 1990, and has since also taught at Queen's University and the University of Guelph. He has held a position in Modern Art History at the University of Manitoba since 1996, and currently holds the rank of Assistant Professor.
Figure Introduction-1
Figure 1-1
The sequence of pictures on this and the two following pages illustrates the growing dissolution of the spatial foundation of Romantic realism. The expressive lines, colors and subject matter distort and finally dissolve the distinct system of spatial lines, space-supporting colors and idealized subject matter which symbolized the traditional ground of static Being.

40. "Penelope's Dream," John Flaxman, 1799


42. "Nocturnal Landscape," Vincent van Gogh, 1890

43. "Moonlight Cove," Albert P. Ryder, about 1900
47. "Man reading in bed," Paul Klee, 1910


49. Non-objective expressive design. Wassily Kandinsky, 1934

50. Pen drawing (detail). Stanley William Hayter, 1944

Figure 1-3
The Biocentric Discourse Intersection

Figure 2-1
Il faut tendre à l'établissement de standards pour affronter le problème de la performance.

Le Parthénon est un produit de sélection appliqué à un standard établi. Depuis déjà un siècle, le temple grec était entouré dans tous ses éléments.

Le cas d'un standard est établi, le peu de la concurrence immédiate et violente n'existe. C'est le match, pour gagner, il faut faire mieux que l'adversaire dans toutes les parties, dans la ligne d'ensemble et dans tous les détails. C'est alors l'étude poussée des parties progres.

**Figure 4-1**
II y a des formes simples et des grandeurs de sensations constantes. Des modifications internes changées, et conduisent la sensation première (de l'ordre, ma-

Figure 4-2
A.H. Franke

Die Pflanze als Erfinder

Kosmos. Gesellschaft der Naturfreunde
Franckh'sche Verlagshandlung. Stuttgart

Figure 4-3
Figure 4-4
Neben wissenschaftlichen und technischen Fundstellen stehen dabei auch die natürlichen Orte und die Kulturen, die die Menschen aus der Natur schöpfen und ihrer Bedürfnisse und Vorstellungen entsprechend gestalten. Der Schaufelwagen, ein Beispiel für eine solche technische Anwendung, zeigt, wie die Naturformen durch intelligente Konzepte und die phänomenologische Wahrnehmung der Umwelt zu einer faszinierenden Kombination von Natur und Technik werden können. 

Um nun dieses Schweben in bestimmter Tiefe zu erläutern, haben Sie gewisse technische Leistungen höchst verwunderlicher Art hervorgebracht. Ihr Körperchen, das eine einfache Form ist, blüht innerlich mit einem Panzer aus seiner Relativität, nur manche (z.B. Fig. 4 der Abb. 11) sind völlig nackt. Dadurch haben Sie ein sehr plastisches Baumaterial von hervorragenden Qualitäten zur Verfüfung. Sie bauen aus ihm eine Art Cellapparatur, der die Bewegung des fließenden Wasers in bestimmte Bahnen zwingt. Man betrachte Abb. 11, Fig. 1 oder 4. Auch ohne Maschinenbauer zu sein, wird man nicht daran zweifeln, daß jede zeitlich kommende Strömung, durch eine derartige Gestaltung in schraubenförmigen Bahnen abgelenkt, durch ihre Gewalt den ganzen Körper gleich einem Laufsand in eine rollende Bewegung verführen muß. Daran, die Pflanze als Lebensform.
Figure 4-8
Figure 4-11 (top) Figure 4-12 (bottom)


Figure 4-13
ESPRIT DE VÉRITÉ

Le lait de chaux, Diogène... Heure de l'architecture. Vérité, sens de vérité...

Figure 4-16
XII. NATURE AND THE MACHINE


*Courtesy of Wendingen.*

2: Section of modern hydro-turbine. Spiral form dictated by mechanical necessity. Geometrical forms, simple and complex, are orchestrated in machine design.

*Figure 4-17*
Figure 4-19
Die statischen und mechanischen Leistungen der Pflanzenzelle.

Anatomie ist es hierbei sofort erinnerlich, daß es noch andere lebende Strukturen gibt, in denen gleiches stattfindet, auch dieselben mechanischen Gesetze realisiert sind. Ich meine hierbei die Knochenbälkchen der Epiphysen in Röhrenknochen, von denen seit Calmans

Abb. 116. Längsschnitt durch einen menschlichen Femur mit dem System der Knochenbälkchen. \( \frac{1}{2} \) nat. Größe.

...epochenmachender Entdeckung bekannt ist, daß sie genau dem Gesetz von Druck und Zug gemäß gelagert sind (Abb. 116) und dadurch ein System von Verspannungen herstellen, das auch im Tier- und Menschenkörper ein Vorbild technischer Konstruktionen schafft. Diese Knochenbälkchen, histologisch gesprochen: interstitielle Lamellen der Spongiosa, welche auch auf die Compacta übergehen; können nun, wie längst bekannt, bedürfnisgemäß, nach dem Gesetz der funktionellen

Figure 4-20
Figure 4-21 (top) and Figure 4-22 (bottom)
Fig. 128. The seven biotechnical elements: crystal, sphere, cone, plate, strip, rod, and spiral (screw).
Figure 4-24
Ein Tropfen Sumpfwasser

Figure 4-25
Figure 4-26
A fine organisation of light and shade, effective in itself, apart from the picture motif.

Repetition as a space-time organisational motif, which, in such wealth and exactitude, could be achieved only by means of the technical, industrialised system of reproduction characteristic of our time.

Figure 4-28
Heightened reality of an every-day object. A ready-made poster.

The light trails of the passing cars and trams.
From the book
Einführung in die Röntgenfotografie
by Dr. Phil John Eggert

Penetration of the body with light is one of the greatest visual experiences.
Figure 4-34
FUSS EINES EISENRAHMENS FÜR EIN KESSELHAUS.

Figure 5-4
Figure 5-11
film und foto 1929 stuttgart
werkbund-ausstellung
von mitte mai bis mitte juli
film-
sondervorführungen
in den
künstbaut-lichtspielen
foto-
ausstellung
in den
städtischen
ausstellungshallen

Figure 5-12
WOHIN GEHT DIE FOTOGRAFISCHE ENTWIC
INTERNATIONALE AUSSTELLUNG
DES DEUTSCHEN WERKUNGS
FILM UND FOTO
STUTTGART 1929

Figure 5-14
Figure 5-18
Figure 5-20
KÁLLAI ERNŐ

A TERMÉSZET REJTETT ARCA

22 KÉPEL

MISZTÓTFALUSI

Figure 5-22
Ernst Kollai

Bioromantik

... die Sammung deiner Bildern begründen von eine der künstlerischen Bilder von Franz Marc. Den ist das Maschinelle der Bildnis zusammengefügt auf dem Boden um...