LINGUISTIC THEORY AND SECOND LANGUAGE TEACHING

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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Abstract

This thesis is written for the language teacher who wishes to gain theoretical insight into the teaching of grammar. In particular, the discussion seeks to investigate the teaching of 'psychologically real' grammar in the foreign language classroom. It aims therefore at a grammatical understanding which corresponds to the distributional and metaphorical realities of language. With this purpose in mind, three twentieth-century grammatical models of the formal matrix are analyzed: the Structuralist school of thought associated primarily with Ferdinand de Saussure, the Transformational-Generative project identified with Noam Chomsky, and the Systemic-Functional model advanced by Michael Halliday. Subsequent to the theoretical section, a heuristic discussion is undertaken for purposes of pedagogical reflection.
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For my mother and father

Andrea and Lee McCormick
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Abbreviations

Texts, Quarterlies, Journals

Applied Linguistics  AL
Edinburgh Course in Applied Linguistics  ECAL
English Language Teaching  ELT
International Review of Applied Linguistics  IRAL
Modern Language Journal  MLJ
On Language  OL
TESOL Quarterly  TQ
Test of English as a Foreign Language  TOEFL

Theories and Frameworks

The Course in General Linguistics  CLG
Language Awareness  LA
Syntactic Structures  SS
Systemic Functional Grammar  SF
Transformational Grammar  TG
Chapter One: Introduction

'A study of language by whatever discipline...makes one feel humble and undogmatic about the methods of language teaching. Even if it does not find one new techniques and new tricks, it may well make one look at the old trick with greater understanding and less naive and make one less facile about languages and language learning.'

(H.H. Stern, in Oller, 1973:17)
Psychological Grammar and the Language Teacher

Whether it was the intrinsic appeal of grammar or the challenge involved in teaching it which occasioned this thesis is still uncertain. Although both interests are intermingled throughout in equal parts, it was only in the course of discussions with my supervisors that the fundamentally psycholinguistic background became apparent. It seemed to them that the inquiry was not so much about how to teach ‘a’ language as it was about how to teach language itself. That the presence or absence of one little word can have such a clarifying effect is still a source of some amazement to me. The intention is to sketch some of the models which have been offered as approximations of the mechanisms which govern articulate behaviour. The discussion which follows, then, is one whose question is framed against this epistemological background: What is a ‘psychologically real’ grammar?

In pursuing this line of inquiry, I was not certain whether the answers to the question lay primarily in linguistic, anthropological, or pedagogical domains. The first seemed a commonsensical choice and previous undergraduate studies in linguistic anthropology had also provided me with glimpses into the realms of ethnography where the forms of language and the patterns of culture meet. The practical motivation of course came from the foreign and second language classrooms that I had been in over the years. This thesis is thus wide-ranging in motivations, aims, and sources, fitting well within the broad realm of inquiry known as ‘Applied Linguistics’.

Although the theoretical motivation of the thesis is pervasive, the practical purpose behind it is equally germane. The descriptive linguist’s inquiries into the nature of language are paralleled by the practitioner’s reasonable request for any insights that might be of use in the classroom. This exploration concerns itself with the theoretical formation of the language teacher. At the outset then, it must be noted that although language learning is the ultimate objective of all language teaching, it is not the proximate goal here. The discussion that follows will touch upon the former only in passing and is not in any way intended to be a review of learning techniques or learner strategies, still less a quest for the chemistry of the ‘best’ methodology. The intent is to focus on what McIntosh, Halliday, and Strevens (1964) refer to as the ‘methodics’ of language teaching - that domain ‘where linguistics and classroom teaching fuse together’. Allen defines this area even more specifically as that ‘...area of applied linguistics where we aim to establish a pedagogically oriented element of the linguistic facts...’ (1971:2). This thesis seeks to involve the reader in a pedagogical orientation to these realities.
A contention all along has been that language teaching does constitute a definable area apart from language learning and Stern's modified 1990 schema is useful here because the distinction is so clearly acknowledged right from the start:

Level 3: Practice Methodology/Organization

Level 2: Interlevel Educational Linguistics: Learning Language Teaching

Level 1: Foundations Hist. of Language Sociolinguistics Psycholinguistics Linguistics Educational Theory

The vastness of the theoretical domain seemed at times overwhelming. Although I knew the theories and the theoretically inclined teacher for whom these insights were intended, the difficulty lay in reconciling the integrity of a theory with a practical understanding. By reconstructing the theories and outlining the hypotheses, insights, obstacles, and inevitable repositionings, I have sought to make the links in each chain as identifiable as possible. At the same time, however, I have tried to accomplish more than a homogenized survey by focusing on details throughout which I felt crucial for purposes of continuity. The result has been a discussion which at times floats rather superficially while at other times plunges quite technically. On the one hand, the theory can be at times either relentlessly technical (as with TG) or conceptually dense (as with SF). Yet on the other hand, the practical aim of furnishing more than just a passing acquaintance with the central constructs was equally important. Both ends of the spectrum unite in this thesis and if the result has been a kind of Reader's Tractatus it has been quite unavoidable for this thesis straddles both epistemological and pragmatic domains.

The Format

Each chapter broadly consists of (i) milieu, (ii) theoretical exposition, and (iii) short summary. The purpose of the first four chapters is to herald the highly exploratory discussion in the last chapter. This first chapter is largely prefatory and deals with some considerations which I felt were important to underline, in particular, the teaching and learning dichotomy, the practical point of departure, and the importance of theory in any discussion of this kind.

The second chapter discusses the philological milieu in which Ferdinand de Saussure established himself, from which he drew his insights, but away from which he eventually moved. In a dialectical process characteristic of many linguists, de Saussure became dissatisfied with the conceptual
constraints of his paradigm, a discontent leading magnificently to the posthumous masterpiece published as *The Course in General Linguistics* (1916). In the second half of this chapter, the European and American schools of structuralism which derived (in)directly from de Saussure’s CLG are discussed. The linguistic theory developed by Roman Jakobson in particular has left its imprimatur on the phonological stratum of linguistic inquiry and Jakobson’s prose in his book *On Language* is among the most readable. Leonard Bloomfield was selected in turn largely because of his defining contributions to morphological science. His book *Language*, while dense and closely argued, was relatively straightforward in areas of greatest concern to this thesis. The paradigmatic and theoretical orientation of the European also contrasts markedly with the syntagmatic and descriptive vista of the American.

The third chapter traces the mathematico-logical trajectory of Noam Chomsky and his transformational-generative school of thought. The intention here is to provide the language teacher with a connected overview of the development of this school from the publication in 1957 of the seminal work *Syntactic Structures* to the theories of the Revised Extended Standard Theory of the early eighties. Studied for reasons similar to those mentioned above, his work on syntax is unsurpassed for the clarifying perspective which it brought to this stratum in particular. Beyond being the most direct exposition of the problems involved in formalizing the relationship between syntax and semantics, the inclusion of this chapter could be justified for no other reason than that the debates over his perspectives, tenets, and conclusions continue unabated in 1997.

The fourth chapter focuses on Michael Halliday’s theory of grammar and provides the functional counterpoint to the resolutely formal rationale of the chapter preceding. Halliday’s theory of Systemic-Functional Grammar is notable for many reasons although one in particular is the way in which his theory of functional grammar is traceable to de Saussure’s theorizing. Halliday is an equally important figure when it comes to understanding, or at least attempting to understand, contemporary discussions about the vexed relationship between semantics and grammar. The two chapters on Noam Chomsky and Michael Halliday in a way constitute the pith and the marrow of this thesis reflecting as they do two diametrically opposed perspectives toward grammatical analysis.

The last chapter of the thesis seeks to connect the theory with the classroom and is divided into historical, expository, and speculative sections. The introductory part consists of a short discussion of the theoretical and pedagogical milieu in Applied Linguistics. Since one of the practical objectives of the thesis is to conceptualize the relationship between linguistic theory and the classroom, the expository part
of this chapter considers previous attempts at bridge-building and a tentative framework is suggested. The speculative part of this chapter takes the shape of a series of questions along with tentative answers concerning themes which I have noted. The conclusion sums up and reiterates the perspectival theme.

Focus in this thesis has been largely on twentieth century linguists since they are the true inheritors of the synchronic science outlined in The Course in General Linguistics. Jakobson would state years later that virtually all of the problems of modern linguistic thought are contained in it and its theoretical fecundity seems to me proven. However, its preeminence has necessitated a particular methodology both in approaching it and in studying the efforts of subsequent structuralists. Since this thesis is intended to be a survey, the methodological rationale has been to utilize whatever sources which would aid in furnishing internal coherence. For this reason there is significant recourse to secondary sources throughout: To begin with, the CLG required supplementary readings owing to questions surrounding its translation and the subsequent interpretations. The materials offered by European and American structuralists, while within conceptual grasp, were heavy-going by times and attempting to link these models required more detailed readings. By proceeding from the synopsis, the observation, and even the casual aside of others, I was able to not only approach the primary materials with more confidence but also to connect details. Oftentimes, it was footnote rather than text which afforded the crucial insight. This recourse to secondary sources is perhaps most in evidence as regards Chomsky's theory, based as it is upon his earlier mathematical linguistics - an area in which few language teachers can claim the requisite expertise. The chapter on functional theory demanded not so much background reading as excavation: Halliday's perspective has deep roots in the linguistics of the London School, the influence of J.R. Firth being notably pervasive. In formulating the thesis, I have looked for nexus rather than terminus, for connection rather than destination and the search for continuity in grammatical description has been an implicit wish.

In a very real way, the subsequent discussion of the thesis is little more than an account of the continuity and resonance of the ideas formulated in The Course in General Linguistics. The provenance of its ideas is illuminating in itself in a manner that in no way detracts from de Saussure's genius and perspicacity. In the wide-ranging debates among past and present theorists, distant echoes of a tradition dating back to the earliest analyses of Sanskrit resonate as Chatterji (1964), Deshpande (1980, 1992), Cardona (1976), Murti (1984), Sharma (1987), Singh (1992), and Taraporeswalia (1968) all affirm. Largely owing to the efforts of Panini, the codifier par excellence of Sanskrit, we have the earliest
recorded attempt at conceptualizing grammar in terms of a rule-governed system. The discovery of his legacy is invaluable for the beginning researcher for it throws into the best relief possible the fundamental acknowledgement that grammatical thought is almost always in some way thought which is indebted. The terminal answer must therefore cede to the perspectival in this discussion and the project advances in the sole hope that the survey will be of heuristic value to the theoretical language teacher.

A Practical Point of Departure

While it is indisputable that a magnetic attraction exists between the two, learning and teaching may be considered legitimately distinct for several reasons. Teaching implies not only an underlying competence but also the ability to systematically present that competence. A learner may apply a wide variety of untaught heuristics, empirical schemas, and 'rules-of-thumb' to experience yet lack the ability to place the right emphasis and precisely in this ability lies one of the competencies of a teacher. Observation is not necessarily learning since lightning gives the untrained observer no understanding in the theory of electromagnetic fields and while an inventory is part of learning, it is nevertheless the teacher who supplies a perspective in the systematic presentation of observations that might otherwise remain piecemeal or covert.

This focus on the teaching rather than the learning end of the spectrum may appear to be a luxury to language teachers who are so much more than theorists and who less and less frequently find a teaching situation where theoretical reflection - let alone exploration - is possible. This formulating perspective indeed seems far removed from the gerundial, workaday life of the teacher involved in the explaining, correcting, setting, marking, and supervising that constitute a typical teaching day.

It is well known that language teachers do not fancy themselves as great theoreticians. They tend to believe in intuitive and practical approaches to the day-to-day tasks they are facing. In fact, they are often quite negative about anything that is described as theoretical and they often look askance at 'ivory-tower' research. Nevertheless, being practical and down-to-earth does not mean being thoughtless (Stern, 1992:3).

Teaching may be distinguished from the learning because it is precisely the prior thoughtfulness, the 'thinking-through-and-out' that is the basis of qualitative learning. This distinction between teaching and learning is especially evident in the second or foreign language classroom in which the substance of the class is taught through an unfamiliar filter.

In teaching the grammar of English to adult students over the years, I had become increasingly dissatisfied with the partial knowledge of grammar that is gleaned from footnotes, Suggested Readings,
and/or a shelf of reference materials. While excellent grammar texts exist, for example, Diane Larsen-Freeman's and Marianne Celce-Murcia's *The Grammar Book*, it was the grammatical frames of reference which frequently proved elusive. The shifting terminology of grammar textbooks has been noted at least since the *Working Committee on Linguistics and Language Teaching* (IRAL, 1963:46). Timothy Light, describing one scenario in 1968, commented in a way still apt today:

By any account, the present scene in grammar is confusing to the teacher who wishes to help students learn the functional use of the English language. Premises, vocabulary, and methodology differ so much among the several schools of linguistic grammarians, that the full-time teacher is often overwhelmed at the thought of mastering the proper background tools for his work. At least for the writer (and, he suspects, for many others as well), the solution to the grammatical quandary has been a resort to a melange of whatever snatches he understood of any modern grammars he happened recently to have read, supplemented by large doses of Latinate school grammar to fill the large gaps between those snatches. This is indeed a very slipshod approach, and it appears that there ought to be a better way (1968:219).

Whether two notions in two textbooks were equivalent, nuanced, or even related could often only be conjectured and, like the wedding guests passing before the Ancient Mariner, such terms came and went. Was there a less slipshod way to approach the phenomenon of *homo loquens*?

Now and again in the course of a particular semester commonalities glinted my way: Most students had had at least some acquaintance with concepts such as 'noun' and 'verb' and the appeal of grammar-teaching based on a *focal* approach - building on recognizable form classes in language - was consequently an interesting one. The relative ease with which such concepts could be utilized in class led me to consider that the quest for the 'psychologically real' grammar might not be entirely quixotic. The search for the grammarian's grail, of course, is a theme which recurs in one way or another in various theoretical literatures.

Initial and somewhat desultory speculations became quite a bit more urgent when it involved preparing students for the *TOEFL*. Transparent presentation often proved stubbornly elusive particularly with respect to the questions surrounding the second part of this examination. More often than not, students did not want to know why a particular answer was correct but rather why the other answers were wrong. This negative line of inquiry taught me one difference between the teaching of *ESL* and the teaching of *TOEFL*. It also, however, highlighted a felt need for a formal expertise which it seemed to me at the time could only be claimed by a descriptive linguist. In addition, it was clear that the error types in the *TOEFL* had not been randomly assembled suggesting that the writers at Educational Testing Service
had had subtle problems in mind when they set their examinations - problems which perhaps skirted the frontiers of the 'psychologically real' grammar which I was approaching. While the contours of the psychologically real remain quite remote, the investigations have shown the vitality of the theoretical discipline, a vitality refracted in the prism of contemporary grammatical theory.

The Importance of Theory

As various authors have pointed out, every classroom has implicit theories of learning and it seems reasonable that these heuristics should be shared and made explicit. Apart from rendering the implicit more conscious, theoretical formation may be considered important for several reasons. The broadest justification of course is the liberal view that any increase in understanding is a salutary goal in itself (Oller,1973; Savage,1973). In proceeding, however, '...the instructor does incur an obligation not to propagandize against other theories because if education is not just the conveying of information, no more is it propagandizing for a particular narrow point of view. Education is concerned with free inquiry, and it should not matter which theory the instructor chooses if he keeps this point in mind' (Wardhaugh, 1974:19).

A theoretical formation in addition encourages a scientific attitude toward the language teaching art. Theory imposes a system, has predictive power, explains and describes (ECAL,1973:278ff). It encompasses the data and allows one to move forward with a replicable framework - as Gillian Brown makes quite clear with respect to the teaching of phonology (ECAL,1975:101). It also fosters a desire for precision and discernment in the researcher as Mackey relates (in Oller, 1973:10); for Hammerly (1985:3), this insistence on replicability and falsifiability is the point of departure. Significantly, it has been under the aegis of strict scientific inquiry that observers have located the most lasting legacies of SLA theory. The empiricist researchers of mid-century provided '...more precise and objective descriptions of languages than had previously been available' (Bell,1981:99) and despite some 'questionable' theoretical axioms, the Audio-lingualists introduced techniques of 'great merit' (Stern, in Oller 1973:21). For Murguia, the transferability of theory constitutes the most precious jewel in the diadem of science: 'The language teacher should become conversant in the fundamental characteristics of linguistics for such an undertaking gives insight and shows techniques which can be transferred (in Donoghue,1967:87). Politzer agrees (1968:157): scientific models can be taught, imitated, transferred to different teaching situations and provide the bases for future research.
Apart from liberal and scientific considerations, a theoretical formation furnishes competence. While acquisition of any language under normal circumstances is a given, the later explicit understanding of its operations is not. Articulate ability does not necessarily imply pedagogical acumen. The native speaker may be able to identify an error but at the same time not be able to readily specify the underlying rule that has somewhere been violated. A teacher, on the other hand, must make explicit the mastery of such rules first to himself and subsequently to the students. In explicitly formulating this prior competence and transmitting it lucidly, one truly has a lifetime's calling. Theoretical awareness blurs the distinction between teacher and student and Lewis's comments regarding the latter are equally applicable to the former: 'Theory facilitates the practical mastery of the material. The provision of such theoretical information facilitates the student's own systematization of the linguistic experience to which he is being exposed, and is largely identical with intellectual development' (Lewis, 1974:102). Exposure to the theories of other minds, along with the seemingly inevitable disagreements over interpretation, inoculates the language teacher against many seductive beliefs, a principal one being that in speaking the language one is thereby able to teach it in an educationally sophisticated manner.

In its immunizing capacity, theory guards against triviality and unverifiability in research (ECAL, 1973:145). Conceptual errors in textbooks, Rutherford points out in this connection, could have been avoided by a prior theoretical orientation and he provides one such striking instance (TQ, 1968:72). The orientation to theory protects as well by allowing the second language teacher to conceptualize the gales which periodically blow through his cove; possessed of no anchor to meet them, he may find his craft spun around in frigid and little understood currents. While balanced books and articles on the relating of theory to practice exist, the realities of classroom and curriculum are not always so expansively considered. Carroll, for one, notes that one-sided attitudes are a fact of life in the domain (TQ, 1971:112) and no language teacher can be unaware of the various methodologies that have either subtly wended their way into the classroom or those which have determinedly invaded it. Wilkins (1972:209) feels somewhat strongly that '…to base language teaching solely on the experience of teachers is to perpetuate the situation in which teaching will be at the mercy of fashion'. In the case of the second language teaching classroom, methodologies may arrive in the wake of a non-linguistic theory e.g., behaviourism, and the domain of SLA has seen much controversy in this regard. If the infusion of new thinking is something to be welcomed, it ought to be analyzed critically and a theoretical awareness furnishes an evaluative framework. Hammerly (1985:xi) describes the dialectic otherwise:
Even desirable trends suffer from the absence of a theory to anchor them. For example, the emphasis on communication of the last few years seems to be following the path of previous trends: (1) acceptance through the untiring zeal of a group of pioneers; (2) distortion by many of the "converts" (in this case taking the form "Communication is all that matters"); (3) reaction against the trend because of the results of the distortion (in this case linguistic incompetence); and (4) rejection of the trend as a whole, leading back to (5) business as usual. With an adequate integrated theory to guide research and innovation, balance can be maintained and new emphases need not go through the usual steps of distortion, reaction, and rejection.

Above all, perhaps, it is the practicality of theory which is not to be overlooked although at first sight this might seem to be a somewhat forced union of the two ends of the continuum. The language teacher - even the most resolutely pragmatic instructor - may discover, however, that the insights of theory are precisely those required by students who need their questions explained rather than explained away. Even if it cannot supply all of the answers, theory can at least point the way by cueing the inquirer to underlying and frequently covert relations of the system.

In the course of writing this thesis, for example, a question arose as to why English permits noun phrases such as 'holding pattern', 'listening device', 'sleeping bag', 'killing field' and a host of other similar constructions only to turn around to prefer 'killer wave'. One of those questions which annoyingly comes up during a lesson devoted to something else entirely, it nevertheless turned out to be germane to the thesis. The particular morpheme in question is a consistently difficult one to clarify for the students on account of its polyvalence. A glance through current TOEFL textbooks, for example, shows the many hats under which a form may travel. In its adjectival use, the -ing morpheme may appear as 'present participle' or 'verbal adjective'; nominally, it can be 'gerund', 'gerundive (phrase)', or even 'gerundial'. In its phrasal guise, it becomes 'participial', '(reduced) adverb(ial) clause', or 'adverbial phrase'. If notional definitions are frustrating for the teacher, their transmission through the filter of a foreign code must be a doubly frustrating experience for the student and at such a pass there are several ways of dealing with it.

One strategy which suggests itself immediately is not always appropriate in view of the goal of transparent teaching. The appeal to idiomatic usage, while a legitimate response in many cases, is nonetheless recognized as an option that is thoroughly incontestable from the student's point of view. Another option is to convey explanation through notional terminology although this too can throw a needlessly weighty net over the student; too often the explanatory terminology remains just as complex as the original problem. Various commentators have pointed out that the hieratic tendency is not solely an affliction of 'the ancients' - as is illustrated by the following two examples - and an 'explanation':

10
(a) I see a man walking down the street
(b) Rupert himself drank the coffee

Thus we can say of walking down the street in I see a man walking down the street, that it is a gerundial subordinate clause modifying the immediately preceding nounal head and getting its implied subject from this head ... We can say of Rupert himself drank the coffee that the pronoun himself is the reflexive intensive form of he used here as a tight appositive of Rupert' (Long, 1969: 132).

Such explanations demonstrate how notional and technical terminology - for both student and teacher - can win by default. Should all else fail, the teacher may assert authority in the way described by Chatterji:

When we were reading in the lower classes of a high school, a student once asked the teacher of Sanskrit why Lat meant the Present Tense. The learned teacher grew furious, gave the boy an inkling into the abusive powers of the elegant Bengali language and then said, Lat means the present tense because the great Panini wanted it to mean the present tense...You ought to have greater respect for Panini than to ask such impertinent questions. The teacher belonged to the usual class of Pandits who regard grammar as a strictly normative science and who are followers of the principle: 'Theirs not to reason why, Theirs not to make reply' and at that time we were greatly impressed by the soundness of his reasoning (1964: 8).

Such measures on the part of the teacher may belie an unwillingness to investigate further whereas a prior theoretical formation - while no panacea - might aid such a teacher enormously in supplying a semantic framework of possible answers. In this case, the problem cited above appears to involve underlying case relations of agency and instrumentality, areas explored in significant depth in the theory of Case Grammar. 'There is indeed nothing so practical as a good theory' (Wardhaugh, 1974:149).

Raphael Gefen sums up unequivocally in his Theoretical Prerequisites for Second Language Teaching much of the foregoing discussion. 'Theory without practice is sterile: practice without theory is blind' (IRAL, 1966:227). This combination of prior competence and enlightened presentation, however, does not suffice unless a third crucial variable is factored into his equation. If the language teacher truly considers the enormity involved in 'teaching a language', he will most certainly have to reject a superficial answer. Any instructor who seriously reflects upon what it is that he is doing when he is trying to 'teach' aspектual and temporal distinctions, even the 'noun' and 'verb' assumed earlier, must acknowledge the sheer impossibility of 'teaching' anything even remotely construed in these ways. What the teacher is more realistically doing is drawing out of the learner the knowledge of the superordinate code which he or she possesses by virtue of being a member of an articulate species, the wiedererzeugung of Chomsky's philosophy to which Allen alludes (1971). Teaching and language cannot be linked together without a tacit and prior assumption on the part of the teacher that an analogue
exists in students' minds in the first place. Many if not all of the concepts and grammatical distinctions are decipherable to students only because there is an innate predisposition to receive in the first place and therefore pedagogical resonance. The point is that even the most profound theoretical formation combined with the most lucid presentation will inevitably fall far short of the mark. Students learn a language and teachers can teach a language because they already know Language. Apart from competence in formation and transparency in transmission, there exists a third component to optimal language teaching, the endowment itself.

Recognition of this third reality has occasioned the rise in what has been variously called the 'Language Awareness' or the 'Consciousness of Language' movement, a stated aim among this group of largely Anglo-American theorists being to undertake curriculum development at all levels in educational systems with a view to making learners aware of the linguistic intelligence that they already possess as members of the species. This enhancement among students dovetails with a heightened awareness among teachers and, thus, with theory. Given the centrality of language in all facets of education, it is to be hoped that the study of linguistic intelligence or 'language writ large' will achieve curricular parity with the other 'core' subjects of mathematics, science, literature, and history. The wholly congenial contributions of the Language Awareness movement will be discussed in the final chapter.
'Other sciences are provided with objects of study given in advance, which are then examined from different points of view. Nothing like that is the case in linguistics...The object is not given in advance of the viewpoint: far from it. Rather, one might say that it is the viewpoint adopted which creates the object. Furthermore, there is nothing to tell us in advance whether one of these ways of looking at it is prior to or superior to any of the others.'

(De Saussure, CLG [1916] (1988:8)
When the British magistrate Sir William Jones (1746-1794) was asked to address the Royal Asiatick Society in 1786, it was for reasons linguistick rather than legal as his previous research into the languages of the subcontinent had illumined rich veins of insight. His findings were based on the tongue known to him as Vedic - the oldest recorded dialect of India and the sacred language through which the Aryans had transmitted the mystical hymns collectively known as the Ṛg Veda. Sanskrit, the basis of Jones's analysis, was a dialect of Vedic associated with the educated caste of early Hindustan. When Panini began the codification of their dialect in The Astadhyayi around 600-500 B.C., it was already moribund and six centuries later, the victim of artifice and prescription, extinct (Van de Walle, 1989:15). "Grammar was made to explain a language, never to fetter it. Sanskrit grammarians did not realize the truth of this, and we know the result" (Taraporeswala, 1968:91). Nevertheless, The Astadhyayi was an impressive intellectual achievement, the record of the roots, suffixes, moods, tenses, technical terms, and prescriptive rules of Sanskrit and, according to Leonard Bloomfield, one of the 'monuments of human scholarship'. Various linguists credit Panini and the early Indian linguists with having introduced such 'modern' concepts as the distinction between voiced and voiceless sounds, aspirated and unaspirated consonants, and with having inaugurated the science of morphology itself (Murti, 1984:321). Ferdinand de Saussure may even have derived the notion of linguistic zero from him (Srivastava, 1992:49).

With the discovery of The Astadhyayi, nineteenth century scholarship unearthed a trove of analytic insight and when Jones's views became more widespread, other scholars set out to formalize the prescience. In 1816 Franz Bopp studied the conjugational structures of Persian, Sanskrit, Latin, Greek, and German and is credited by de Saussure with having been the first to sketch the formal outlines of comparative linguistics (CLG, 1888:2). The Danish scholar Rask, this time studying the Scandinavian family of languages, noticed certain phonetic similarities between Germanic languages and other members of the family and provided the earliest historical outline of these correspondences in Danish (Lyons, 1981:196). Jacob Grimm published Deutsche Grammatik in 1822; his terminology of shift, mutation, and gradation were to become axioms in the literature. In 1863, August Schleicher, who developed the genealogical theory of language change, discussed the merit of approaching language in terms of the evolutionary perspective in Darwin's Origin of Species (Sampson, 1980:18).
The inheritors of this organic world view were the so-called *Junggrammatiker* of whom de Saussure may be counted a member. The scholarship of this school constitutes a high watermark in the development of linguistic science and out of the relational ethos of this milieu de Saussure would develop his theory of structuralism. With the vast erudition of his peers, however, de Saussure was to eventually express his discontent, believing that a perspective had been elevated to final orthodoxy. The multidimensional horizons latent within language, moreover, had been narrowed to the purely historical plane. As much seemingly had been proclaimed by Hermann Paul in his *Principles of Language History* (Lyons, 1981:216). Before the 1878 publication of de Saussure's philological masterpiece *Mémoire sur le Système Primitif des Voyelles dans les Langues Indo-Européennes*, he already had an inkling of the problems inherent in a purely diachronic approach.

The problem which exercised the philological world at the time involved determining the exact nature of the proto-phoneme from which the vowels of the Indo-European languages had derived. Utilizing the relational, orthodox procedures of philology, de Saussure reasoned that a hypothetical phoneme *had to* antedate the attested forms because they collectively implied its existence. In perhaps the most elegant way that the new, relational science of structuralism could hope to be introduced, his hunch was confirmed by the subsequent discovery of the laryngeal consonants in Proto-Indo-European (Culler, 1976:66). "Saussure's discoveries depend on an analysis which today we would not hesitate to call structural. Taking into account the whole system, he postulates elements of an abstract character which are defined on the basis of their structural function rather than their phonetic shape" (Lepschy, 1970:42).

De Saussure's erudition in this area evinces the historical science at its best yet his scholarship coincided with a disciplinary exhaustion on the one hand and the ascendance of a scientific, phonetic perspective on the other. The positivist ethos of the day was not lost on members of a discipline which sought to assume its place among the 'hard' sciences and the mechanizing, industrializing, and scientizing trends of the late nineteenth century left their mark upon de Saussure as well. Traditional grammar he dismissed as prescriptive, concerned "...with laying down rules instead of observing facts"; comparative reconstruction was "..only a means of resurrecting the past" (CLG, 1988:118). At the time that Einstein was developing his science, de Saussure considered the antiquarian focus of his own:

For a long time I have been above all preoccupied with the logical classification of linguistic facts and with the classification of the points of view from which we treat them; and I am more and more aware of the immense amount of work that would be required to show the linguist what he is doing...The utter inadequacy of current terminology, the need to reform it and, in order to do that, to demonstrate what sort of object language is... (in Culler, 1976:15).
De Saussure's formalization of the new science of structuralism was published posthumously by two of his students Charles Bally and Albert Sechehaye as The Course in General Linguistics in 1916. Their version of de Saussure's theories has predictably occasioned much interpretive disagreement. On the one hand, it is still a matter of debate whether the reconstructed text faithfully reproduces his thought (Malmberg, 1964:36) while on the other hand, there are passages which are obscure, confusing, and even contradictory (Holdcroft, 1991:26,57). 'Much of what Saussure proposed merely as a possibility, as a question, or in otherwise subtilized and differentiated form, appears as simple and definitive doctrine in the edition compiled by his students' (Holenstein, 1974:25ff). However, his famous dichotomies are reasonably clear. As against the strictly historical or 'diachronic' school of thinking in which artifact, shape, and descent were of paramount importance, de Saussure envisaged an indelibly 'synchronic' science whose concern would be biopsy - the study of the responsive, systematic natures of living languages - rather than autopsy. Structuralist linguistics '...is directed not against history as such, but against an old-fashioned, atomistic method of linguistic research which studies the development of isolated elements - a vowel, an accent, a form, a syntactical procedure, a meaning...without taking into account that at any moment in the history of the language, this element formed part of a structure, and was determined, as regards its function, by this structure' (Malmberg, 1967:6).

(i) Parole

This synchronic approach is immediately subsumed within an overarching domain of 'sign-relations', or semiology which had been another latent predilection of nineteenth century scholarship. From this vantage point, every natural language is a system of cognitive signals first coordinated in the mind and then emitted vocally. '[T]he linguist's task is to define what makes language a special type of system within the totality of semiological facts' (CLG, 1988:16). The signalling matrix in the mind, de Saussure called le langage - the superordinate term of the CLG and correctly understood as the 'human faculty of speech/communication'. Langage is disassembled into three primary categories and consequently studied from either a diachronic, phonetic, or phonemic perspective (Lane, 1970:86). The historical or diachronic study of langage was the perspective of the philologists away from which de Saussure was moving. The phonetic approach directs the linguist towards la parole or 'speech' and it is the 'psycho-physical' study of the structure of an individual language (CLG, 1988:19), the protean sum of
daily utterances. 'There is nothing collective about speech. Its manifestations are individual and ephemeral. It is no more than an aggregate of particular cases...' (CLG, 1988:19). Although this psycho-physical aspect of langage is intrinsic to the integrity of the whole theory, it nevertheless occupies a position of subordinate interest as well. The primary object of de Saussure's acumen was the third, phonemic perspective of langue and its arbitrary, linear, syntagmatic, and paradigmatic realities.

(ii) Langue

'The notion of langue is the first step in making linguistics a science' (Lane1970:121). That langue was the primary object of de Saussure's analysis and the crux of the new synchronic science is clear in hindsight. It is, Holdcroft tells us (1991:23), the substrate upon which parole is based. Langue in a sense constitutes the mainframe of articulate behaviour: 'The linguist must take the study of linguistic structure as his primary concern, and relate all other manifestations of language to it' (CLG, 1988:9). Langue '...is not to be confused with human speech, [le langage] of which it is only a definite part, though certainly an essential one. Linguistic structure we take to be language minus speech. It is the whole set of linguistic habits which enables the speaker to understand and to make himself understood' (CLG, 1988:77). Since de Saussure is at pains to elaborate this at various places in CLG and since it is the foundational notion of structuralism, his references should be read in their entirety:

If we could collect the totality of word patterns stored in all those individuals, we should have the social bond which constitutes their language. It is a fund accumulated by the members of the community through the practice of speech, a grammatical system existing potentially in every brain, or more exactly in the brains of a group of individuals; for the language is never complete in any single individual, but exists perfectly only in the collectivity. (CLG,1988:13)

It is the social part of language, external to the individual, who by himself is powerless either to create it or to modify it. It exists only in virtue of a kind of contract agreed between the members of a community...a language system is homogeneous in nature. It is a system of signs in which the one essential is the union of sense and sound pattern... (CLG 31:14). It accumulates in our brain only as a result of countless experiences (CLG, 1988:19)

Sampson (1980:44) and Lyons (1970:51) relate langue or system - de Saussure does not use the term structure - to Durkheim's notion of the abstract, collective mind in sociology: 'The collective mind of a society is something that exists over and above the individual members of the society, and its ideas are only indirectly and imperfectly reflected in the minds of the people who make up that society'. This intangible matrix is the formal model upon which twentieth century grammatical science is based.
De Saussure's crucial point is that langue is a system of 'forms' or 'signs' (Culler, 1976:26) and these will henceforth be its operational terms - 'word' and 'utterance' constituting the tokens of parole. In orienting the science to 'sign' rather than to word, de Saussure is expressing his dissatisfaction with the imprecision of the latter term. Philological research demonstrated not only that the sounds and shapes of words change over time but also that their meanings are highly susceptible to nuance and transfer. The diachronic shape of a word exists on the surface of an underlying grid of coordinates. It is this underlying network which permits the transfers, shifts, and individual entropies in the first place.

The point is that it is difficult to see how words could remain identifiably the same, over shifts in pronunciation and use, if they did not have a formal identity established within language-specifically, by their differentiation from other words. This was the germ of Saussure's structuralist insight. Under all of the acoustic or graphic shapes a meaning might assume throughout history resides an indissoluble atom of meaning (Pettit:8).

The conclusion follows immediately: 'The language [langue] itself is a form, not a substance' (CLG, 1988:120). The formal network of the kind de Saussure envisaged is comparable to the cobweb which is as much the spaces among as the threads between. In the same way that a nexus of intersecting threads in the web cannot be removed and studied in isolation without doing damage to the integrity of the whole, neither can a form in langue be excised. Isolated analysis is inconceivable (Lane, 1970:97). The substrate of langue is a '...complex equilibrium of terms holding one another in mutual juxtaposition' (CLG, 1988:120). The conclusion which de Saussure draws from this relationship is logical: the meanings of forms - and therefore meaning-in-language itself - can only be defined in negative terms. Having no substance in itself, a sign exists only to designate otherness, dissimilarity, and boundary.

Everything we have said so far comes down to this. In the language itself, there are only differences. Even more important than that is the fact that, although in general a difference presupposes positive terms between which the difference holds, in a language there are only differences, and no positive terms...In a sign, what matters more than any idea or sound associated with it is what other signs surround it. (CLG, 1988:118)

'A linguistic sign is not a link between a thing and a name, but between a concept and a sound pattern' (CLG, 1988:66)[italics mine]. De Saussure here makes it clear that the sign represents the linkage of sound and meaning and these two realities are the conceptual poles of all future grammatical models. De Saussure expressly did not call the sign a relation between a sound and an object. Objects have many perspectives and names but meaning is attached to the concept assigned its place in the underlying matrix of mental signs. De Saussure recognized that there is no reason why a concept could not be expressed in an acoustically distinct way and from this he adduced 'the organizing principle for the whole of linguistics' - the principle of arbitrariness (CLG, 1988:68).
The next step was to describe how these arbitrary units of sound and meaning were arranged differentially in the mind in order to eventually convey intelligible meaning between speakers. His answer was that language makes sense through linear arrangement of its forms in time; linearity is the second organizing principle of langue (after arbitrariness) and its significance 'equals that of the first law'. The forms of langue are expressed temporally, conjoined to one another in praesentia (CLG, 1988:122), They present themselves before and after one another in discrete succession in which 'one may consider only one thing at a time' (CLG, 1988:80). 'A linguistic entity is not ultimately defined until it is delimited, i.e., separated from whatever there may be on either side of it in a sequence of sounds...a primary characteristic of the spoken sequence is its linearity' (CLG, 1988:145). De Saussure's conception may perhaps be clarified here by contrasting the linear principle of langue with systems of communication evolved by other species which convey meaning in distinctive ways. Some utilize scalar strategies in which meaning is conveyed by modulating the loudness of a call; other species use gesture, coloration, scent, or some other means. Humans, however, recognize the passage of time, arbitrarily link sounds with meanings, and sequence these arbitrary signals in a strategy henceforth to be described as 'syntagmatic'.

These linear sequences, however, convey no intelligible meaning as yet: like the Mayan hieroglyphics the forms are simply concatenated. The linear arrangement is apparent to all but the meaning remains mute. The same is true in de Saussure's description: the signalling infrastructure of the language is there but the switches remain 'off' until something else activates the meanings along the syntagm. 'In itself, it is merely a line, a continuous ribbon of sound, along which the ear picks no clear or adequately marked divisions. In order to do so, recourse must be had to meanings' (CLG, 1988:145). People listening to a foreign language remark on this continuous stream of sounds, pitches, and stresses but no intelligible meaning. De Saussure's point is that such noise becomes meaning when the 'associations' of these objects are rendered transparent. What the paradigmatic axis contributes (Hjelmslev's term replacing de Saussure's) is contextual meaning through what de Saussure somewhat oracularly describes as principles of 'difference and grouping' (CLG, 1988:126). He gives the example of a word and states that '...any word [in the syntagm] can evoke in the mind whatever is capable of being associated with it in some way or other' (CLG, 1988:124). What is clear is that syntagmatic concatenation is
only half of the equation, completely opaque until of meaningful paradigms of groups and differences intersect with them. Paradigmatic relations are characterized by 'their indefinite number' and 'their indeterminate order' (CLG,1988:124). De Saussure's theory of the axes would be later described in terms of 'choice' and 'chain' or 'selection' and 'combination'.

The notion of paradigm is quite nebulous and various authors have sought to clarify its details. Carroll provides a useful example here by describing the familiar 'tip-of-the-tongue' phenomenon: 'Recently, I was trying to recall the word contagious, but I could only remember incongruous, contextual, and infectious - all of them similar to the word I sought, in general length (number of syllables), stress pattern, and certain combinations of sounds (con-, -ous), and one of them, infectious, overlapping semantically with the target word... (in Hill,1969:168). Each sign is thought of as an exponent of a paradigm in which innumerable others could just as easily replace it. The exponent is linked to all others in its paradigm in terms of resemblances to and contrasts with all others. These associations, metaphorically speaking, hover over every selected exponent of langue, intimating by their implied contrasts and echoes suggestions of what could be expressed at any moment. These are de Saussure's simultaneous, in absentia relationships unlike those linear relations which are in praesentia. 'This axis concerns relations between things which coexist, relations from which the passage of time is entirely excluded' (CLG, 1988:80). To take a phonological example, the paradigms of the definite article /ə/ may be found in Appendix 1. The point here is that this particular sign, if it did not tacitly suggest to the speaker these relations could not be construed as part of the English language.

The preceding sketch of Saussure's fundamental beliefs illustrates a model in which meaning is wholly contingent upon connectedness: sound is arbitrarily linked with meaning and the resultant form partakes of a system in which it is defined differentially - by what it is not. These differential forms are interconnected cognitively through associations of resemblance and contrast and only become intelligible when they intersect temporal reality which places them one after the other. The privative syntagmatic analyses of later American descriptivists would thus seem to be incompatible with de Saussure's model since the chain to intelligible meaning has been broken if one axis is excluded. On the one hand, the resemblances and contrasts in paradigms become intelligible when they are placed in a sequence. On the other hand, these objects remain uninterpretable unless they partake of evocations; meaning is ensconced within the heart of the model right from the beginning.
In producing their version of de Saussure's work, Bally and de Sechehaye had in fact sketched the first contours of a 'structuralist' manifesto. But it was not until a group of principally Slavic linguists convened in Prague - of whom Vilem Mathesius, Nikolai Trubetzkoy, and Roman Jakobson were the leading members - that the diffuse Saussurean notions of pattern, relation, interdependence, resemblance, and contrast began to kindle. The Prague Circle as it came to be known published a series of Travaux in which their interests ranged from poetic to philological analysis. In their first Thèse the Prague linguists stated that human language was a 'functional' system (Holenstein, 1974:15) whose purpose was 'communication'. In this first development of de Saussure's thought, structuralism became irrevocably oriented toward the communicative behaviour of the individual rather than the formal apparatus within the mind. 'For the Prague Circle', Waugh relates, 'functionalism and structuralism were inseparable. Jakobson himself described this theory of language as one in which function (language as a tool for communication) and structure (language as a lawful governed whole) are combined: language is so structured so as to be suitable for communication' (in OL, 1990:14). As Sampson points out, however, their functional conception of language would have been little more than a truism had it not been for the efforts of Trubetzkoy, Mathesius and others who attempted to scientize this commonplace observation. The intent was to discover how the signs of langue became the words of parole. 'The goal [was] to make explicit the implicit knowledge used in the recognition and reading of signs' (Robey, 1973:25).

From its inception, the Prague Circle had displayed a marked preference for paradigmatic as opposed to syntagmatic analysis (Pettit, 1975:12) and this penchant was to be developed through the analysis of one stratum in particular. The most accessible writer in matters phonological was Roman Jakobson whose writings are characterized by breadth, transparency, and holism (Fried, 1972:13) and a clear fealty to de Saussure is evinced (Lane, 1970:128). Jakobson not only traces the origins of others in the field but also explicitly traces his own indebtedness, in particular to de Saussure, and in a refreshing manner.

It is characteristic of Jakobson's linguistics that it embraces all aspects, levels, and related points of language and takes into account both their inner autonomy and their interdependence. Reductions, or to use a more linguistic expression, excommunications, are foreign to it. Meaning is not excluded to the sole advantage of syntax, diachrony to that of synchrony, everyday language to that of the formalized languages of the exact sciences, inner language to that of the externally observable language of intersubjective communication. (Holenstein, 1974:5)
Emic and Etic Realities

To the Russians, Martinet tells us, we owe the phoneme (in Kroeber, 1953:577). The notion had been originally developed by de Courtenay and Kruszewski at the close of the nineteenth century and was defined by the linguist L.V. Šcerba as early as 1912. He described it (in distinctly Saussurean terms) as 'the shortest general sound image of a given language, which can be associated with meaning images and can differentiate words' (Lepschy, 1970:62). It was from this concept that Jakobson would develop the theory of the 'phonemic principle' which has been described as 'one of the more significant intellectual achievements in the social sciences' (Carroll, 1959:34). The catalyst to the development of this theory may be seen in the needs of the linguists in the early part of this century to more rigorously define the parameters of the emerging science of phonetics. It was felt that the articulatory, acoustic, instrumental, and auditory areas of investigation were capable of scientific analysis and were thus fundamentally unlike the subjective, less verifiable intuitions of phonology. The 'emic' notions of the mind were thus opposed to 'etic' objects of the science and phonology was to deal with the former (Holenstein, 1974:73; Robey, 1973:23; Lepschy, 1970:60). This bifurcation had a variety of sources among which may be cited an article by Edward Sapir entitled The Psychological Reality of Phonemes (1933). Sapir's contention in the monograph was that while people clearly heard the etic infrastructure of the speech chain, they in fact were more closely attuned to the emic meaning-bearing realities of it. This observation would be subsequently borne out by Jakobson.

That a psychological reality exists underneath the phonetic stream is underscored in sometimes humorous ways as when Jakobson reported that upon arriving in Prague, he believed that everyone was preaching '...because of the regular emphasis on every syllable in Czech' (Holenstein, 1974:38). Subsequent investigations have shown that native speakers do not attend to all of the acoustic variation in the speech chain but rather (un)consciously listen for only those sounds which distinguish meanings for them congruent with de Saussure's theoretical speculations. He noted the following (OL, 1990:254):

Knocks produced at even intervals, with every third louder, are perceived as groups of three separated by a pause. The pause is usually claimed by a Czech to fall before the louder knock, by a Frenchman to fall after the louder; while a Pole hears the pause one knock after the louder. The different perceptions correspond exactly to the position of the word stress in the languages involved; in Czech the stress is on the initial syllable; in French, on the final; and in Polish, on the penult. When the knocks are produced with equal loudness but with a longer interval after every third, a Czech attributes greater loudness to the first knock, a Pole, to the second, and a Frenchman, to the third.
Phonology was henceforth considered the emic domain underneath the etic science - 'the system behind the speech sounds' (Mackey, 1961:49). The importance of this development is that it illustrates a contour in the phonological realm: of the mind actively structuring its input rather than simply processing it passively. For the teacher this means that the student does not necessarily hear the emic realities of the etic code which the teacher is communicating.

Jakobson's Ladder

All throughout, the CLG was the 'underlying, permanent model against which the Prague linguists made further discoveries' (Holenstein, 1974:20). From the CLG the Prague school was to develop groundbreaking insights not only about the phoneme but also into its internal relations of invariance, markedness, and binary opposition. Jakobson states it simply - the CLG contains 'almost all the essential problems of modern linguistic thought' (OL, 1990:84). (Jakobson, Trubetzkoy, and Mathesius in fact collaborated with Bally and de Sechehaye at the First International Congress of Linguist in the Hague). In Jakobson's hands, nevertheless, details in the CLG were modified, disputed, and occasionally abandoned. While he did not undermine the substantive dichotomies, Jakobson nevertheless questioned emphases within each: the form/substance dichotomy (OL, 1990:22), the ontology of langue (OL, 1990:14, 90), issues of arbitrariness and linearity (OL, 1990:58), and the subordinate status of parole (OL, 1990:93).

What Jakobson derived from the phonemic principle took the discourse to its next stage - that stage at which the phoneme became embedded within a theory of 'distinctive features'. This theory is universally acclaimed as his most enduring contribution to linguistic science (Lane, 1970:76; Robey, 1973:47). It was Jakobson primarily who provided the most discernible link to de Saussure by converting the latter's éléments différentiels into a set of contrastive distinctive features (Lepschy, 1970:96) as he did not adopt Bally and de Sechehaye's interpretation of the CLG uncritically. What Jakobson and the Prague Circle took most fundamentally from de Saussure was the belief that the structure of language was differential, constructed out of notions of boundary and otherness (Pettit, 1975:12). Jakobson believed that de Saussure's negative, differential approach to the objects of langue had been fundamentally misconstrued by the two students who had conceived of the éléments différentiels of langue as phonemes, that is, as the meaningful sounds of a language. According to Jakobson, what Saussure had really intended was that these elements be construed as sets of contrasts or 'distinctive features' to which the human ear was finely sensitive (Holenstein, 1974:126).
Speakers hear acoustic differences rather than discrete sounds. The ‘breaking down’ of the phoneme into a set of distinctive features, however, did not take place until the late 1930s (OL:1990:63).

Believing that the acoustic phenomena of living languages could be most transparently explained through a universal substrate of etic distinctions, Jakobson set about the elaboration of this theory. He maintained that all languages shared in this inherent elegance and developed a theory in which three ‘inherent’ qualities of sonority, protensity, and tonality on the one hand and three ‘prosodic’ features of force, quantity, and tone on the other were considered universal. Together these six qualities could be economically configured as twelve oppositions: vocalic/non-vocalic, consonantal/non-consonantal, compact/diffuse, tense/lax, voiced/voiceless, nasal/oral, discontinuous/continuant, strident/mellow, checked/unchecked, grave/acute, flat/plain, sharp/plain. ‘All differences of phonemes can be resolved into simple and undecomposable binary oppositions of distinctive features’ (OL:1990:398). Thus, the 36 phonemes of French are aligned in terms of six of these basic oppositions (Holenstein, 1974:71) and the phonemes of Serbo-Croatian have been assigned to a similar sextet (Lepschy, 1970:97). This continuous excavation of de Saussure’s speculations proved highly rewarding:

In phonetics, vowels and consonants were long considered two quite disparate groups with no common denominator. Jakobson succeeded in bridging the gap...[He] demonstrated that the two oppositional pairs compact/diffuse and grave/acute are invariant structures common to vowels and consonants. (Holenstein, 1974:96)

(Holenstein also adds, interestingly, that ‘Jakobson found authoritative precursors to his endeavours among the ancient Indian grammarians’). Confirmation that he was on the right track was afforded to him later from research into language acquisition (‘build-up’) and language pathology (‘break-down’) (OL:173,398). The phonology was thus acquired and lost in a manner congruent with feature theory.

Three hundred and thirty three pages earlier (OL:1990:65) Jakobson had confessed an attraction to ‘binary solutions’ in linguistic analysis, a predilection variously traced to the ‘irreconcilable antinomies’ of Russian formalism (Holenstein, 1974:9), the inherent economy of information theory (Lepschy, 1970:96), or to philosophical investigations at the University of Moscow (OL:1990:3). Jakobson, in Martinet’s opinion, is ‘the initiator and most active propagator of the application of the binary principle to phonology’ (in Kroeber, 1953:585) - his position supported by resonance in the field of information processing:

The mathematical theory of communication has with striking success demonstrated that any set of data can not only in principle be analyzed through binary decisions, but further that this mode of analysis exhibits the greatest efficiency. Phonology and the theory of communication have independently arrived at similar, mutually complementary conclusions, leading to a fruitful cooperation between the two (Holenstein, 1974:126)
The procedures of information theorists who utilized '...a sequence of binary selections as the most reasonable basis for the analysis of the various communication processes' (OL,1990:252) were consequently regarded approvingly. Not the last linguist to be reinforced by mathematical theory, Jakobson applied this notion to illuminating effect in the area of distinctive features. Distinctive features seemingly 'paired off' and the nature of this pairing off was, as de Saussure had speculated years earlier, contrastive and 'oppositional'. 'When one says large, one must have an idea of small; when one says expensive, one must know what is cheap' (OL,1990:316). The conclusion is sweeping: 'The whole morphological and syntactic structure of language as well as the phonological system is based on this principle' (OL,1990:316). Another potential contour of real grammar may be discerned here. With this principle of binary opposition in mind, a serendipitous variety of hitherto unnoticed insights began to emerge for researchers. Jakobson relates that it was Trubetzkoy who discovered that one member in a phonemic correlation often conveyed more information than the other:

Trubetzkoy wrote to me that he had found an “important gap” that both of us had tolerated in our theory of correlative phonemes: “The essence lies in the so-to-speak 'intrinsic content' of the correlation. Trubetzkoy realized that binary opposition “assumes a particular form in linguistic consciousness. The presence of some mark is opposed to its absence (or the maximum of some mark to its minimum).” He came to the conclusion that “only one of the terms of a correlation is perceived as actively modified and as positively possessing some mark, while the other term is perceived as lacking the mark and as passively unmodified” (OL,1990:138).

Jakobson writes that 'The general meaning of the marked is characterized by the conveyance of more precise, specific, and additional information than the unmarked term provides. In language containing an opposition between the two grammatical tenses of past and present, for example, the former is always marked and the latter unmarked' (OL,1990:138). The marked term is somehow less essential with the unmarked term furnishing the substrate of meaning and this may have implications for the teaching of lexis in the classroom. Holenstein furnishes a concrete example:

In comparison to the unmarked term, the marked term provides more information. This is best illustrated by the example of polar adjectives and nouns. The statement Peter is as young as Paul is more informative than the statement Peter is as old as Paul. Someone unfamiliar with Paul's age knows, after the first statement, that he is relatively young while the second statement reveals nothing about his age. Young is the marked term, old the unmarked term. (1974:131)

The concept of (un)markedness resonated with the notion of (in)variance relations in mathematical theory and from such observations, the theory of the invariant phoneme and its allophonic variants would evolve.
There is yet another serendipity that emerges from the quest for underlying continuities in linguistic science. The investigation of the paradigms of distinctive features had an attendant, if unexpected effect upon the other axis of the CLG. In isolating the underlying characteristics of phonological systems, Jakobson likely encouraged a commensurate elaboration in syntagmatic analysis: ‘With such characterizations available, the phonologists could begin to formulate the syntagmatic laws governing phonemic combination: roughly, laws of form - phonemes with certain features do not occur in certain positions in the neighbourhood of phonemes with certain other features’ (Pettit, 1975:12). The study of the syntagmatic axis, however, is the province of the American scholars who explored its intricacies, dominated its analyses, and guided its development.

American Structuralism: Leonard Bloomfield

If the phonemic principle may be considered central to the thinking which predominated in Europe at the time, then the morphemic principle may be conceived of as similarly emblematic across the Atlantic. If functionalism was the banner under which the Prague Circle at the time gathered, it was a ‘distributionalist’ standard below which their American counterparts stood. Broadly speaking, each of the two main branches of early structuralism may be said to have taken an axis of the CLG as its own. Bloomfield clearly esteemed the ‘clear and rigorous demonstration of fundamental principles’ that de Saussure had outlined in the CLG (in Matthews, 1993:6), honoured Sapir and Boas, but, as Haas tells us, unlike the linguist and the anthropologist, Bloomfield was ‘primarily a language teacher and...interested in applying the important principles developed in linguistic science to the more practical problems of language teaching’ (in Kroeber, 1953:810).

While de Saussure was developing the theory of structuralism, the compelling concern in America was the rigorous description of fast-disappearing aboriginal languages and American structuralism was impelled forward in particular by Franz Boas's Handbook of American Indian Languages (1911) and Edward Sapir's Language (1921). The structuralist analyses within these books became canonical in the literature as both authors showed convincingly, foreshadowing the heterogeneity of Firth, for example, that each language was sui generis analyzable principally, if not solely on the basis of its own emic categories. As Sapir put it (1921:127): ‘It must be obvious to any one...who has felt something of the spirit of a foreign language that there is such a thing as a basic plan, a certain cut to each language’. The declensional and conjugational apparatuses appropriate for European languages were consequently
viewed as blunt, unwieldy tools which, while eminently suited to the inflecting languages of Europe were demonstrably unsuited to the polysynthetic subtleties of languages encountered by Amerindian linguists. Students were therefore enjoined to keep uppermost in their minds the maxim that languages could vary indefinitely in terms of their notional categories and that scientifically legitimate generalizations would emerge only when the patterns culled from the data were minutely, impartially observed. As a result of their influence, linguistic relativism became a benchmark of American structuralism; however, it took its imprimatur from Leonard Bloomfield.

Bloomfield's Behaviour: (i) The Relegation of Meaning

Boas's insights in particular, according to Geoffrey Sampson, are simply rendered more explicit and systematic in Leonard Bloomfield's 1933 publication, Language. It is perhaps because of his resolutely scientific approach to the data that Bloomfield is esteemed so highly within the discipline (Allen, 1964:137). It is a matter of his own record that Bloomfield was aware of de Saussure's theories and the Genevan's differential framework is dispersed throughout the text: 'For the working of language, all that is necessary is that each phoneme be unmistakably different from all the others' (Bloomfield, 1933:128). '[S]peech sounds are uttered as signals' (ibid:139). Further into the realm, however, Bloomfield refused to tread. Although he shared de Saussure's two foundational beliefs, namely that language was a interrelated set of forms rather than substances, and that meaning and substance were arbitrarily linked (Mackey, 1961:13), he departed markedly in other ways.

Reviewing his efforts in his Survey of Structural Linguistics, Lepschy essentially credits Bloomfield with constructing the science of de Saussure's other axis. To him are attributed (i) the axiomatic terms and notions of morphology, (ii) scientific conclusions regarding case, number, gender, tense, agreement and derivation, (iii) the foundational descriptions of 'immediate' and 'ultimate' constituency, and no less than (iv) the elaboration of the morphemic, sememic, and lexical frameworks of language (Lepschy, 1970:88). His genius was of a different rune altogether and the ideas laid out in his 1933 publication were to dominate North American linguistics until the 1950s (Wilkins, 1972:17).

Philosophically, Bloomfield was a disciple of the movement known as logical positivism and adhered enthusiastically to the behaviourist principles of Thorndike, Weiss, Watson and Pavlov. An encyclopedia of the day relates the basic tenets of his position: "[Linguistic] science will deal only with events '...that are accessible in their time and place to any and all observers...[and]...that are placed in co-
ordinates of time and space'. The only useful generalizations about language, we are told, are 'inductive generalizations' and significantly for the next generation of linguists, the science should concern itself solely with '...such initial statements and predictions as lead to definite handling operations...[and with]...terms such as are derivable by rigid definition from a set of everyday terms concerning physical happenings'. These propositions became known as behaviourism, mechanism, operationalism, and physicalism respectively and more than any other contributions, such tenets were to result in the resolutely scientific framework known as 'distributionalism'. This analytic model is of great import to the language teacher since its intent is to capture in a replicable manner the formal i.e., predictable operations in the network of grammar.

Practically, Bloomfield was acutely aware of the difficulty of utilizing meaning as an operational construct in linguistic definition, having studied languages as diverse as Menomini and Tagalog. Atoms of meaning in these languages, as Boas had discovered, were not so amenable to analyses based on the above scientific principles. The search for verifiable forms of meaning-in-language thus fell to the wayside early on because of its fundamentally uncircumscribable nature as Lepschy describes (1970:112):

[T]o check if two expressions a and b have the same meaning or not, we try to substitute one for the other in a given context y - z; but then to check whether yaz and ybz have the same meaning or not, we have to try to substitute one for the other in a wider context w - x; then we have to compare the meanings of wyazx and wymbx in even wider contexts, and so on ad infinitum. If we draw a line somewhere, and take into account denotation, or the context of situation, we are faced with difficulties of the kind mentioned by Bloomfield.

In place of this approach, Bloomfield proposed that the morphemes of a language be isolated, dissected, compared and contrasted in a purely mechanical way. The meaning of any object would be determined in based on its combinatorial and segmentable possibilities. Phonemes and morphemes therefore would be identified according to their 'fit' - their compatibility or incompatibility in certain contexts along the syntagm. One of the fundamental premises of Bloomfieldian structuralism is that these patterns of combination do exist, can be formalized and, in the absence of notional criteria, their behaviour can be distilled into 'same' and 'different' occurrences. For Bloomfield and his followers '...what characterizes a language is a set of combinatorial regularities, the acceptance of certain associations and the rejection of others' (Ducrot,1994:35). Meaning-in-language thus became the discussion of forms-in-language.

Years later, Chomsky would complain that his views on meaning-in-language had been 'wildly distorted' and in his day Bloomfield believed similarly. Seventeen pages in Language very forthrightly
discuss meaning-in-language and it is stated unequivocally in various places that semantic considerations are above all implicated in phonological analysis (1933:78,139). It is nonetheless arguable that subsequent linguists were not wide of the mark when they took the wary approach to be an anathema. In the same book, Bloomfield had also written that ‘...the meanings of speech-forms could be scientifically defined only if all branches of science, including, especially, psychology and physiology, were close to perfection’ and the telltale, underlying attitude is made quite clear in a remark that has been quoted over and over again in the literature: ‘The statement of meanings is therefore the weak point in language-study, and will remain so until human knowledge advances very far beyond its present state’ (ibid:140). In the behaviouristic scholarly climate of the 1930s, this was all that was really needed although Malmberg (1964:165) does relate that his followers were ambivalent in their discipleship: some were to utilize semantic criteria in their analyses, while others sought to ‘define language elements solely on the basis of their distribution’.

(ii) The Elevation of Form

With associative meaning of the paradigmatic axis out of the way for the time being, linguists were encouraged to mine the syntagmatic axis using what Bloomfield called ‘immediate constituency’ (IC) analysis and Bloomfield adduces the famous example:

Any English speaking person who concerns himself with this matter, is sure to tell us that the immediate constituents of Poor John ran away are the two forms poor John and ran away, that each of these is, in turn, a complex form; that the immediate constituents of ran away are ran, a morpheme, and away, a complex form, whose constituents are the morphemes a- and way; and that the constituents of poor John are the morphemes poor and John. (1933:161)

(It is interesting to note here that IC theory is inaugurated with a distinctly mentalistic appeal to native-speaker intuition.) The crux of the distributionalist approach lies in this IC analysis: how does the linguist arrive at the immediate and finally at the ultimate (indivisible) constituents of a phrase non-intuitively? ‘The answer given by Bloomfield and (1933/5), Harris (1951) and other proponents of IC analysis was that the elements which are given constituent status are those which may be replaced in their environment by others of the same pattern or by a shorter sequence of morphemes’ (Malmkjaer,1991:217)[emphasis mine]. A facet of the distributional approach is the paradigmatic replacement of forms by other forms. A constituent is any element capable of substitution by another element and a set of these intersubstitutable elements is a ‘form-class’ (Lyons,1981:119). Divided mechanically as in the above
example, the next node below is to be considered an 'immediate constituent' of the one above it. An immediate constituent which cannot be further dissected downwards is an 'ultimate' (indivisible) constituent as Ducrot (1979:34) points out:

The postulate of this method is that when one pursues, stage by stage, the process of subdivision, one arrives at classes that are increasingly homogeneous from the distributional viewpoint. In other words, the elements of the classes obtained at a given stage resemble each other more, in terms of their distribution than they resemble the elements of the classes obtained at the preceding stage, so that the whole process leads...toward the rigorous specification of distributional classes.

As McIntosh and Strevens note (1966:2), it is this notion of 'class' rather than that of 'verb' or 'noun' which constitutes an inherent property of language. As an intrinsic property of language and definable contour of psychologically real grammar, the form class will be an indispensable tool of the teacher's competence.

In his 1933 book and elsewhere, Bloomfield tirelessly advocated for verifiable scientific procedures; it was his followers, however, who applied the exhortation with a vengeance. Here, an important distinction between the empirical approach urged by Bloomfield and the increasingly astringent, empiricist views taken by his followers must be made since Bloomfield appears to have been taxed for the excesses of his disciples. It is debatable, given Bloomfield's later statements to the contrary, that he had ever intended the science to become as inflexibly empiricist as it did. It should be noted in passing too that when Chomsky critiqued 'structuralists' he was not targeting those who made use of a mechanistic, Bloomfieldian method of analysis principally. He aimed his critique rather at those descriptivists who, instead of assigning a distributionalist ethos to its proper place in an overall linguistic theory, elevated it to the very purpose of linguistic theory. Distributional analysis for him was but a means rather than an end of linguistic analysis, the utility of which he would show most effectively in his paper Remarks on English Nominalizations.

Nevertheless, it must be admitted that Bloomfield's science was a radical departure from anything that de Saussure had ever envisaged for synchronic science. De Saussure's view was one in which the central datum of analysis was the meaning of the sign. He had considered the sign - the linkage of acoustic image with meaning - to be the fulcrum of synchronic science and its entire intelligibility in turn depended on paradigmatic and syntagmatic intersection. Ostensibly, Bloomfield had agreed with the semiological basis yet had methodologically excised the contributions of the paradigmatic axis from the discourse (something which leads one to question whether Bloomfield ever really did acknowledge the
co-axial theory in the first place). The evocative, intangible relations and associations of the paradigm were much less amenable to scientific analysis in stark contrast with the dissectable realities of the syntagm - its phonemes, morphemes, and tagmemes. Even though the relegation was provisional and the rationale tactical, by relegating the study of meaning to a remote future, Bloomfield effectively anathematized the concept for a generation of American linguists. The history of linguistic science is the richer for it. Had the analytic acumen of an American generation not been so determinedly trained upon the description of form, the morphophonology of language might never have been formalized to the extent that it was.

The Descriptivists

The inheritors of Bloomfield's approach - R. Wells, B. Bloch, G.L. Trager, C. Hockett and Z. Harris - pursued Bloomfield's notions of immediate constituency in which the approach has been alternatively described as 'formal', 'descriptive' or simply 'structural'. A formal approach is, as Allen points out '...based on the fact that every linguistic unit below the level of sentence has a characteristic distribution; that is, it is restricted to a greater or lesser degree with respect to the environments in which it can occur' (ECAL, 1975:21). The term 'formal' will be used interchangeably with 'distributional' and is understood to mean any constituent whose basic structure can be scientifically verified and whose contextual (syntactic) behaviour can be predicted. This approach has alternatively been termed a 'taxonomic' one in which the 'units of the analysis are defined internally in relation to each other, rather than externally in relation to psychological, logical or metaphysical categories...' (ECAL, 1975:53). At a broader level, the distributional approach is characterized by its empiricist rationale, the importance attached to the collection of data, the focus on surface analyses, emphasis on the elaboration of strict taxonomies, and the prospective development of a set of inductive 'discovery procedures' (Robey, 1973:5).

Aware of the problems of meaning-in-language which Bloomfield encountered earlier, descriptivist field workers were enjoined to do nothing more than amass corpora. Through replicable procedures, the linguist would see the internal distributional configuration of the language slowly emerge. 'This is a totally corpus-based approach, where all the linguist does is identify the minimum grammatical units (morphemes) and describe their distribution relative to each other' (Allerton, 1979:94). However, in what can only be described as surprising, this insistence on impartial analysis, verifiable data collection, and the avoidance of subjective judgments ended up being a concerted attempt to obviate subjective judgments altogether. Descriptivists '...assumed that the proper task of 'structural linguistics'
was to formulate a technique, or procedure, which could be applied to a corpus of attested utterances and, with the minimum use of the informant's judgments of 'sameness' and 'difference', could be guaranteed to derive the rules of the grammar from the corpus itself (Lyons, 1970:157). This is an important link to transformational-generative grammar.

The pedagogical reflex of descriptivism - the Audio-lingual method - imbued the pedagogy of the late forties and early fifties. If the theoretical approach to language focused upon the distributional relationships of its objects, it was reasoned that teaching should follow theory. A clear example of this isomorphism may be seen in Charles Fries's Englsih Sentence Patterns (1957) which is considered to be a 'monument to structuralism as applied to language teaching'; its materials '...rest upon the view that learning a foreign language consists not in learning about the language but in developing a new set of habits' (in Bell, 1981:97). These new sets of habits are founded upon Fries's theory of 'form classes' which he had elucidated five years earlier in The Structure of English. Nelson Francis describes the background:

Fries, after recording 250,000 words used by educated middle-class Americans determined that there were only four primary parts of speech of words with lexical meaning: classes 1,2,3, and 4. To these he adds a relatively small group of function words, 154 in his materials, which he divides into 15 groups. These must be memorized by anyone learning to language; they are not subject to the same kinds of general rules that govern the four parts of speech' (in Allen, 1964:83).

In Fries's schema these four parts of speech could be further identified either by their form - 'noun', 'pronoun', 'verb', 'adverb' and 'adjective' - or by their position, in which they were termed 'nominal', 'verbal', 'adjectival', and 'adverbial' (Hartung, in Allen, 1964:30). This type of pedagogical application was called a 'slot-and-filler' approach and widely adopted for its clarity, its various manifestations entitled 'drilling', 'pattern practice', or the 'mim-mem' method. Robert Lado's 1957 book Linguistics Across Cultures: Applied Linguistics for Language Teachers is one such text and proposes another corollary of distributional analysis. Introduced by Fries, this Bloomfieldian book is an attempt to show the teacher how to '...develop a new set of language habits against a background of different native language habits'. Lado takes the various morphophonological phenomena and examines their cross-linguistic comparisons and contrasts in a purely formal way subsequently gaining fame as the Contrastive Analysis hypothesis; it enjoys extensive coverage in the field and is generally recognized as one of the conceptual insights gleaned thus far from theoretical linguistics.
The Descriptivists, nevertheless, were criticized very heavily on one count in particular, a conceptual misstep first made by Bloomfield and then repeated by his heirs. The fallacy has been identified by Sampson who notes that in excluding semantic considerations until such time as ‘human knowledge advances well beyond its present state’, linguistic behaviourists ‘...took the wrongness of introspection to imply that there was nothing to be introspected’ (Sampson, 1980:66). Their approach thus violated a fundamental axiom of structuralism, namely, that it is the functioning, interrelated whole which must be described (Lane, 1970:80). European and American structuralists stand apart on this score:

American Descriptivism...first of all compares form, position and distribution of language elements both in the system of the native language and that of the target language. The Prague School compares the ways in which these forms actually function in the languages in question...American Descriptivism isolates form from content, the language system from the extra-linguistic reality it conveys. It only takes note of the invariant systematic meanings of form and their formal signals...For the Prague School the consideration of both form and content was always characteristic, which protects it from an antisemantic bias (in Fried, 1972:56)

The descriptivists were taxed for having elevated a viable methodological approach along one axis to the status of a theory itself (Lane, 1970:18). It was Chomsky who critiqued this equivalence of discovery procedure and linguistic science most caustically: analyses derived from such a misalliance resulted in trivial and misguided conclusions about superficialities. Rather, it was the underpinning grid, Chomsky maintains in distinctly Saussurean terms, which constitutes the true object of linguistic analysis. ‘Structural linguistics, by basing itself inductively on the utterances...of informants was accused of lacking criteria by which to distinguish the regular from the accidental, the grammatical from the ungrammatical’ (Stern, 1992:145). Bell found structuralist grammars ‘weak’ and ‘possibly misleading’ in matters syntactic (1981:95). Timothy Light goes further: structuralist analyses leave students and teachers ‘in mental chaos’ (1968:225).

Despite the excesses, it must be recognized that any attempts to denigrate the insights from this chapter of linguistic history needlessly tear the thread. In a review of its central tenets, one can only be struck by the extent to which American structuralism constitutes the internal weave that joins Chomskian linguistics to de Saussure's. While certain tenets are no longer accepted today e.g., language-as-habit formation, many of its basic constructs and exhortations still provide the substance of modern teacher training programs. Moulton itemizes some of the more renowned: ‘Language is speech not writing’ ‘Teach the language, not about the language!’ ‘A language is what its native speakers say, not
what someone thinks they ought to say' and 'Languages are different!' (in Mohrmann et al, 1966: 86ff). All of these dictums derived from structuralism are familiar to teachers-in-training. However, one conceptual bequest, the 'separation of the levels' upon which Trager and Smith in their *Outline of English Structure* insisted, is problematic for the language teacher and an issue to be discussed in the last chapter.

The underlying ethos of theorists such as Bloomfield, Fries, Hill, Hockett, Lado must be understood clearly and the distributionalist insight into grammar re-enhanced. G.P. Faust emphasizes that '...the concern of structuralists [was] with the mechanisms of language as a medium not with the 'message' (meaning) carried by the medium' (in Allen, 1964: 96). Theirs was a formal as opposed to functional undertaking and the original intent must be borne in mind when evaluating their particular trove. If their fault lay in miscalculating the place of meaning-in-language on the one hand, and the place of a particular methodology on the other, their inestimable value lies in the distributional insight passed on to linguist and language teacher alike.

The labours of one descriptivist in particular, Zellig Sabbatai Harris, provide the next link in the chain (Lyons, 1970: 157). His emerging dissatisfaction with the paradigm in many ways recapitulates and parallels the development of de Saussure fifty years earlier. This formalizer of 'discovery procedures' in the end found them constricting. While an analysis of his seminal work deserves a chapter in itself, the discussion will simply point to the procedures of segmentation which he formalized for posterity. Its two principle operations were elaborated by Harris in a dense and closely argued tome entitled *Structural Linguistics* (1951) and Grinder provides the link here (1973: 42): 'These tools or procedures were extended into the analysis of the higher-order system of syntax. The notions of substitution and expansion made possible the development of what we regard as the primary conceptual advance - the notion of formal relations between sentences, the transformation'. This combination of tremendous erudition, rigorous procedural science, as well as the methodological excess led directly to Noam Chomsky and *Syntactic Structures*.
Summary

While his theories either directly or indirectly have occasioned significant theoretical developments on both sides of the Atlantic, de Saussure has nevertheless been rightly termed a 'remote' figure in the literature. Since the purpose of this thesis, however, is not to identify direct application so much as to pencil in some of the contours discerned in the background, de Saussure's theory may be rightly considered to have provided substantive competence for the theoretical classroom teacher. The principal value of the CLG lies in two areas for the language teacher. First and foremost, de Saussure's theory of langue conveys the centrality of meaning and Allerton (1979:32) draws us back to the fundamental metaphor of the coin to make this point: '[O]n the one hand, we see the outward shape of the coins; on the other, we observe the value of the coins in the system and their meaning (through exchange rates) in terms of other currencies. And it has been argued that this analogy is much more appropriate to the relationship of sound and meaning, since meaning is not some physical attribute that the sign possesses but rather a value or function or even activity that the sign participates in' [italics mine]. The point here is that the science of structuralism would not have resulted had meaning-in-language not been ensconced in the heart of structuralist thought from the beginning.

A second insight that the classroom teacher might derive from de Saussure derives from the latter's differential philosophy - an approach to the epistemology of language in which boundary, otherness, negation, and form are the prime terms of reference. The fecundity of these concepts suggests that the classroom researcher examine these notions as possible avenues to a 'psychologically real' grammar. De Saussure's theory of the twin axes in relation to language teaching has been revisited as recently as 1996 in H.G. Widdowson's introductory text Linguistics. Indications of how a 'differential' approach to linguistic analysis might operate may be seen in Glyn Lewis's Saussurean text Linguistics and Second Language Pedagogy (1973).

'Now, more than a decade later,' De Camp asked in 1968, 'where are the language textbooks in which pronunciation is taught in terms of Jakobsonian distinctive features?' (TQ, 1968:3). There does not truthfully appear to be a wealth of such resources. However, since the aim is now not one of direct application but rather the establishment of prior competence, the question is not unanswerable. Wardhaugh (1974:139) informs us that in the mid-seventies the concept of the phoneme remained 'controversial'. However, for the second language teacher, an approach framed either in Jakobson's...
original, or Chomsky and Halle's revised terms in *The Sound Patterns of English* is to be recommended. The second language teacher needs a framework of analysis which is commensurate across languages in order to conceptualize the many (supra)segmental difficulties which his students encounter. As an adherent of this school of European structuralism puts it unequivocally: 'Thinking in a foreign language is arrived at by penetrating more and more profoundly into the system of functional oppositions of the foreign language differing from the mother tongue' (in Fried, 1972:45).

Bloomfield's most enduring, *scientific* contributions to linguistic theory have been described above and in practical terms, his influence has been pervasive. Wilkins (1972:164) informs us that '...most developments in foreign language teaching since the second world war have been based on the assumption that language is a form of behaviour. Even where there is no explicit statement of the theoretical foundations of a method, the underlying attitude can be inferred from the use of such terms as 'skill' or 'habit'. Yet, Bloomfield's signal contribution in teacher-theoretical terms has been the distributional insight which the framework of immediate-constituent analysis has afforded linguistic science. The varied processes of segmentation and expansion which he outlined in *Language* and elsewhere ought to be re-enhanced in the foreign language classroom.

American Descriptivism, however, must be accorded its own echelon of eminence, engendered as it was by the continuity of a rich grammatical tradition. Fries located the twin etiologies of American structuralism in Sapir's *Sound Patterns in Language* and in de Saussure's lectures in Switzerland (in Allen, 1964:37). Bell (1981:92) saw in the practical problems confronting the early American Structuralists the rationale: traditional grammars were incapable of handling the intricacies of Amerindian linguistics. C.F. Hockett's *Item and Process model* (IP) derived directly from mid-century structuralism and elaborated the Bloomfieldian techniques of addition, replacement, and subtraction thereby contributing significantly contributing to morphological science (Collinge, 1990:80). Bolinger feels that the strong suit of these mid-century scholars was the depth of phonological insight which they bequeathed to posterity (1972:113). Their most enduring bequest - almost universally agreed upon - has been the insights transmitted through the vicissitudes of the Contrastive Analysis hypothesis - even though they could never agree on precisely how many contrasts were needed (Hill, 1969:11).

The literature which Lado's and Fries's efforts stimulated is extensive. If resonance is reckoned to be an important signpost for the beginning researcher, their ethos, if not necessarily all of their
extrapolations, needs revisiting in 1997. While such a belief appears quite mild in itself, it is still not one current in contemporary language teaching curricula and the insights which it could offer remain dormant within the discipline. Unfortunately, contemporary language teaching may be still experiencing the residual effects of the dialectic described earlier by Hammerly. Although the Communicative Method continues to enjoy Most Favoured Notion status for a variety of sound reasons, it nevertheless has eclipsed an awareness of equally important formal constructs. With the 'external', 'message-oriented', 'functional' side of current language teaching in the ascendant, a result has been the neglect of the 'intrinsic patterns of self-contained systems', their segmentable realities and their distributional analysis. At some point, those who called for 'More communication, less grammar' in the classroom seem to have opted for a much more absolutist, exclusionary stance in which the preferred standard is 'Anything but grammar'. Neither perspective need be lost nor enhanced at the expense of the other in teacher training programs and happily, although the dichotomous urge remains, the res omnium or res nulla attitude to language teaching theory and/or methodology appears to be approaching its end (Cook et al, 1995).
The traditional multivolume grammars that you find on the shelves of libraries present and classify precisely the examples that appear in them and nothing else. But we transformationalists try to answer the mysterious and, I think rather profound question: What qualities of intelligence does a human being possess that make it possible for him to use language creatively, to generate from the limited set of examples that he hears an infinite set of sentences?*

*(N. Chomsky, in Savage, 1973:167)*
The Philosophical Origins

While many linguists disagree with and/or modify his theories, Noam Chomsky's contributions to the study of language are nevertheless considered seminal. Whether it is a question of the fundamental linguistic postulates, the unresolved relationship between syntax and semantics, or even the disciplinary status of linguistics, it is an understatement to say that the linguistic paradigm inaugurated by him in 1957 has been one of 'significance'. There are many who consider the influence to have been positive Malmkjaer (1991:482), Newmeyer (1986:63), Lyons (1991:9), and Harris (1993:33) yet equally many whose assessments differ sharply. J.M. Ellis, writing with thirty years hindsight, evokes the kind of categorical opposition that is felt by many: 'Syntactic Structures captured the attention of a then theoretically stagnant field by offering a sense of rigor, purpose, and scientific precision, but it was based on theoretical mistakes that were so basic and so disastrous that recovery from them was scarcely possible short of abandoning the entire theory and beginning anew' (1993:97). Whether revolution, paradigm shift, or palace revolt, the arguments put forth in SS initiated, at least in North America, a wholly novel way of looking at grammar in general and syntax in particular.

Thirty years after its publication, Chomsky would make reference to his philosophical point of departure in what he termed 'Plato's problem': 'In The Meno Socrates demonstrates that an untutored slave boy knows the principles of geometry by leading him, through a series of questions, to the discovery of theorems of geometry. This experience raises a problem that is still with us: How was the slave boy able to find truths of geometry without instruction or information?' (Chomsky,1988:4) For Plato, the answer was epistemological and involved the metaphor of a cave and its flickering images. For Chomsky, however, the linguistic analogue is the more interesting one. It is 'the learnability problem' of first language acquisition and it is worth quoting in its entirety:

The competence of an adult, or even a young child, is such that we must attribute to him a knowledge of language that extends far beyond anything that he has learned. Compared with the number of sentences that a child can produce or interpret with ease, the number of seconds in a lifetime is ridiculously small. Hence the data available as input is only a minute sample of the linguistic material that has been thoroughly mastered, as indicated by actual performance. Furthermore, great diversity of input conditions does not lead to a wide diversity in resulting competence, so far as one can detect. Furthermore, vast differences in intelligence have only a small effect on resulting competence. We observe further that the tremendous intellectual accomplishment of language acquisition is carried out at a period of life when the child is capable of little else, and that this task is entirely beyond the capacities of an otherwise intelligent ape. Such observations as these lead one to suspect, from the start, that we are dealing with a species-specific capacity with a largely innate component' (Chomsky,1967:3)
Infants incapable of rolling over have begun to grasp that some of the behaviour around them is articulate, and by the age of six, they have acquired it (Haegemann, 1991:16).

This logical problem was simply the fulcrum upon which two related observations - one empirical, one speculative - rested uneasily in 1957 and centuries before the appearance of 'deep structure' the Cartesians already had had the insight, according to Chomsky: 'Descartes and his followers observed that the normal use of language is constantly innovative, unbounded, apparently free from control by external stimuli or internal states, coherent and appropriate to situations; it evokes thoughts in the listener that he or she might have expressed in similar ways in the same situations...For the Cartesians the creative aspect of language use provided the best evidence that another organism who looks like us has a mind like ours' (Chomsky, 1988:5). The infinite linguistic creativity characteristic of humans in general and the child's accelerating mastery of language suggested to Chomsky that a genetic, species-specific mechanism was in place and that the study of language was a direct pipeline: 'It may well be that the general features of language structure reflect...the general character of [our] capacity to acquire knowledge' (Chomsky, 1967:59). Concepts of mastery and universality were present from the beginning but creativity is the hinge. 'Creativity is predicated on a system of rules and forms, in part determined by intrinsic human capacities. Without such constraints, we have arbitrary and random behaviour, not creative acts' (Chomsky, 1975:133).

Given his Cartesian loyalties, it is not surprising to find that Chomsky's 'earliest books and papers are filled with polemics against the empiricist conception of science' (Newmeyer, 1986:66). In particular, it was the extension of behaviourist tenets into the linguistics that was most worrisome. The behaviourist agenda was most rigorously formalized in B.F. Skinner's 1957 publication Verbal Behaviour. Skinner's paradigm was one governed by strict adherence to the principles of the scientific method: observability, experimentation, replicability, and falsifiability of hypotheses (Stern, 1990). Mid-century psychologists proceeded on the basis of these tenets contending, in essence, that the characteristic behavioural patterns of all living organisms could be most aptly described in a dyadic 'stimulus-and-response' (SR) mechanism, eventually to be formalized in terms of laws of habit formation. Such habits could be variously modified through schedules of 'positive' and 'negative' reinforcement or extinguished altogether through a lack of reinforcement. Rote and associative learning, habit ingraining, shaping, reward and punishment schedules, environmental manipulation, instrumental and developmental learning are some of the concepts associated with this school of thought (Brown, 1987:39).
In *Verbal Behaviour* Skinner’s overarching concern was to provide a coherent and thoroughly empiricist framework for language acquisition in which the learning precepts of lower species were to be carried over into the realm of *sapiens sapiens*. Among other things, Skinner proposed that (i) language teaching could be expedited and (ii) the underlying principles of first language acquisition explained by a theory of conditioning involving strategic reinforcement schedules. Any word or ‘verbal concept’ along with its position or ‘frame’ in a sentence was learned through a trial-and-error approach in which the child laboriously, but effectively, narrowed the logical possibilities aided by parental schedules of positive and negative reinforcement in the form of approval or correction. From the speech community around her, the child deduced that words fit into various ‘slots’, and, when appropriately chained in speech, the result was meaningful.

Chomsky’s objections to the Harvard psychologist’s thesis were framed quite polemically in 1959 in his *Review of Verbal Behaviour*. In the first place, Chomsky contended that were the psychologist’s empiricism to be followed to its logical conclusions, his hypotheses would be vacuous, misleading, subjective, and ‘simply not true’ (See Appendix 2). In the second place, having circumscribed legitimate scientific inquiry so narrowly, behaviourists had illiberally declared much of genuine human interest beyond the investigative pale. ‘Like much of modern linguistics and modern philosophy of language, behaviourist psychology has quite consciously accepted methodological restrictions that do not permit the study of systems of the necessary complexity and abstractness’ (Chomsky, 1968:72).

The most severe problems, however, were the logical and operational inadequacies of the behaviourist position in relation to mother tongue acquisition. Given that the child is exposed to only a ‘minute’ sample of the language, that ‘vast’ differences in intelligence exist, and that the child is experimentally naive, Chomsky re-asserted that it is logically impossible for a child to formulate hypotheses of commensurate sophistication and two examples of the kind of argument he was advancing ought to suffice here. Phonologically, each phoneme has enormous powers of recombination. From a strictly behaviourist perspective of frames and fillers, the child must learn through schedules of reinforcement and trial-and-error strategies that in English, for instance, /s/ can precede /n/, /n/, /n/, /m/, /n/, /p/, but not /b/, /d/, /g/, /l/, /l/, or /z/. Such an approach is highly improbable requiring coordinated schedules of reinforcement, well-honed mnemonics, and much lengthier exposure and practice. Syntactically, Bickerton (1990:57) suggests that the behaviourist perform the following operation:
Try to rearrange any ordinary sentence consisting of ten words. There are, in principle, exactly 3,628,800 ways in which you could do this but...only one of them gives a correct and meaningful result. That means 3,628,799 of them are ungrammatical. How did we learn this? Certainly no parent or teacher ever told us'.

A more reasonable approach on both levels, Chomsky argued, involved a hypothesis that there are certain genetic constraints which guide the child's learning, impelling him towards certain hypotheses and away from others.

If the philosophical debate with Skinner centered on the impasse resulting from the expanse of creativity on the one hand and the dictates of logic on the other, the battle was also fought within the discipline itself. The core of this debate focused on the reflexive determination of certain linguists to introduce behaviouristic principles into the discourse and Chomsky's equal determination to show that such an extension was critically misguided. Apart from the felt imperialism of such an approach, the 'many important questions about the nature of linguistic structure' are overlooked when the discussion is so constricted (Chomsky, 1957:52). It was the syntactic claims made by Skinner in particular that drew Chomsky's attention. Meanwhile, the breakthrough required in linguistic theory was emphatically not to be located in methodological refinements. The study of linguistic structure '...should not be identified with a manual of useful procedures, nor should it be expected to provide mechanical procedures for the discovery of grammars' (ibid:55). Various authors (Sampson, 1980:76; Bach, 1966:186) have pointed out the fallacy at the heart of the discovery procedure agenda: 'Just as the proof of a mathematical theorem can be checked without taking account of the way in which the person constructing the proof happened to hit upon the relevant intermediate propositions, so it should be with respect to grammatical analysis' (Lyons, 1991:40).

Empirical Problems with Behaviourist Linguistics

A central concern of Chomsky's has always been the analysis of ambiguity in surface structures, in particular, those of the sentence. Spolsky tells us here that Skinner's approach to and treatment of syntax can be distilled into two basic approaches: the sentence unit could be viewed alternately as a system of frames or as a 'finite-state Markov' process' (IRAL, 1966:122) and Chomsky would take up each of these claims in turn. If the behaviourist model were adopted, it would have to deal with certain sentential anomalies which could not be accounted for within an approach of slots and frames. The truth of this observation is carried by means of several examples familiar to readers of the literature. For example, in

(1) The scene of the play was in Chicago
(2) The scene of the movie was in Chicago

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they may be easily conjoined into *The scene of the play and of the movie was in Chicago* as Chomsky points out. Other superficially similar pairs, however, are not so smoothly explained. Kristeva invites us to compare the following two sentences (1989):

(3) The money left the country
(4) The police controlled the country.

Their surface similarities belie an inadequacy at a deeper level one which is discerned only in conjunction:

(5) *The money left and the police controlled the country.*

Another commentator took aim at the behaviourist contention that reference to the frames of a sentence were sufficiently elaborate for grammatical analysis. ‘How would Skinner’, asked McGlaughlin (1978:21) ‘explain that *is* can be substituted for *can be* in (6) but not in (7) although both have the same frames?’

(6) Marking papers can be a nuisance
(7) Struggling artists can be a nuisance

Kristeva makes the connection here (1989:289): ‘These examples prove that in order to apply syntagmatic rules to a language like English, one needs to know not only the final shape of sentences but also the structure of their constituents, or their “history of derivation”’. The point is that IC analysis dissects the constituent parts admirably but remains mute in other respects. It can point to where the joints are but can say little about the multiple interconnections. To put this into its sharpest relief, Gefen relates that ‘out-and-out’ structuralists (of the Fries school) were *not* permitted to stray from the observable relations studied by IC orthodoxy; thus ‘...there is no apparent structural connection between *the boy kicks the ball* and *the ball is kicked by the boy*. The structuralist is forbidden to delve into ‘invisible strings’ because he is ‘...bound to describe only sentences that are actually produced (i.e., read or heard)’ (IRAL, 1966:228). By confining analyses to linear segmentation and conjunction, descriptivists and behaviourists alike missed the deeper semantic affinities of these invisible strings.

The Disciplinary Link

It is a matter of historical record that Chomsky stood squarely upon the shoulders of his predecessors. By his own admission, he owes much to previous theorists and his own far-flung comments in this regard are perhaps the most revealing. Denying, for example, that any ‘revolution’ in the discipline ever took place (Newmeyer,1986:96), he traces certain of his central concepts to those of previous theorists, e.g., the relationship of ‘competence’ and ‘performance’ to the *langue-parole* distinction of Saussure’ (Chomsky,1965:4). Interestingly, he has even indicated that his model of transformational
grammar is in fact closer to those of traditional grammarians than to that of his immediate structuralist forebears (Saumjan, 1971:22) and Ralph Long (MLJ, 1961:152) agrees. The categories utilized are traditional (Lyons, 1991:50) and transformational and traditional diagramming techniques for Thomas are "quite obviously" related (in Allen, 1964:411). Moreover, Chomsky's theorizing incorporates many descriptivist insights (Saumjan, 1971:118; Gleason, 1961:179; Oller, 1973:37; ECAL, 1975:52 fn.; Bell, 1981:104). Although the goals of Bloomfield and the descriptivists on the one hand were "vastly different" from those of Chomsky on the other (Wardhaugh, 1968:83), they shared a common distributionalist attitude. "The [Chomskian] model of syntax which serious study of generative grammar was to begin, and which served as the springboard for the development of the transformational model, was in essence the one implied by the procedures of segmentation, substitution, and classification that they had developed" (Matthews, 1993:146). Lepschy says simply: "Phrase structure grammar is unthinkable without American structural linguistics" (1970:137).

His greatest intellectual debt however, was to the thought and theory of one descriptivist in particular - Zellig Saffatai Harris (Newmeyer, 1995:27; Matthews, 1993:191). It seems unfair in hindsight to characterize Harris solely as a descriptivist for having pioneered much and formalized more in the area of structuralist linguistics, he was clearly moving beyond a purely syntagmatic schema towards the end of the 1950s. Central to his evolving theory were some decidedly unempirical concepts - "transform", "kernel", "string" - which suggest that the IC paradigm was becoming an increasingly straitened one. The Chomskian concept of "transformation" in particular, is a direct issue from the work of Harris (Bach, 1966:172; Collinge, 1990:107; Lepschy, 1970:120). It appears, in addition, that Harris was the first to have introduced the term "generate" - a verb that would bulk large in Chomsky's later theorizing (Matthews, 1993:134).

While revolutionary in perspective, it is thus clear that Chomsky did not overturn all linguistic benchmarks. Although transformationalists considered the linguistic theory in the nineteenth and in the first half of the twentieth century to be little more than "a stifling parenthesis" (Lepschy, 1970:35), Chomsky clearly built upon some insights but discarded others. Most of all, perhaps, he was perturbed by the behaviourist ethos in linguistic description, an ethos which confused "language-like behaviour" with language in Spolsky's estimation (in IRAL, 1966:123). Chomsky would recast some of his mentor's concepts, but the revolution truly began when he availed himself of Harris's methodology of IC analysis - essentially substitution and expansion - to explore these in a more profound way. The grammar, he
maintained, can '...be regarded as a very elementary process that generates sentences not from 'left to right' but from 'top to bottom' (Chomsky, 1957:37). Surface relations and methodological concerns constituted only two facets of linguistic analysis and the linear world view of conjunction now yielded to subjunction: 'The central notion in linguistic theory is that of level' (ibid:11).

The Distributionalist Legacy

In 1957, Chomsky addressed the problem that had vexed Bloomfield and the post-Bloomfieldians - the place of semantics - in quite a similar way. The place of semantics can be clarified somewhat here with Cromer's apposite observation (1991:206) that '[t]he term semantics is a linguistic term that refers not to meaning, but to meaning-in-language. It is in no way identical to thoughts, concepts, or meanings' [italics mine]. Chomsky is only peripherally, at this stage at least, interested in either variety. Although meaning-in-language is clearly involved in his model (Chomsky, 1957:12) it is nevertheless a fact that '...despite the undeniable interest and importance of semantic and statistical studies of language, they appear to have no relevance to the problem of determining or characterizing the set of grammatical utterances. I think that we are forced to conclude that grammar is autonomous and independent of meaning...' (ibid:18). This is formalistic linguistics at its most distilled and semantics is once again set aside.

A great deal of effort has been expended in attempting to answer the question: "How can you construct a grammar with no appeal to meaning?" The question itself, however, is wrongly put, since the implication that obviously one can construct a grammar with appeal to meaning is totally unsupported... I am not acquainted with any detailed attempt to develop the theory of grammatical structure in partially semantic terms or any specific and rigorous proposal for the use of semantic information in constructing or evaluating grammars... (Chomsky, 1957:18)

The logical delicacy and precision which he envisaged for the revised model of grammar would only be blunted by the use of the 'vague and 'undesirable' terminology of semantics. Chomsky's response in 1957 was to provisionally relegate semantic considerations although it must be emphasized that, like Bloomfield and Harris before him, Chomsky has never maintained that semantics had no bearing on the discussion. '[C]orrespondences between formal and semantic features exist... [and] cannot be ignored' (Chomsky, 1957:102). His model was intended to operate as mathematically as possible and his description was intended to lay bare its algorithms. Much conceptual misunderstanding of the kind that plagued descriptivists in subsequent years can be avoided if Chomsky's fundamental bias in this matter is understood. His relegation, like Bloomfield's, is tactical. Searle (in Harms, 1974:16) highlights the chasm between the purely formal project as envisaged by Chomsky and the more functional counterpart which was propagated by the Prague School of linguists:
Chomsky's picture...seems to be something like this: except for having such general purposes as the expression of human thoughts, language doesn't have any essential purpose, or if it does there is no interesting connection between its purpose and its structure. The syntactical structures of human languages are the products of innate features of the human mind, and they have no significant connection with communication, though, of course, people do use them for, among other purposes, communication.

Campbell in Grammatical Man underscores the quintessentially mechanical nature of the 1957 theory:

It is true that Chomsky provides a place for rules which interpret the meaning of a sentences according to the way it is being used in a particular context in the “real world”. But for him syntax, as pure framework and pattern, is unconnected with meaning or sound or context. It is more or less mindless. Syntax generates grammatical sequences of words, whether or not they are appropriate; at a later stage of processing, the rules of interpretation reject those which make no sense. Syntax as thus defined is divorced from use and from experience. (1982:183)

This separation of syntax from meaning was, in Matthew's opinion, Chomsky's original premise (in Collinge, 1990:131). His was 'an attempt to develop a grammar of explanatory power which would be based on distributional facts only' (Matthews,1993:206). This problem is essentially the same one which dogs the project in any one of its structuralist or descriptivist, or transformationalist guises: purely formal models of linguistic creativity necessarily turn out to be more semantically ramified than expected.

Syntactic Structures (1957)

In proposing a new model of generative grammar, Chomsky was continuing the venerable inquiry into the interconnectedness of sound and meaning which were taken to be axiomatic by de Saussure. Whereas McIntosh would see the bridge between sound and meaning as primarily phonological (Chapter Five), Weibelhuth sees the conceptual bridge between sound and meaning as basically syntactic (1995:3): 'Generative Grammar is founded on the specific hypothesis that sound and meaning are only indirectly related in that they are mediated by syntactic representation'. Newmeyer traces the preeminence of syntax to one facet of the learnability problem cited earlier (1996:25): 'Phonological and morphological systems are essentially closed and finite; whatever their complexity or intrinsic interest, their study does not lead either to an understanding of a speaker's capacity for linguistic novelty or to an explanation of the infinitude of language'. With grammatical analysis so effectively co-identified with the syntactic analysis, the conceptual foot-soldier became the sentence: 'Syntactic investigation of a given language has as its goal the construction of a grammar that can be viewed as a device of some sort for producing the sentences of the language under analysis' (Chomsky,1957:11). Whereas the analysis of 'text' characterizes functional linguistics, the analysis of 'sentence' is thought to epitomize formalist linguistics (Bell,1981:132).
In Syntactic Structures, Chomsky introduced a wide variety of novel, mathematically nuanced terms, of which one of the most storied is the term 'formal'. For structuralists following de Saussure, the term denoted the differential meaning that a linguistic object acquired by virtue of being a member in an interlocking network of relationships. Crystal (1991) lists at least six additional approaches. For R. Harris (1993:13), it is ‘...nothing more than codified abstraction’. Emmon Bach, however, specifies that with regard to generative linguistics, the term ‘formal’ is to be sharply contrasted with ‘notional': there may be no appeal to semantic considerations if a concept is ‘formally’ defined (1966:10). Thus, a formal definition implies that the explanation is to be carried out in a mechanical, specific, precise, replicable, and non-intuitive way. *The term is synonymous with explicit.* ‘Generative Grammar was developed as a program to characterize the knowledge of a native speaker about his/her natural language as a formal and explicit set of rules to generate all and only the representations that underlie the grammatical sentences in a natural language...A Generative Grammar is thus nothing more than a formally precise grammar whose empirical predictions follow mechanically from its rules and postulates’ (Webelhuth,1995:4).

Another concept - the notion of ‘sentence’ - bears little if any resemblance to what is normally understood by the term. In generative terms, it begins life as a ‘construction’ - a concatenation of elements which, as economically as possible, makes up a proposition. The juncture at which a ‘construction’ becomes ‘sentence’ is not entirely clear and Waterman (1970:102) complains that the term ‘sentence’ was never concretely defined, its sense, instead, being left up to ‘the intuitive judgment of the native speaker’. Although it would be sharply distinguished later in the literature, the term is at this juncture used interchangeably with ‘utterance’ (Matthews,1993:130). Gleason states that the Chomskian ‘(S)entence’ is better understood as representing all sentences in the language’ (1961:182). Like an equation, the Chomsky’s \( \sum \) specifies that another ‘string’ of increased detail must further clarify, or ‘rewrite’ the non-terminal symbol to the left automatically. These terminal symbols are to be read in much the same way that a mathematician would read an equation or a scientist a formula: a function that expands everything to the left on the right. Whenever a terminal symbol appears, it is to be immediately rewritten as a series of more concrete, more explanatory elements or ‘formatives’. *A chain of algorithmic formatives is a ‘string’.*

This 'string' is not an unordered set of elements, but, in Bloomfieldian terms, a particular kind of ‘sequence of elements characterized by constituent structure’ (Gleason,1961:179). For Lyons, it is a ‘sequence of symbols’ (1991:59) and for Crystal, ‘a linear sequence of elements’ (1991:329). The term
has various operational usages: The 'initial string' is the prime, irreducible formula with which the syntactic device operates: \( S \rightarrow NP + VP \) and appears equivalent to 'underlying string' i.e., the sequence of elements which has not as yet undergone any kind of transformation (Lyons, 1991:67). These types of symbols - S, NP, VP, Aux, etc. - are called 'non-terminal' symbols in a 'non-terminal' string because they can be further specified. However, when the non-terminal symbols are 'filled in' with actually occurring formatives in the language, e.g., -en, the, cat, etc., these latter are called 'terminal symbols' and the resultant concatenation is called a 'terminal string' i.e., one which cannot be rewritten/specified any further. The terminal string is the final string generated by the generative grammar.

Much more accommodating with regard to the admissibility of intuitive evidence than Bloomfield had ever been, Chomsky would come to reverse the Bloomfield's dictum that the field-worker should 'accept everything the native speaker says in his language but nothing he says about it'. The acceptance of intuition is the characteristic which marks Chomsky off from Bloomfield. For Chomsky, it was precisely these native speaker abilities - 'the abilities to label certain sentences as clearly grammatical, others as clearly ungrammatical, to recognize certain sentences as ambiguous, pairs of sentences as synonymous, etc.' (Webelhuth, 1995:4) - that constituted the Royal Road to linguistic consciousness. Although he granted that both native speakers' judgments and linguists' intuitions are fallible, Chomsky turned Bloomfield's most definitive anathema on its ear: 'One may arrive at a grammar by intuition, guess-work, all sorts of partial methodological hints, reliance on past experience, etc.' (Chomsky, 1957:56). Nonetheless, '[t]he major goal of grammatical theory is to replace this obscure reliance on intuition by some rigorous and objective approach' (ibid:93).

In overturning the resolute empiricism of previous descriptivists, and in insisting upon the centrality of grammaticality in the discourse, Chomsky was required to offer a new trajectory and this he did in a tentative way in 1957. Initially, the notion of grammaticality refers to little more than the quality of a sequence that is 'acceptable to a native speaker' (Chomsky, 1957:13). Grammaticality is determined neither probabilistically (i.e., the more frequently an object occurs, the more grammatical it must be) nor semantically (1957:17,100). In terms of the first, however, Chomsky does concede that frequency of use may be a useful heuristic for the native-speaker in judging relative grammaticality. Nevertheless, the point is that heard utterances are only a small subset of all potential grammatical sentences generated by the rules of the system. Such a measure is consequently an impoverished metric by which to determine
grammaticality. He is interested in describing the algorithmic system which pre-exists these judgments of grammaticality in the first place because it generates the strings beforehand. Ultimately, however, both the linguist's and the native-speaker's intuitive judgments of grammaticality are scalar: there are 'levels of grammaticalness' (1957:16) or 'degree[s] of grammaticalness' (1957:78) in the system. *Grammar is fuzzy.*

This formal (=non-semantic) quest for the principles of grammaticality was to be judged in terms of a hierarchy of adequacy. Bloomfield's search for descriptive adequacy, then, was to be replaced by a standard of 'explanatory adequacy'. The centrality of this adjective in the development of Transformational-Generative (TG) grammar can scarcely be underscored sufficiently. Radford (1981:28ff) provides some guidance: At the most elementary level, a grammatical model/theory of language is observationally adequate provided that it predicts which sentences are syntactically, semantically, and phonologically well-formed and which are not. A descriptively adequate grammar fulfils exactly these same requirements but significantly furnishes an explicit set of grammatical principles to formalize the native speaker's intuition. The acme of scientific explication, however, would be a theory of explanatory adequacy. Such a theory must explain '...why grammars contain certain types of technical devices and not others; it must explain what exactly are the defining characteristics of human languages that differentiate them from other communication systems; and it must explain how it is that human beings come to acquire their native languages'. With twenty-five years hindsight, Chomsky would state that '[t]he basic concept, it seems to me still, is explanatory adequacy...the problem of explaining how a particular grammar is selected on the basis of certain data' (Chomsky, 1982:27). With thirty-six years hindsight, these descriptive and explanatory criteria would be underlined once more: 'Early generative grammar faced two immediate problems: to find a way to account for the phenomena of particular languages ("descriptive adequacy"), and to explain how knowledge of these facts arises in the mind of the speaker-hearer ("explanatory adequacy") (Chomsky, 1993:3). A descriptively adequate grammatical theory makes correct predictions but is not 100% explicit. An explanatory grammar on the other hand, lays bare the rules and operations.

A grammar of explanatory adequacy offers criteria by which to select the optimal description from among the competing models of grammar. A record of utterances, no matter how carefully culled, necessarily contains many well-formed utterances but equally crucially, as many hesitations, fragments, slips, and faulty native speaker judgments. Such utterances would thus provide a doubtful basis upon which to state the principles governing a particular language, the merest possibility that an utterance not
be grammatical rendering any discussion inconclusive and inexplicit. Explicitness requires measurement and conclusion.

Accordingly Chomsky imposed a set of "internal" conditions on explanatory grammars of which the most important criterion was simplicity. It dates perhaps most famously to Occam's dictum: Non sunt multiplicanda entia praeter necessitatem: 'Entities are not to be multiplied beyond the necessity'. Saumjan, citing the formal criteria of the 'hard sciences' finds TG theorizing congruent in this regard: 'In modern methodology of science the following basic criteria are proposed for choosing between alternative hypotheses: (1) The criterion of productivity. - Of two hypotheses equally in accord with the observed data, the more preferable is that which is applicable to a broader circle of facts and phenomena and (2) The criterion of simplicity - Of two hypotheses applicable to the same circle of facts and phenomena the simpler hypothesis is preferable' (1971:43).

Always a governing concern in TG theorizing, explanatory simplicity occupies a seat of preeminence. '[T]he only ultimate criterion in evaluation is the simplicity of the whole system' (1957:55) and this metric is consistently re-emphasized with respect to a wide variety of grammatical phenomena including conjunctions, transformations, and voice (1957:41,68,77,79,81,83). The justification Chomsky finds in an analogue from the natural sciences: 'In physics, one might ask the same question: why look for elegant answers? Everybody does, but you might ask: why do it? The reason they do it is an almost mystical belief that there is something about our concept of elegance that relates to truth, and that is certainly not logically necessary...But you really have no choice but to try to use the resources of your mind to find conceptual unification and explanation and elegance, hoping that by some miracle that is the way the world works' (Chomsky,1982:30). Postal concurs in this almost prophetic function: '[T]he question of simplicity is not merely a matter of elegance. Two or more grammars may be compatible with the same set of observed data and yet make logically incompatible claims about the language. Determination of simplicity is thus inherently bound up with the determination of truth (Postal, 1967:82).

Invoking Occam's Razor, however, has proven easier than applying it as Lyons relates (1991:62):

It has proved very difficult, however, to make formally precise the sense in which the term 'simplicity' is being employed here. How do we decide, for example, that a grammar which requires relatively few rules, some of which however are quite complex, for the generation of a given set of sentences is, as a whole, more or less 'simple' than a second, weakly equivalent, grammar which requires far more rules, none of which however is particularly complex, to generate the same set of sentences? There is no obvious way of balancing one kind of simplicity against another...
Next to simplicity, a second defining attribute of explanatory adequacy was 'generality': 'In addition, we pose a condition of generality on grammars; we require that the grammar of a given language be constructed in accordance with a specific theory of linguistic structure in which such terms as “phoneme” and “phrase” are defined independently of any particular language' (Chomsky, 1957:49). That is, any explanatory grammatical description must be capable of generalization. ‘Otherwise,’ as Lees puts it, ‘...there would be no reason to expect that our knowledge of how speakers of any one language used it to communicate had any relation at all to what the grammar of other languages could elucidate about communication among their speakers' (in Harms, 1974:44).

After these 'internal' conditions of simplicity and generality, Chomsky imposes a set of 'external' conditions upon explanatory argumentation. 'Every grammar will have to meet certain external conditions of adequacy e.g. the sentences generated will have to be acceptable to the native speaker...' (Chomsky, 1957:49). Lees disassembles Chomsky's meaning here: the grammar must generate all and only the grammatical sentences of the language; it must assign degrees of grammaticality to these sentences; and it must explain intuitive ambiguities by providing explicit structural descriptions (in Harms, 1974:46). 'If we drop either the external conditions or the generality requirement', Chomsky maintains, 'there will be no way to choose among a vast number of totally different ‘grammars’ each compatible with a given corpus (Chomsky, 1957:49). ‘Our ultimate aim is to provide an objective, non-intuitive way to evaluate a grammar once presented, and to compare it with other proposed grammars' (ibid:56). Having reoriented to discourse to a search for explanatory adequacy, Chomsky brings the discussion in clearly into focus:

The fundamental aim in the linguistic analysis of a language $L$ is to separate the grammatical sequences which are the sentences of $L$ from the ungrammatical sequences which are not sentences of $L$ and to study the structure of the grammatical sequences. The grammar of $L$ will thus be a device that generates all of the grammatical sequences of $L$ and none of the ungrammatical ones' (1957:13).

It has been stated that Chomsky's most lasting gift to the study of language was the 'mathematical rigour and precision with which he formalized the properties of alternative systems of grammatical description' (Lyons, 1991:42) and others have concurred (Bach, 1966:143, Bennett, 1974:150). This explanatory rigor which Chomsky sought for descriptive linguistics was found in the terminology and procedures of an area of mathematics called Set Theory which is concerned with the proper assignment of elements to classes, sets of classes, and hierarchies of classes. In addition, Chomsky utilized the postulates of Relations Theory which is concerned with the ‘reflexive’, ‘symmetric’, and ‘transitive’ natures
of interaction among sets (Bach, 1966:147ff). Telltale strands of these influences may be seen in the new conventions of grammar which are variously recorded e.g., Koutsoudas (1966).

In the above quote, Chomsky posits the existence of a 'device'. His intention might very well have been to orient the linguist to language study based on a mechanical metaphor. 'So far we have considered the linguist's task to be that of producing a device of some sort (called a grammar) for generating all and only the sentences of a language, which we have assumed were somehow given in advance' (Chomsky, 1957:85). This device or set of rewrite rules is a kind of mental grid from which all sentences derive and against whose grammatical principles all sentences are measured. It is a linguistic template hard-wired in the mind that permits linguistic creativity in the first place. The importance of this device is underlined quite starkly years later: 'Were it not for this endowment, individuals would grow into mental amoeboids, unlike one another, each merely reflecting the limited and impoverished environment in which he or she develops, lacking entirely the finely articulated and refined cognitive organs that make possible the rich and creative mental life that is characteristic of all individuals not seriously impaired by individual or social pathology...' (Chomsky, in BBS, 1980:4). Chomsky initially envisaged this endowment along the lines of an 'input-output system' (Chomsky, 1967:2):

\[
\text{data} \rightarrow \text{LA} \rightarrow \text{knowledge}
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Whereas certain descriptivists had presumed that performance (=the data) was co-extensive with competence, Chomsky dissented: the mere fact that a native-speaker could identify certain utterances as grammatical and others as ungrammatical evinced the existence of an innate arbiter, a conceptual network against which the native speaker unconsciously projected all utterances. This Language Acquisition Device (LAD) was hypothesized to contain two in-built constraints, one verifiable, the other abstract. On the one hand, the empirical or 'upper bound' was the 'diversity of resulting competence - in our case, the diversity of languages. We cannot impose so much structure on the device that acquisition of some attested language is ruled out...On the other hand, we must attribute to the device a sufficiently rich structure so that the output can be attained within the observed limits of time, data, and access' (1967:3).

McNeill...described the LAD as consisting of four innate linguistic properties: (1) the ability to distinguish speech sound from other sounds in the environment, (2) the ability to organize linguistic events into various classes which can later be refined, (3) knowledge that only a certain kind of linguistic system is possible and that other kinds are not, (4) the ability to engage in constant evaluation of the developing linguistic system so as to construct the simplest possible system out of the linguistic data that are encountered (in Brown, 1987:20).
Importantly, this LAD is pre-equipped, Chomsky says, with an 'iterative' or recursive property. Strings of formatives could be extended indefinitely through conjunction and along with the uniquely human capacity to manipulate syntactic categories and not solely discrete constituents, the ability to 'loop back' over the same sequence i.e., to endlessly embed, endows the device with enormous generative potential. 'The importance of the notion is that recursive rules are the main formal means of accounting for the creativity of language: by using this device, an infinite set of sentences can be generated from a finite set of rules' (Crystal, 1982:292). Chomsky's mentalism appears to be legitimate abstraction from the phenomenology: the recursive properties of language suggested an iterative component; the learnability problem implied the LAD; acceptability judgments suggested an innate arbiter of grammaticality.

The Mechanics of the Model I: Generation

In 1957 Chomsky envisaged the LAD to consist of a 'base' component - there being no reference to 'deep structure' in 1957 - conceptualized in the form of symbols, notations, and rules (rewrite rules) which would expand these symbols in a variety of ways and which are outlined in Appendix 3. This 'base component' incorporated the central constructs and insights of IC analysis (R. Harris, 1993:42). The archetypal syntactic rewrite rule S → NP + VP commences the algorithm until specification is complete. When these strings proceed in terms of the specified rules, they are considered to have been 'generated' and could be diagrammed on the page in a linear way - by means of parentheses or brackets - or in a hierarchical manner - by means of a phrase structure tree. Tree structures are chosen in preference to parentheses and brackets because they are 'visually clearer' (Lyons, 1991:61). In either case, Chomsky refers to the result as a 'phrase marker' (Chomsky, 1957:61) and it has two basic relations: dominance and linearity (Chomsky, 1993:34). (Halliday designated comparable items in terms of units of the hierarchy and structures of the syntagm). A collection of such phrase markers derived from rewrite rules is a 'Phrase Structure' component although Postal draws attention to the ambiguity of this term in the literature (1967:82, fn.11).

These rewrite rules in the LAD may be aptly termed 'generative' as they scan all symbols in the system until each symbol is maximally specified and thus identified as one of its own. When a string lawfully follows the specified rewrite rules of the grammar, it is considered to have been 'generated'. A second related sense is that '...in which 'generative' may be glossed as 'explicit', [and] implies that the rules of the grammar and the conditions under which they operate must be precisely specified' (Lyons, 1991:43). A third perspective is that 'generates' denotes 'projects'. In this sense, Chomsky's ideal of a
generative grammar is a "...grammar that 'projects' any given set of sentences upon the larger and possibly infinite, set of sentences that constitute the language being described". Gleason (1961:182) contrasts it with performative production:

A particular running through of the grammar [GENERATION] is not to be considered as creating a sentence, but more nearly as selecting a sentence from a pre-existing stock (the language) of all possible sentences... S stands for all sentences in the language... The process of running through the grammar and making the required choices is a matter of singling out a specific sentence to replace the general symbol S. Nothing is created, increased, or added to; the meaning is instead very much narrowed.

Four years later, Gleason gave the term a final gloss: 'Generation does not...mean the physical production of sentences. The latter is accomplished by some other instrumentality - a man or a machine - operating with a generative grammar. Generation is the identification of a sequence of words as a sentence in the language. A generative grammar does not generate one sentence now, and another at another time. Rather, it generates all the sentences it is capable of at all times' (1965:247)[italics mine].

Harris (1993:100) says that generation 'identifies an abstract notion, like delineate, define, and enumerate'. Chomsky (1980:220) defines 'generative grammar' in the following way: '[W]hen we speak of the linguist's grammar as a generative grammar" we mean only that it is sufficiently explicit to determine how sentences of the language are in fact characterized by the grammar'. A generative grammar identifies all the sentences of a language and 'does not distinguish between those that have been attested and those that have not' (Lyons, 1991:38). For the teacher, much grief over this vexatious term in linguistics can be avoided if its origins in modern symbolic logic are understood from the outset: generate means nothing more and nothing less than explicitly define. Explicit syntactic definition came in 1957 in the form of two extant models: the 'Markov' or 'Finite-State'/\'Kleene'/\'Steady-State' model on the one hand and the 'Phrase Structure' model of generation on the other.

The Markov Model

The first generative model has a rewrite system of rules that operate in a manner comparable to a machine i.e., by following purely contingent processes a line of elements is connected one to the other:

[Finite State grammars] are based on the view that sentences are generated by means of a series of choices made 'from left to right': that is to say, after the first, or leftmost, element has been selected, every subsequent choice is determined by the immediately preceding elements... We can think of the grammar as a machine, or device...which moves through a finite number of internal 'states' as it passes from the initial state ('start') to the final state ('stop') in the generation of sentences...It can be extended, however, by allowing the device to 'loop' back to the same or some precious state at particular points of choice... (Chomsky,1957:51)
This Finite-state model of 'slots' or 'frames' operates by selecting elements based, among other considerations, upon probability of occurrence in a corpus. It is purely additive: \(a+b+c+d+e\ldots\) Yet even with some type of recursive principle that enabled the speaker to creatively embed new clauses in this string, its inability to deal with unified elements of meaning that are not contiguous - wrote its epitaph for Chomsky. The connections across elements e.g, adverbial particles \(\text{look} \ldots \text{up}\), correlative conjunctions \(\text{both} \ldots \text{and}\), required an explanation and in the literature, descriptivists were taxed for either sidestepping this issue altogether or offering mistaken analyses of these 'discontinuous' elements (Postal,1967:67). The problem lay in explicitly relating separated elements in the sentence in terms of a rigidly linear and additive model of grammar with no memory capacity. If the fundamental left-to-right nature of the grammar were reworked so as to admit the addition of a 'left-to-{third}, {fourth}, {fifth}...from-the-right' provision, it could no longer be a finite-state, or sequentially contingent grammar.

The Phrase Structure Model

The next grammatical model that could conceivably generate all of the sequences of a language was a Phrase Structure Grammar (PSG). 'The origin of phrase structure grammar was, in short, Bloomfieldian constituency analysis, and the origin of that, in turn, was what remained of Bloomfield's model when, first, grammatical arrangement is reduced to selection and order and, secondly, when all reference to meaning is taken out. It was, in consequence, a brilliantly simple model' (Matthews,1993:148). A PSG, in a typically unhelpful definition in the literature, is a particular kind of rewriting system 'formalized as a set of ordered or unordered, optional or obligatory, recursive or non-recursive, concatenating rules' (Lyons,1970:236). Postal, somewhat more helpfully, tells us that it operates with the same types of symbols as a Finite-State grammar (1967:9). The derivations of a PSG i.e., the running-through of the rewrite rules, however, are significantly different from those of a finite-state grammar. A PSG, crucially unlike the preceding model, deals with both discrete \(\text{and}\) phrasal elements.

The reasons for rejecting this model are somewhat less apparent. The contention that a PSG is incapable of handling the intricacies of natural languages is still disputed. Within the world of MIT theorizing this type of model was indicted for its lack of simplicity, inability to account for structural discontinuities, and needless complexity and duplication of rules (ibid:73). Saumjan, in his Principles of Structural Linguistics (1970) reifies these problems somewhat by stating that a PSG is unable to account for (a) intuitions, and (b) homonymy as in the following examples.
A native speaker of English, for example, intuits the sentences Peter speaks English, Does Peter speak English?, and Who speaks English? to be somehow structurally related. A PSG, according to these authors, could do little more than assign three separate phrase-markers to each of these sentences but remain silent with regard to the felt interconnections. Should the attempt be made to relate these three sentences, other problems would follow:

If we take word order as a formal criterion, we shall be forced to assign the first and third sentences to one class. If intonation patterns are considered a formal criterion, then the interrogative intonation which is an integral part of the second sentence is lacking in the third. Thus we cannot find the invariants on which are based interrogative and declarative sentences as two contrasting classes. (Saumjan, 1971:126)

The second problem of 'constructional homonymy' to which Saumjan refers (Lyons's 'structural ambiguity') is evident in dissecting Chomsky's example: The shooting of the hunters. In this phrase and in many others e.g., Visiting aunts can be boring, Flying planes can be dangerous, Chomsky had pointed out that two distinct propositions are conflated into one grammatical structure. If the problem of constructional homonymy were merely considered an idiosyncrasy of English, then the explanatory raison d'être of TG would have to be abandoned: issues of surface ambiguity and explanatory adequacy go to the heart of Chomsky's original disputes with the descriptivists. Ad hoc explanations e.g., that English gerund phrases may alternately be subjective or objective, were similarly antithetical as such a Topsy-like approach resulted in an efflorescence of rules and sub-rules:

[Grammarical description is greatly complicated by a multiplicity of rules, which specially devised to eliminate grammatical homonymy, lead to minute grammatical categories and subcategories unrelated to the inner structural regularities of the language. With this method, grammar, from being a theory about the investigation of linguistic laws, inevitably turns into an empirical collection of ad hoc rules. (ibid:127)]

The crux for Chomsky lay in the inability of the PSG to formally account for the felt relations between two phrase markers. 'What Chomsky claimed, in Syntactic Structures and elsewhere, was that there are sentences of English which can be described only 'clumsily' within the framework of phrase structure grammar - that is to say, in a way that is 'extremely complex, ad hoc, and unrevealing' (Lyons, 1991:62; Harris, 1993:43). Allerton makes the connection: the PSG is the wrong kind of tool:

Phrase structure rules, with their conventions to ensure the correct assignment of structural descriptions were designed purely for the purpose of developing phrase markers, in other words, extending tree diagrams until they are complete down to the last terminal symbol. The role...for transformations, however, is not one of developing a single phrase marker, but that of linking one phrase marker (the deep(er) with another (the (more) surface)...' (1979:159)
The last type of generative model to be discussed after the Markov and the Phrase Structure models is the Transformational model which, consistently enough, finds its etiology in the functional and explanatory problems of the Markov and PSG models (Postal:72, Lyons, 1991:63). Allerton contends that '...part of Chomsky's insight was to see this as a problem of mathematical formalization. A grammar was a type of mathematical system' (in Collinge:116). And the mathematical transformation of objects and symbols was one of the nuances that Chomsky incorporated into the distributional approach. Ducrot uses the letters A and B to clarify the concept of transformation that Chomsky is now promoting:

A rule of this type indicates that in every string of which the substring A is an integral part, we can replace A by B. Let us take, for example, abc and ed for A and B respectively. The rules abc → ed thus gives us the right to construct, on the basis of the string fgbcd, the string fgedd. It is obvious that such rules make it possible to carry out a great variety of transformations. They allow us to delete symbols, as well as to add them; they even allow us to modify a discontinuous symbol sequence...(1993:227)

Transformational rules are based on four types of 'elementary' transformations - adjunction, deletion, permutation (i.e., juxtaposition), and substitution (or replacement) (Koutsoudas,1966:27) and are intended by the theorist to codify what people do unconsciously. Yet this transformational adjunct seems less a static component in a model than its inherent dynamism: 'A transformation is a statement of the structural relation of a pair of constructions which treats that relation as though it were a process' (Gleason,1961:172). The rules of the transformational component, moreover, are qualitatively distinct from those which govern the phrase structure component.

P[hrase Structure] rules postulate the underlying constituent structure of sentences, while T[ransformation]-rules, in operating on the underlying P-markers, change the constituent structure postulated by the P-rules. In general, to say that transformations change the underlying structure means that, because of their very nature, transformations gradually break down, erase, or destroy (the latter is especially true of permutation transformations) the constituent structure of sentences postulated by P-rules. In other words, in generating a sentence, constituents and constituent-types postulated by the P-rules as underlying this sentence are eventually either changed or non-existent after the application of the T-rules of a grammar. (Koutsoudas,1966:36)

Apart from the thorny problem of semantic considerations, the most technically contentious issue for future development lay in the scope and power of the transformation. The T-rules 'erase', 'break down', 'destroy' the structural index of the kernel in such a thorough way that the door is left dangerously ajar: it is conceivable that transformations also erase, destroy, and break down meanings.
In this pre-Aspects stage, the Phrase-Structure component, beginning with the initial string, generates terminal strings from which all sentences in the language will eventually derive (Chomsky, 1957:61). They in turn submit to two kinds of transformation: obligatory and optional. **Obligatory transformations** are absolute and exceptionless and affect those phenomena that are seemingly 'legislated' by the language e.g., subject and predicate agreement. Once an obligatory transformation has been applied, the terminal string is technically a *kernel sentence*: '[W]e define the kernel of the language...as the set of sentences that are produced when we apply obligatory transformations to the terminal strings of the PSG' (ibid:45) These kernel sentences which are simple, active, and declarative may then proceed through a series of *optional transformations* which, on the other hand, need not always apply to a kernel string e.g., passivization, negation, interrogation (Chomsky, 1957:112).

There are two sub-types of optional transformations mentioned in the 1957 model. In the first place *singulary transformations* have as their starting point a single string and *generalized transformations* which amalgamate several kernel strings into one. The second category of generalized transformation technically incorporates the mechanics of creativity mentioned earlier: 'Generalized transformations fall into two classes: embedding and conjoining rules. The main points about embedding and conjoining rules is that they permit subordination and coordination respectively (Lyons, 1970:266). After these various types and sub-types of transformations have reworked the kernels, they are submitted to the topmost level of derivation: phonological conversion. 'We consequently view grammars as having a tripartite structure. A grammar has a sequence of rules from which phrase structure can be reconstructed and a sequence of morphophonemic rules that convert strings of morphemes into strings of phonemes. Connecting these sequences, there is a sequence of transformational rules that carry strings with phrase structure into new strings to which the morphophonemic rules can apply' (Chomsky, 1957:107).

**Empirical Problems with Syntactic Structures**

Problems of both a conceptual and functional nature ensued regarding Syntactic Structures when it was studied by the academic community. Lyons points out some of the technical faults in the 1957 model, referring in particular to the problematic ordering the transformational rules (1970:268) and Malmkjaer refers to the 'extraordinarily complicated' solution to this problem which in turn led 'to considerable formal difficulties' for the model (1991:488). In addition, Andrews points out the more serious concern that 'in this theory there was no principled distinction between rules introducing lexical
items and other sorts of phrase structure rules' (in Newmeyer, 1988:60). The rules proposed did not sufficiently differentiate contexts. The string $S \rightarrow NP + VP$ simply indicates that noun phrases attached to verb phrases comprise a legitimate kernel. However, both common and proper nouns fell under the rubric NP but it was only the former that permitted some kind of determiner to precede: *the cat* but not *the Alice*. This enmeshing of distinctive syntactic and semantic considerations in one rule is the problem of 'contextual specification' and unless the rules were refined, anomalous kernels could be legitimately generated. This instance furnishes a glimpse of the semantic fault-line on which TG theory was founded.

Where to assign semantic considerations in the model was a recurrent problem. As the morphophonemic and transformational components operated with underlying phrase markers, and as these phrase markers were already clearly utilizing 'formatives' i.e., meaning-bearing elements of the language, they were logically ruled out as derivative in the sequence. The phrase structure component of the base remained. The possibility was that semantic considerations could either be located within this component or located in a separate semantic component. This semantic component would operate strategically at as yet indeterminate points in the derivation to modify the kernel.

Chomsky and his early collaborators had a strong intuition that all the real semantic action took place in and around the kernel. Lees...expressed the intuition as plainly as possible, proposing an "effective research program" within Chomskian linguistics to reduce the problem of sentence-meaning to a problem of kernel-meaning, and to provide "a syntactic analysis for certain apparently semantic notions, wherever possible..." (Hanis, 1993:84).

Although meaning had been ruled out in 1957, it was being subtly reintroduced in the lead-up to 1965. Since the raison d'être of the model was syntactic, the critical decision was taken to divide the base phrase structure component of the 1957 model in two rather than to assign a separate semantic component. Chomsky dates the first 'relatively clear formulation' of how to *syntactically* constrain semantics in this way to 1963 but later gives the credit for 'an improved version' of this attempt to Jerrold Katz and Paul Postal in 1964 (Harris, 1993:274). In their *Integrated Theory of Linguistic Descriptions*, Katz and Postal proposed, in essence, that transformations are meaning-preserving operations and that no transformation if properly formulated changes the meaning of an underlying kernel (Grinder, 1973:150). They therefore asked linguists to '...construct grammatical rules that relate the original sentence and its paraphrases in such a way that each of these sentences has the same sequence of underlying phrase-markers' (Katz, 1964:157). Weibelhuth remarks: 'This heuristic led to a picture of the relationship between form and meaning that many linguists found extremely appealing, namely, that a large class of synonymous sentences had identical representation at the semantically significant deepest level of
analysis, and that it was the function of transformations to create the possible surface structures that express these meanings' (1995:18). With the addition of the so-called Katz-Postal hypothesis, Transformational-Generative (TG) Grammar was sketching specification and circumscription. The task was to specify the exact natures of the syntactico-semantic component and the transformational component. The second was not only to specify the transformational component but also to circumscribe its operations so that they did not change the meaning of the kernel sentences in the base.

The Standard Theory (1965)

Many of the previous concepts described in Syntactic Structures are here treated more explicitly. The past borrowing of mathematical notions and procedures is for Chomsky and linguistics an area of 'great potential'. In fact, it is largely owing to the precepts of Boolean algebra that the 'formal properties of the theory of transformation become fairly clear and reasonably simple, and it may be possible to undertake abstract study of them of a sort that has not been feasible in the past' (Chomsky, 1965:147). Some concepts have been expanded. In 1957, the theory of grammar was aimed at an understanding of (un)grammaticality. In 1965, a theory of grammar must be able to correctly describe first 'the intrinsic competence' of the speaker, his 'linguistic intuition', his 'tacit competence' (Chomsky, 1965:24ff). The theory will therefore begin with a series of clearly presented rules. These rules will adequately 'describe' the elicited data and 'predict' potential patterns. Observational adequacy seems now a footnote; descriptive and explanatory adequacy constitute the two principles upon which TG theory will be based. Exploratory adequacy, however, is the 'principled basis' of the grammar and it alone 'bears the burden of justification' (1965:26). Significantly, the search for these descriptive and explanatory principles has now become simply 'the attempt to discover linguistic universals' (1965:36). Real progress in linguistics 'consists in the discovery that certain features of given languages can be reduced to universal properties' (1965:34).

Previous theoretical mistakes are enumerated and new concepts strategically introduced. IC Analysis, with its labeled bracketing, was handicapped by rigidly linear analysis and is 'certainly not adequate as an account of deep structure' (1965:17). Most damaging of all, however, was that unlike transformational linguists, these 'taxonomic' linguists laboured under the mistaken assumption that deep and surface structures are actually the same. 'The central idea of transformational grammar is that they are, in general, distinct, and that the surface structure is determined by repeated application of certain formal
operations called 'grammatical transformations' to objects of a more elementary sort' (1965:16). Empirically minded descriptivists, or behaviourists feckless enough to try their hand at explanatory models of linguistic creativity '...contribute nothing that even faintly suggests a way of overcoming the intrinsic limitations of the methods that have so far been proposed and elaborated' (1965:58). Such theories are inadequate, inexplicit, misleading, or worse. 'The social and behavioural sciences provide ample evidence that objectivity can be pursued with little consequent gain in insight and understanding' (1965:20).

Competence and Performance

His dissatisfaction with the state of linguistic science led Chomsky to introduce his fundamental postulate of autonomous syntax: dichotomous levels of analysis. The contours of 'deep structure' and 'surface structure' had been implicit in Chomsky's contention in 1957 that the 'central notion of linguistic theory' i.e., linguistic level (1957:11) and that '...the linguist's task is that of producing a device of some sort (called a grammar) for generating all and only the sentences of a language, which we have assumed were somehow given in advance' (1957:85). The set of these sentences given in advance was the set against which the native speaker measured the grammaticality of his utterances; these were the 'sentences' of his 'competence' to be distinguished from the 'utterances' of his 'performance'. This dual construction is emphatically not 'a point-by-point model for the actual construction of a sentence...Rather, as has been repeatedly emphasized, it can be regarded only as a characterization of the intrinsic, tacit knowledge or competence that underlies actual performance' (1965:140). Grammatical analysis in Aspects will proceed upon these assumptions (1965:16) but not in equal measure. His objective is an understanding of a competence which is identified by its singular creativity - 'the speaker's ability to produce new sentences, sentences that are immediately understood by other speakers although they bear no physical resemblance to sentences which are 'familiar' (Chomsky,1966:4).

This intrinsic knowledge or the 'competence', in a recapitulation of the learnability problem, is unconsciously revealed by the hypothesis-testing child. The linguist's task is to make explicit precisely what it is that the child is doing when he acquires this morphology or that phonology. What the child is doing is following an innate schema: 'A theory of linguistic structure that aims for explanatory adequacy incorporates an account of linguistic universals, and it attributes tacit knowledge of these universals to the child. It proposes, then, that the child approaches the data with the presumption that they are drawn from a language of a certain antecedently well-defined type, his problem being to determine which of the
(humanly) possible languages is that of the community in which he is placed. Language learning would be impossible unless this were the case' (1965:27). Essentially the same statement would appear twenty years later as one of the basic beliefs of Universal Grammar.

Such universals are presumed to exist in the syntactic, the semantic, and the phonological components. These universals may be either substantive or formal. The former describes elements 'drawn from a fixed class of items' i.e., items determined independently of any one grammatical description e.g., the grammatical categories of convention in the realm of syntax. In the realm of phonology, examples of substantive universals may be found, for example, in the acoustically defined set of distinctive features underlying Jakobson's theory of the phoneme. 'Substantive universals...concern the vocabulary for the description of language' (1965:29). Formal universals, on the other hand, refer to the processes to which these substantive universal submit. 'F[ormal universals involve rather the character of the rules that appear in grammars and the ways in which they can be interconnected' (1965:29). Comrie (1981:15ff) states that Chomsky's substantive and formal universals between them distinguish three things: the (a) necessary characteristics, (b) the possible characteristics, and (c) the impossible characteristics of human language. In short, they encompass all conceivable possibilities in linguistic discourse. Chomsky asserts that in learning her language, the child is (un)consciously attempting to clarify hypotheses about how certain innate concepts (substantive universals) are governed by certain innate rules (formal universals).

The Components of The Model

(i) The Categorial Sub-component

In this section, there will be no attempt to draw up schemata as the model has changed. The intention is rather to sketch 'deep' and 'surface' structure. The primary function of the categorial structure in TG theory, Newmeyer states, is to specify order (in Malmkjaer,1991:174). This base component stipulates all of the grammatical relations of the future sentence and, crucially in 1965, the base component also defines the semantic interpretation of the future sentence (Chomsky,1965:99,120). The base component has a twofold structure consisting familiarly of (i) a categorial component of rewrite rules (1965:123) and novelty of (ii) a lexical component containing semantic entries (1965:136). It continues to specify that a well-formed sentence be in the form of $S \rightarrow NP + VP$. This formulaic expression means that all sentences in the language must be described in terms of an NP and a VP. It does not, however, mean that every sentence e.g., imperative, must explicitly consist of these two elements (Gleason,1961:180).
The notions of 'context-free' and 'context-sensitive' rewrite rules in a PSG - already mentioned in embryo in 1957 - are formally specified in 1965. 'A context-free grammar is one in which all the rules apply regardless of context, i.e., they would be all of the type 'rewrite x as y' no further conditions being specified' (Malmkjær, 1991:79). Interestingly, context-free rules are still included as a part of the categorial base of the grammar possibly as a buttress to the leitmotif of universality: such rewrite rules may be universal characteristics of human language (Chomsky, 1965:141). In order to address the central critiques of the 1957 model - specifying the nature of the base component and circumscribing the power of transformations - Chomsky shifts the discussion to 'context-sensitive' grammars which will succeed where context-free grammars did not do so well still within the base component of the model.

There are two sub-types of rules in a 'Context-Sensitive Phrase Structure Grammar' or CS-PSG for short: (i) 'strict subcategorization' rules, and (ii) 'selectional' rules (1965:95). The strict subcategorization rules are those which govern the combinations of grammatical elements in the system e.g., [+/- Adjective] [+/- NP] [+/- V] (1965:94). Chomsky takes the form class of verbs to illustrate the notion of subcategorization 'Verbs are strictly subcategorized into Intransitives, Transitives, pre-Adjectival, and pre-Sentence, etc. In these cases, violation of the rules will give such strings as: (i) John found sad (ii) John elapsed that Bill will come (iii) John compelled (iv) John became Bill to leave (v) John persuaded great authority to Bill. Subcategorization rules specify the syntactic context of a lexical item in a string, e.g., that Det occurs only with NP. They are enclosed in square brackets (Cowper, 1992:58).

Selectional rules, on the other hand, specify the meaningful context of the lexical item e.g., color adjectives occur with <->Concrete> nouns (Harris, 1993:91) for example, and are conventionally written with angular brackets <->Animate> (Cowper, 1992:57). 'Failure to observe a selectional rule will result in such deviant sentences as: (i) Colorless green ideas sleep furiously (ii) Golf plays John (iii) The boy may frighten sincerity (iv) Misery loves company'. It should be noted that Chomsky's selectional rules clearly straddle the semantic-syntactic divide, indicating syntactic co-occurrence restrictions that appear to be based on more profound considerations of meaning e.g., [+/- abstraction, +/- animacy]. That such semantic considerations are in fact syntactically contrived is proven by his referring to these features as 'syntactic' (1965:95). Meaning-in-language was clearly implicated in the model; determining exactly how it functioned was the problematic issue and it was precisely upon this point that the whole transformational-generative movement was to divide in much the same way that the Descriptivists had done earlier.
The creation of the lexicon was a major innovation of 1965 and this sub-component of the base was conceptualized in terms of a dictionary with 'entries'. While semantic notions were entering the model by osmosis, Chomsky was nevertheless uncomfortable with the effects. The lexical component, it appears, was designed explicitly to isolate the fuzziness of meaning from the formal simplicity and elegance of the syntactic base component. The lexical component of the transformational model and the importance that was eventually attached to it is a significant milestone in the trajectory. In this 'bifurcation at the base', the fundamental distinction between lexis and grammar is reaffirmed.

We can see immediately that separating the lexicon from the system of rewriting rules has quite a number of advantages. For one thing, many of the grammatical properties of formatives can now be specified directly in the lexicon...and thus need not be represented in the rewriting rules at all....Since many such properties are entirely irrelevant to the functioning of the rules of the base and are, furthermore, highly idiosyncratic, the grammar can be significantly simplified if they are excluded from the rewriting rules and listed in lexical entries where they most naturally belong' (1965:87)

It was also economical: 'In general, the lexical entry contains all information about the item in question that cannot be accounted for by general rule' (Chomsky, 1972a:141). These lexical insertion rules specify both syntactic and semantic phenomena (+/-Common, +/-Count, +/-Animate, +/- Human, +/- Abstract). Phonological phenomena were to be instantiated in each lexical entry in terms of Chomsky and Halle's distinctive feature matrix as well (Chomsky, 1965:81). The lexicon will consist also of '...redundancy rules that modify the feature content of a lexical entry in terms of general regularities. For example, the fact that vowels are voiced or that humans are animate requires no specific mention in particular lexical entries. Much of the redundant lexical information can, no doubt, be provided by general conventions (that is, rules of universal grammar) rather than by redundancy rules of the language (Chomsky, 1972a:141).

Crucially, however, this lexical subcomponent with its lexical insertion and redundancy rules is still bound to the categorial i.e., phrase structure component. The categorial rewrite system generates the phrase markers, which are then entered into the lexical component in which the strict subcategorizational, selectional, redundancy, and phonological rules apply. In 1974, Bennett would describe this sub-component in the following way: 'The lexicon, it would seem, carries information about the "world" (to match the semantic specification), about the syntax (to determine the developments in the transformational component), and about the phonological component (to enable the output from the syntactic component to match the input to the PC [Phonetic Component]' (Bennett:180). Together the
output is the deep kernel of the future sentence. The point to be noted here is that lexicon and syntacticon become the twin pillars of the revised model and this is congruent with the traditional division of language learning into 'a dictionary in one hand and a grammar book in the other'.

(iii) The Transformational Sub-Component

The transformational component is based on the general operations of deletion, substitution, and adjunction (Chomsky, 1965:147). What this means according to R. Wilbur, is that transformational rules carry out four basic tasks of (i) adding elements to the string (ii) deleting elements from the string, (iii) modifying elements within the string, and (iv) moving elements around within the string (in Bjarkman, 1986:176). This component receives the base phrase-markers '...from which the semantic interpretations of actual sentences are constructed' (Chomsky, 1965:117). Some familiar transformations are passivization, affix-hopping, and concord (Cowper, 1992:7). This sub-component mediates between the 'elements of content' of deep structure and the eventual utterance of surface structure. It is, however, 'solely interpretive' (Chomsky, 1965:137). It is intended to preserve the kernel meaning. Chomsky quotes the authors of The Integrated Theory of 1964 approvingly (1965:132):

Katz and Postal (1964) [have formulated] a general principle, namely, that the only contribution of transformations to semantic interpretation is that they interrelate Phrase-markers (i.e., combine semantic interpretations of already interpreted Phrase-markers in a fixed way). It follows, then, that transformations cannot introduce meaning-bearing elements...Katz and Postal point out that the principle just stated greatly simplifies the theory of the semantic component, since semantic interpretation will now be independent of all aspects of the transformation-marker...This principle seems very plausible.

The transformational component is, once again, the linchpin in the model, the set of rules abstracted from analysis of the substituting, deleting, and conjoining that occurs in everyday speech. Through conjoining, embedding and transforming, Moulton tells us, infinity is achieved (in Donoghue, 1967:77) and now a defined set of algorithms has explicitly shown how the exponential creativity of human language is achieved. The purpose of these rules is motivated by a desire for elegance, economy, and explicitness. This description is to be understood as a figurative characterization of one of the processes underpinning competence and not to be viewed as a 'point-by-point model' of generation (Chomsky, 1965:140).

(iv) The Semantic Sub-Component

Although the lexicon - another innovation in 1965 - concerns itself with the idiosyncratic specifications of words in the string, Chomsky came to recognize that there are other 'pragmatic' features which affect the meaning of an utterance e.g., intonation, stress, and presupposition and do not appear
to fit so readily into the fundamentally binary (+/-) schema envisaged for the lexicon. However, there was the more involved issue regarding the functioning of the strict-subcategorizational and selectional rules of the syntactic subcomponent. Kernel sentences that were grammatically generated in the algorithmic base, e.g., *Colorless green ideas sleep furiously*, *Sincerity admires John* were grammatical in deep structure but clearly unacceptable in surface structure. Chomsky therefore suggested that lexis incorporate notions such as 'subject of', 'predicate of', and 'direct object of' (Lyons,1970:439).

However, as Lyons goes on to point out, these are syntactic notions, and other requisite notions such as animate agency are left unspecified in the lexicon. Thus sentences such as the two immediately above could be generated. A semantic component, which availed itself of in-built 'projection rules' was therefore necessary in order to 'interpret conflicts in feature composition' (Chomsky,1965:154). It somehow scanned the emerging syntactic strings for semantic or selectional conflicts, blocks real-world incompatibilities, and assigns appropriate `readings'. This semantic projection rules are totally contingent upon the emerging syntax as Searle makes clear (in Harms,1974:25):

> If for example a sentence has three different meanings the semantic component will duplicate the speaker's competence by producing three different readings. If the sentence is nonsense the semantic component will produce no readings. If two sentences mean the same thing, it will produce the same reading for both sentences.

The semantic component was therefore conceived as a necessary way-station in the process of derivation in which all of the diverse deep structure phenomena were amalgamated by means of a set of 'projection rules' in order to satisfy the acceptability demands of surface structure. These rules effectively indicate how lexical entries could be appropriately linked before submission to the phonological component of the model but, like the transformational rules, they remain solely 'interpretive'. The definitive feature of the model is intended to remain the syntactic rewrite rules of the base component and meaning is held in abeyance until its strings are generated. The tenuous role of semantics in formal models of grammar is nevertheless acknowledged by Chomsky. 'We call a feature “semantic” if it is not mentioned in any syntactic rule, thus begging the question of whether semantics is involved in syntax' (1965:143). Then, strikingly - in a footnote - semantics is ruled extrinsic to phonology and syntax in the model.

For the moment, I see no reason to modify the view, expressed in Chomsky (1957) and elsewhere that although, obviously, semantic considerations are relevant to the construction of general linguistic theory (that is, obviously, the theory of syntax should be designed so that the syntactic structures exhibited for particular languages will support semantic interpretation), there is, at present no way to show that semantic considerations play a role in the choice of the syntactic or phonological component of a grammar or that semantic features (in any significant sense of this term) play a role in the functioning of the syntactic or phonological rules. (Notes, 1965: 226)
Semantic features are, however, very centrally at play when such features as \([+/- \text{Animate}] [+/- \text{Human}]\) and \([+/- \text{Abstract}]\) are invoked to constrain the grammar (1965:95ff). 'It is clear...that the interrelation of semantic and syntactic rules is by no means a settled issue, and that there is quite a range of possibilities that deserve serious exploration' (1965:158).

(v) The Phonological Sub-Component

This sub-component is conceived of as the last stage in the derivation. The strings underlying human syntax have thus far been generated/identified by the base component as grammatical. These strings have then been submitted to the battery of lexical insertion rules which specify their syntactic environments and their permissible (semantic) contexts. They have undergone the sets of obligatory and optional transformations, and have been 'read' by the projection rules of the semantic component. They now are metaphorically submitted to the phonological component the purpose of which is to attach phonetic interpretation (1965:135). The nature of the phonological sub-component in the derivation is incontrovertibly based on Jakobson's theory of distinctive features in which each phoneme is identified in terms of an underlying set of universal acoustic realities. With the phonology the mapping is complete.

A grammar contains a syntactic component, a semantic component, and a phonological component. The latter two are purely interpretive; they play no part in the recursive generation of sentence structures. The syntactic component consists of a base and a transformational component. The base, in turn, consists of a categorial subcomponent and a lexicon. The base generates deep structures. A deep structure enters the semantic component and receives a semantic interpretation; it is mapped by the transformational rules into a surface structure, which is then given a phonetic interpretation by the rules of the phonological component. (1965:141)

'The important thing to note about this model is that the semantic representation is constructed entirely on the basis of the deep syntactic structure' (Cowper,1992:9). It was on the semantic realm - a shaky federation of overlapping categorial, lexical, and 'projecting' jurisdictions - that the ensuing warfare began.

Empirical Problems with The Standard Theory

Chomsky's theory regarding the nature of the semantic component was felt by various linguists to be unnaturally confined - or worse: syntactic and semantic relations in the 1965 model were 'virtually indistinguishable' (Harris,1993:96). And with the discussion so constrained to the algorithms of deep structure, certain facets of surface structure were either overlooked or left unexplained. As an example of the first, Derwing and Harris (in Koerner, 1975) note that while the 1965 model elaborates a viable model of generative creativeness - the *production* and *understanding* of an unlimited number of novel
utterances - it does not attach a corresponding level of importance to the appropriateness of this production. The conceptual but forgotten twin of linguistic generativity is that of linguistic appropriateness and the following quote summarizes what many believed to be equally important (in Koerner, 1975:301):

As Chomsky and Miller (1963:271) themselves point out, the native speaker of a language not only has the ability simply to “produce novel utterances”, but also the produce them “on the appropriate occasion”. The normal use of language, in short, is not only ‘innovative’, but also ‘coherent’ and ‘appropriate to the situation’.

The most serious problems concerned the substance of the Katz-Postal hypothesis and generative grammarians had previously acknowledged that such problems existed. Granting that the Question-transformation (Tq) clearly reversed the meaning of the declarative kernel, the authors responded to this problem by conceptually transferring these transformations to the base structure in which they appeared as underlying ‘triggers’ rather than contingent transformations. ‘The effect [was to] rob from the transformation and give to the kernel’ (Harris, 1993:86).

A second, apparently more intractable difficulty, however, involved the negative transformation (Tneg.). Hayes states that ‘...in interpretive theory, the function of a lexical item is determined by its position in the deep structure’ (1995:105). The negative formative not carries nuances in the surface string that are difficult to situate in the deep structure. This had several ramifications. The two derivatives either came from different strings altogether, or transformations altered meaning at some point in the derivation, or surface structure could change the meaning. The following two sentences, for example, are not totally equivalent in meaning and they suggest that the movement of the negative particle in surface structure can affect the meaning:

(8) Not a few were surprised at his behaviour ≠
(9) A few were not surprised at his behaviour

Although it was generally demonstrable that TQ did not change meanings, it nevertheless did have its inexplicable exceptions which were well-known from the inception of TG. TQ did not everywhere and always faithfully recapitulate the proposition of its active counterpart as in (10) and (11):

(10) Everyone admires two people ≠
(11) Two people are admired by everyone.

Partee has also pointed out logical difficulties which she says ‘...led to the downfall of the Katz-Postal hypothesis’ (in Harms:305). The transformed utterance in (12) thus suggests an illogical kernel in (13):

(12) No number is both even and odd. ≠
(13) No number is even and no number is odd.
Chomsky himself adduces a problematic case of presupposition with the following two examples:

(14) I have been taught physics by Einstein ≠
(15) Einstein has taught me physics

'In general, active and passive are synonymous and have essentially the same deep structures. But in these cases, active and passive forms differ in the presuppositions they express...In this respect, the surface structure contributes to the meaning of the sentence in that it is relevant to determining what is presupposed in the use of a sentence' (Chomsky, 1972a: 108).

A growing corps of discourse analysts pointed out that the freewheeling nature of conversation entailed problems which could only be handled with difficulty by a model which sternly averred that utterance meanings were determined in advance. In the following two sentences, for example, differential stress can convey idiosyncratic meanings and it is difficult to see that these prosodic realities could be successfully captured in deep structure:

(16) He was the prime minister of Canada.
(17) He was the prime minister of Canada. etc.

Presciently, Chomsky had speculated that the notion of Topic-Comment may be '... the basic grammatical relation of surface structure corresponding (roughly) to the fundamental Subject-Predicate relation of deep structure' (Chomsky, 1965: 142). However, the specifying of stress and intonation parameters in the deep structure needlessly complicates the deep structure description. Such phenomena might be handled better by a level of performance rather than competence grammar.

The most serious and sustained attack on TG, however, came in response to Chomsky’s statement in 1965 that ‘[t]he syntactic component of the grammar must specify, for each sentence, a deep structure that determines its semantic representation’ (1965: 16). This apparent intertwining of syntax and semantics led certain transformational linguists to suggest that since semantic considerations were involved in the base categorial component, the base was not only syntactically but also semantically generative. Their thesis is clearly a highly interesting one:

Generative-semanticists...believe that their way of perceiving the speech act comes closer to portraying the capacities of the language user. The speech act, they maintain, begins with concepts which are then encoded into syntax. Thus, semantics is the focus of language; they hope to find that semantic concepts are universal, while syntax and phonology are language-specific (Hayes, 1995: 102)

One issue was whether the economy of syntactic argumentation could in some way be extended to the realm of semantics. If two related surface structures, for example, could be related to one underlying
syntactic kernel, then the possibility existed in principle that two related surface meanings could be similarly treated. Sentences such as *Mary borrowed a pencil from John* and *John lent a pencil to Mary* might conceivably be predicated upon one underlying semantic kernel. McCawley suggested further that verbs and adjectives were conceivably even derivable from one semantic prime. Other proposals suggested that pragmatic features, beliefs about the world, deductive reasoning, relative social status, politeness, and levels of formality be included in the expanding definition of the base (Malmkjaer, 1991:174). W.A. Bennett puts the issue in a concise way (1974:154): 'If the transformational rules are capable of converting D[ee]p S[tructure] into a surface syntactic structure, then a syntactically expressed DS may be surplus. If DS is semantically expressed it may be better termed a semantic representation'.

The dispute between the generative semanticists and the interpretivists thus had principally to do with the composition of the base component. Depending upon its specifications - whether semantic criteria superseded the syntactic - the transformational component would inevitably have had to work in radically distinct ways. Moreover, if the base were construed so capably, the operations of the transformational component would be questionable. Either way, the elegant economy of an algorithmic model would be lost. In the late sixties, the transformational component was the critical focus: a concept of either rapidly diminishing or increasing importance.

**Case Grammar**

An array of encampments set up in this milieu each seeking to explain the relationship between semantic and syntactic considerations. Those who opted for Chomsky's orthodoxy in which the base was held to be irrevocably syntactic, were called 'Interpretivists' while those who preferred a semantically construed model were termed 'Semanticists'. Among the latter, one particularly noteworthy model put forward was that developed by Charles Fillmore who suggested a way in which the semantic arguments - which he believed to be latent within the model - might be uniquely incorporated. Sympathetic to the considerations of the generative semanticists, he felt along with many others that the 1965 model failed to delve into the realm of 'deep syntax', the argument being that the strict subcategorizational [+/-transitive], [+/- abstract-subject], [+/- animate] (Chomsky, 1965:90) and the selectional restrictions [+/- Abstract, +/- Human] (1965:152) themselves pointed to an even more profound, but covert set of case categories. Purely syntactic analyses of deep structure relations were explanatorily inadequate. Following Fillmore, we may derive the utterances in 18 from the kernel; however, the faulty transformations of of 19 expose
the semantic thread in the syntactic weave that was to prove so problematic for the generativists:

(18) The fire burned the grass
      (a) What did the fire do to the grass?
      (b) What the fire did to the grass was burn it.

(19) The fire caused the panic
      (a) * What did the fire do to the panic?
      (b) * What the fire did to the panic was cause it.

Fillmore's point is that whereas syntactic notions such as 'subject' and 'object' are necessary and sufficient conditions for a syntactic model of competence, they nest within more semantic considerations of the kinds of object they are e.g., either 'affectum' (a) or 'efectum' (b). The contention was that the semantic inappropriateness of 19 could only be handled clumsily, uneconomically, or in an unrevealing manner by adding further selectional and/or subcategorizational restrictions. The more elegant solution was to posit a yet deeper level of analysis in which a substrate of semantic roles involving notions such as agent, patient, goal, experiencer, beneficiary, instrument, etc., were proposed. '[These] case notions comprise a set of universal, presumably innate, concepts which identify certain types of judgments human beings are capable of making about the events that are going on around them, judgments about such matters as who did it, who it happened to, and what got changed' (in Harms, 1974:24). Chomsky apparently found such arguments unpersuasive at the time. At the time, however, a parallel theory somewhat more congenial to the Interpretivist camp was being developed at this time by Gruber, another case grammarian. He identified four conceptual categories: 'agents' (forces which cause things to happen), 'themes' (objects whose nature, position or status change), 'sources' (places from which things originate, or conditions they cease to be in), and 'goals' (places where things go, conditions they attain) (Newmeyer, 1993:66). His terminology would be incorporated by the Interpretivists.

Chomsky's contention that '[r]eal progress in linguistics consists in the discovery that certain features of given languages can be reduced to universal properties of language, and explained in terms of these deeper aspects of linguistic form' (1965:35) allowed D. Perlmutter to recapitulate Chomsky's original critique of the descriptivists. While not contesting the legitimate search for a universal substrate, Perlmutter questions whether or not Chomsky's deep structure rule schemata are themselves descriptively adequate to the task. With regard to $T_{pas}$, for example, the Chomskian formula was that, given a linear string $NP_1 + V + NP_2$, this transformation was applied by pre-posing $NP_2$, post-posing $NP_1$, and adding certain English parameters e.g., copula and preposition. However, '...such ideas cannot even provide a gross account of the most superficial facts internal to the grammars of certain languages. First, there are languages in which the order of constituents in 'corresponding' actives and passives does
not differ' [Nitinah]. Second, a theory that attempts to formulate passivization in terms of pre-posing and post-posing will not yield natural accounts of passivization in languages with a word order free enough to eliminate motivation for positing a fixed 'underlying' order of constituents' (Perlmutter, 1986:5).

Perlmutter and Postal would find an alternative to Chomsky’s theory in the theory of Relational Grammar. Fillmore would develop the implications of Case Theory. Lakoff and McCawley would explore the input of surface phenomena in ‘Generative Semantics’ in the early seventies. Generative Semantics self-destructed, however, in its attempts to accommodate any sense of meaning within a coherent model. The result of the myriad incorporations sought for deep semantic structure, some of which were listed above, proved to be the final undoing.

Gradually, it became clear in a more general sense that all sorts of things in addition to transformations, including sociolinguistic and contextual variations of one sort or another may affect the surface meaning of sentences, variations which could not possibly be completely represented in the lexical or sub-lexical terms no matter now rich their specification. The realization brought about the swift overthrow of the Generative Semantic model and a reassertion of Chomskian analysis’ (Piper, 1995:146).

As for Chomsky: ‘It is quite appropriate when a theory is disproven in a strong form to replace it by a weaker variant’ (1972a:92, footnote 21).

The Extended Standard Theory (EST)

Chomsky’s position throughout the polemics and acrimony, however, may be characterized as a fundamentally retentive one, in which the more contentious of his hypotheses were adjusted rather than disavowed altogether. ‘The moral is not to abandon useful tools’ (1972a:21). His response, in close conjunction with R. Jackendoff was to develop the Extended Standard Theory in which the essence of the 1965 model is essentially retained (1972a:59). The signal shift in the developing theory at this point is, predictably, its propagators’ increased awareness of the import of surface phenomena: ‘It appears that matters of focus and presupposition, topic and comment, the scope of logical elements and pronominal reference are determined, in part at least, by surface structure’ (1972a:110). The significance of stress assignment and the problematic nature of meaning constancy in passive transformations are equally addressed (1972a:108). Three years later, Chomsky would state that:

'It seems that we can tentatively postulate that only surface structures undergo semantic interpretation. With this step, we can unify a considerable amount of quite fruitful research of the past few years that has shown that many aspects of semantic interpretation are best expressed in terms of properties of surface structure’ (1975:116)
It fell to a pupil of Chomsky's, Ray Jackendoff, to incorporate the implications noted above. Developing the thematic hypotheses of Gruber, Jackendoff proposed that the semantic component be expanded to include a sub-component of 'functional structure' to incorporate the underlying semantic primitives of Case Theory. In response to issues surrounding 'logical scope' and 'quantification', a sub-component of 'modal structure' was posited to interpret potential feature conflicts. In addition, another sub-component would deal with issues arising from surface considerations of focus and presupposition (Cowper, 1992:11ff). Piper comments that '[t]he solution to these kinds of scope problems appeared to be to continue allowing transformations to perform their valuable role, but to supplement the grammar with both rules which determine the semantic roles of lexical elements in deep structure and rules which determine matters of scope and pronominal reference at the surface' (1995:147).

Although interpretivists following Chomsky now acknowledged the import of semantic considerations to the syntactic base, their ideal of 'autonomous syntax' was not abandoned. In the EST model, '...it would appear that syntax and semantics have become intertwined in a more complicated way than they were in the Standard Theory...however, this model represents a significant move toward distinguishing the two components and making them autonomous from each other' (Cowper, 1992:11).

Although these two sub-components were now theoretically distinct, they were held to be parallel to each other, a major innovation taken by incorporating notions of 'logical form' into the semantic component.

The rules of the base, including the rules of the categorial component and the lexicon, form initial phrase markers. The rules of the transformational component convert these to surface structures which are converted to logical forms by certain rules of semantic interpretation...The logical forms so generated are subject to further interpretation by other semantic rules interacting with other cognitive structures, giving fuller representations of meaning. (Chomsky, 1975:105)

The thematic [case], logical, and referential modules within the semantic component are intended to affect the syntactic, lexical, and transformational processes of the base component all the way through the derivational process. When the derivation reaches surface structure, the 'focus and presupposition' module imposes its strictures upon the utterance (Cowper, 1992:10).

Chomsky's progress, however, is not solely dialectical. At the same time as the two camps split over the place of meaning-in-language, Chomsky was exploring hypotheses of greater economy and restraint. Interpretivists were particularly worried by the prodigal nature of the transformational cycle. In its generative semantics guise, TG ran the risk of becoming so encompassing as to be theoretically vacuous:
there was, as Chomsky himself noted, no surface consideration or semantic primitive, that might not be potentially handled transformationally:

The gravest defect of the theory of transformational grammar is its enormous latitude and descriptive power. Virtually anything can be expressed as a phrase marker... Virtually any imaginable rule can be described in transformational terms. Therefore a critical problem in making transformational grammar a substantive theory with explanatory force is to restrict the category of admissible phrase markers, admissible transformations and admissible derivations... (Chomsky, 1972b:124)

In order to technically constrain the power of the transformational component, Chomsky turned to the lexicon as an untapped source of explanatory wealth. To highlight its constraining ability, Chomsky selected the area of English nominalizations. An implicit assumption of TG with regard to the transformational component had always been that, despite the often relentless intricacies at work within, its hallmark was regularity: '[S]yntactic transformations express structurally regular and productive relationships between expressions' (Webelhuth, 1995:20). The original rationale for admitting transformations into the grammatical discourse had been the belief that they rendered it simpler and more elegant because they expressed the regular interconnections among underlying phrase markers.

Chomsky now used this virtue of regularity to show that, in the area of English verb nominalization, an exclusively transformational approach had the opposite effect. Such an approach would result in structural irregularities, and examples of the kind advanced by Chomsky may be found in Appendix 4. The lexicon on the other hand could be construed as the repository of idiosyncrasies in the model and was ideally equipped to handle the grammatical irregularities of derived and gerundive nominals in a much more reasonable and transparent manner. The signal result of Remarks on Nominalization was the development of the 'Lexicalist Hypothesis' which would focus attention on the properties of the lexicon. This theory in its turn would engender competing 'weak' and 'strong' versions, the former of which became the cornerstone of Chomsky's Government and Binding Theory (Webelhuth, 1995:27).

The Revised Extended Standard Theory (REST)

The most important innovation in the EST had been the incorporation of semantic considerations into the model of surface structure. Most commentators point to this as a major shift. Lyons, for one, feels that the greatest difference between the standard and the extended version is that the latter 'has abandoned the principle that only the deep structure of a sentence is relevant to the determination of its semantic representation' (Lyons, 1991:101). Cowper appositely points out, however, that the problem is
not really the technical one of assignment of meaning to this or that level. It is the tacit acknowledgement by all parties that syntax and semantics are inextricably intertwined. 'The important thing here is not so much which aspects of meaning are based on which level of syntactic representation, but rather the idea that various syntactic levels may contain information relevant to the meaning' (Cowper, 1992:13).

The Revised Extended Standard Theory is the somewhat cumbersome name of the successor to the EST and is best understood as the culmination of a variety of influences, both dialectical and original. Having embraced the Katz-Postal hypothesis in the sixties - even if tentatively - Chomsky expressed serious reservations in the early seventies (Webelhuth, 1995:20). Finally, the fifteen-year-old hypothesis that transformations held meaning constant was abandoned completely in 1979 (Collinge, 1990:127). There were other developments as well. In 1975, Chomsky would discard two fundamental terms, if not the underlying ideas: 'The term "deep structure" has, unfortunately, proved to be very misleading. It has led a number of people to suppose that it is the deep structures and their properties that are truly "deep", in the non-technical sense of the word, while the rest is superficial, unimportant, variable across languages, and so on. This was never intended' (1975:82). In their place, the layered terms of 'l-structure' and 'E-structure' would be utilized - two concepts having to do with the internal logical relations and external semantic notions.

Linguists working within the framework of the REST speculated on the 'modular' nature of linguistic theory. In particular, the categorial component of 1965 was now to be constrained by the so-called 'X-bar theory' whose purpose was to define, as narrowly as possible, the kinds of phrase structures which human syntax manipulates (Cowper, 1992:19). Webelhuth (1993:9) lists some of the more frequently required transformations which that sub-component had to accomplish:

<table>
<thead>
<tr>
<th>Dative Mvt</th>
<th>Equi NP Deletion</th>
<th>Reflexivization</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
<tr>
<td>Extraposition</td>
<td>It Deletion</td>
<td>Number Agreement</td>
</tr>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
<tr>
<td><em>There</em> Insertion</td>
<td>Raising to Object</td>
<td>For Deletion</td>
</tr>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
<tr>
<td>Agent Deletion</td>
<td>Raising to Subject</td>
<td>Subj.-Aux. Inversion</td>
</tr>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
<tr>
<td>Tag Formation</td>
<td>Neg. Placement</td>
<td>Do Support</td>
</tr>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
<tr>
<td>Passive</td>
<td>Wh.-Fronting</td>
<td>Affix Hopping</td>
</tr>
<tr>
<td>(Optional)</td>
<td>(Obligatory)</td>
<td>(Obligatory)</td>
</tr>
</tbody>
</table>

The observation that a significant number of these transformations involved the datum of movement permitted the spectacular simplification evinced by the REST. Many of these transformations involved the movement of NPs particularly in the kernel string. Chomsky speculated that what linguists were in reality studying was a hard-wired principle of fluidity inherent in human cognition manifested syntactically through trans-categorial movement. 'We might even set ourselves the goal, still distant but
perhaps attainable, of so restricting the apparatus of the theory of transformations that rules can only be
given in the form “move NP”…” (1975:112). This suggestion, inexplicably and annoyingly buried within
the 1975 publication, is the cardinal ‘move alpha’ rule. In light of the decade(s) of controversy over the
nature and scope of transformational rules, its simplicity is breathtaking: All transformational rules could be
distilled into (i) move NP and/or (ii) move WH-. The axiomatic conclusion of transformational grammar in the
mid-seventies, Ronald Wilbur concluded, was nothing more and nothing less than ‘movement’ (in
Bjarkman, 1986:177). In the project which followed immediately upon Chomsky’s alpha speculation, a
theoretical synergy reminiscent of Jakobson’s and Trubetzkoy’s earlier chain of development - from
*elements differentiels* to distinctive features to binary analysis to markedness theory - developed
among generativists as Radford (1988:537) explains:

If we know that languages have rules moving a wide range of different constituents from
one position in a sentence to another, then we ought to expect (as the simplest
hypothesis) that *in principle* language allows you to move any constituent anywhere; and
if *in practice* this is not the case, then it is the linguist’s task to discover the principles which
determine why it’s possible to move some constituents into some positions, but not
others...Our quest becomes all the more rewarding if we are able to uncover general
principles of cross-linguistic validity...For, as we have noted many times, the discovery of
universals provides the key to attaining our ultimate goal of *explanatory adequacy.*'

This distilled principle was thoroughly consonant with a reductive theme that had been present, often in
the form of allusion, footnote, and aside, and occasionally in clear statement, since the early sixties.

Allusions to a universal substrate for human cognition had been made by Chomsky as early as
1959 in his *Review of Verbal Behaviour*. The substrate was none other than that upon which the
whole learnability problem is based. In 1965, Chomsky speculated about an in-built heuristic device and
in 1975 stated that ‘...the ‘fundamental’ problem of linguistic theory...[is]... to constrain the class of
“learnable systems” so that it becomes possible to explain the rapidity, uniformity, and richness of learning
within cognitive capacity’ (1975:111). European advances had only seemed to confirm his hypothesis:

The structure of a phonological system is of very little interest as a formal object; there is
nothing of significance to be said, from a formal point of view, about a set of forty-odd
elements cross-classified in terms of eight or ten features. The significance of structuralist
phonology, as developed by Trubetzkoy, Jakobson, and others, lies not in the formal
properties of phonemic systems but in the fact that a fairly small number of features that
can be specified in absolute, language-independent terms appear to provide the basis for
the organization of all phonological systems. (Chomsky,1968:74)

The learnability problem of 1959 turns out to be the epistemological leitmotif of all transformational-
generative theory. The four operational components of the LAD described by MacNeill in 1965 (above)
were to be borne out. In particular, it was the third, constraining aspect of the LAD that became most important - an infrastructure of some sort which predisposed members of the species to select human communicational options rather than other conceivable options. 'But if we suppose, furthermore, that children are not genetically predisposed to learn one rather than another language, then the conclusions we reach regarding the language-acquisition device are conclusions regarding universal grammar' (Chomsky, 1972a:113). The answer to the learnability problem lay in investigating '...the system of “pre-existent knowledge” that makes learning possible' (Chomsky, 1975:118).

Universal Grammar (UG)

The link between a universal base and an evolving theory of internal constraint seemed natural. A cardinal function of the universal base was to factor out of the child's linguistic learning certain communicational 'non-starters' - to economically excise those communicational systems that could never be construed as distinctively human. Definite echoes of de Saussure's differential linguistic epistemology are heard here: the device or substrate conveys to the child what her language can potentially consist of by first conveying to her what her language can never consist of. If Chomsky's REST is correct, this device must instantiate in the child the tacit knowledge that categorial movement is part and parcel of language. The corollary to the principle of movement is that a system inconceivable to the species is one in which movement is impossible. Movement is fundamental to language.

The linguistic contours of UG, however, are simply veins to the mother lode. Universal grammar Chomsky coidentified with 'human intellectual capacities' (1972a:27) and UG '...might be defined as the study of the conditions that must be met by the grammars of all human languages' (1972a:126). Then, these capacities and conditions become '... the system of principles, conditions, and rules that are elements or properties of all human languages' (Chomsky, 1975:29). Eleven years later, the notion of 'parameter' has joined 'principle' in a network of schemata: 'UG is a system of subtheories, each with certain parameters of variation. A particular (core) language is determined by fixing parameters in these subtheories' (Chomsky, 1986:2). These sub-theoretical parameters are essentially syntactic parameters governing the movements of constituents and the 'traces' left by certain movements. The lexicon is not forgotten as the properties of lexical items are 'projected' onto the syntax.

What are some of these principles and parameters? In the realm of phonology, for example, Chomsky considers 'rule cyclicity' to be a universal (1972a:45) along with a set of phonological distinctive
features (1972a:121). Within the domain of syntactic argumentation, the notions of structure-dependence (1975:57), transformational cyclicity (1975:85), subjacency (1975:91), specified-subject condition, and trace theory (1975:112) are suggested. The contours of the semantic substrate are comparatively impoverished and development in this area is predictably speculative: 'We might hope to establish general principles regarding the possible systems of concepts that can be represented in a human language and the intrinsic connections that may exist among them... With the discovery of such principles, universal semantics would become a substantive discipline' (1972a:124). It would appear that the principle of movement might be such a one.

These principles, however, must be parameterized. 'While the principles of UG lay down absolute requirements that a human language has to meet, the parameters of UG account for the syntactic variation between languages' (V. Cook, 1985:37). The structure-dependence principle, for example, states that human languages must conform to certain fundamental rules of phrase structure, for example, that each phrase contain a 'head' constituent. Where that head element is placed - either to the right of the phrase or to the left of the phrase - is a parameter that each language determines. This particular sub-theory of UG simply dictates that there be a head to all phrases, a head whose position from one perspective 'governs' the rest of the phrase or to which, from another perspective, the rest of the phrase is 'bound'.

The theory of 'government' and the theory of 'binding' are in fact just two of the various sub-theories within the syntactic module. Lyons has pointed out that neither the concept of government nor that of binding is original with Chomsky, the former being well attested in the annals of traditional grammar and the latter deriving from formal logic. It does, nevertheless, appear to be a general phenomenon of syntax (Lyons, 1991:201). That the 'Principles and Parameters' version of UG came to be identified with its two seminal concepts - government and binding - within its syntactic module is not surprising. There has always been a tendency, it seems, for an attribute of a theory or approach to become definitional. The isomorphism of 'discovery procedures' with linguistic theory - essentially identifying the methodology with the science - is a case in point. McCloskey gives some insight as to why the same occurred with P&P:

The relation of government is implicated in almost every subdomain of the grammatical system. Case assignment depends on government; the theory of agreement depends on government; the theory of anaphora (in the broad sense) depends on government... The working out of these correlations and expectations constitutes the main focus of the program or research initiated with the publication of *Barriers*. (in Newmeyer, 1996:42).
Chomsky himself finds the GB title a misleading term and has recommended that it be abandoned (1993:162). As it stands, however, GB theory deals with the syntactic component of UG. It is characterized in terms of a network of subsystems specifically concerned with certain venerable areas of syntactic argumentation. Chomsky suggested the six following sub-theories (1982:5f): Bounding theory '...poses locality conditions on certain processes and related items'; Government theory discusses '...the relations between the head of a construction and categories dependent on it'; Theta theory involves '...the assignment of thematic roles such as agent-of-action'; Binding theory is '...concerned with relations of anaphors, pronouns, names, and variables to possible antecedents'; Case theory deals with '...assignment of abstract Case and its morphological realization; and finally Control theory '...determines the potential for reference of the abstract pronominal element'. These sub-theories clearly evolved from the revisions to the Standard Theory suggested by R. Jackendoff in the early seventies in response to concerns over the neglect of surface considerations such as logical scope, intonation and stress assignment, and negation, etc.

Summary

The foregoing description of TG has been an attempt to summarize quite superficially in some ways but rather technically in others, some of the more crucial developments in the TG trajectory. Both the necessary technicalities and the unavoidable superficialities of the discussion have resulted from a desire to show continuities. Throughout all of the foregoing chapters, it has been the problematic place of meaning-in-language in formal models which has bedevilled American linguists in particular. This concentration upon everything else except meaning-in-language has, nevertheless, led to cardinal discoveries in phonology, morphology, and in this chapter, syntax and Wardhaugh considered it '...impossible to understand current issues in teaching ESL without some understanding of the linguistic theory associated with Chomsky's linguistics' (1974:118). Flores, after an exhaustive analysis of texts and articles which have sought to connect TG to the classroom, has the following practical advice:

We must keep expectations separate from realities, or achievements. Since the early sixties, expectations about the applicability of TG grammar to language teaching have run very high. However, the attempts to test the feasibility of its application, and to develop actual materials have been extremely disappointing' (1973:77)

The transformationalists are rightly chastised, he goes on, for '...a greater concern with establishing the principles of the theory, and with proving it right, than with actual language description'. He strongly urges, finally, the elaboration of a pedagogical grammar of TG for '...without this bridge, the translation from a scientific grammar to a didactic grammar seems an almost impossible task' (ibid:77).
A discussion of some of the applications which have been attempted, however, while intrinsically appealing, constitutes another undertaking for another time. An extended discussion has already been carried out by Pedro Flores in his MA thesis entitled The Impact on Second Language Teaching of Chomsky’s Theory. Such a project, however, takes the present discussion away from the central tasks of the thesis - those of survey and elicitation of insights into a 'psychologically real grammar'. What the TG trajectory has to offer in terms of this quest are some caveats.

(a) Meaning and form cannot be easily or transparently disambiguated. The contention that the project was fundamentally misguided and its hypotheses about base, semantic, and transformational rules highly misconstrued has dogged TG theorizing since its inception. Its motivation was, as Matthews has pointed out, irrevocably distributional: an attempt to separate form from function and to concentrate on the former in terms congenial to mathematical set theory and formal logic. Code was elevated and meaning-in-language, if not to be excised altogether, was largely subordinated in the framework of Syntactic Structures. J.M. Ellis considers the attempt to deliberately separate syntax and semantics as the crucial mistake of Chomsky's linguistics (1993:100ff).

(b) Perspective and phenomenon must be disambiguated. One fault in TG theorizing, it seems, has not so much been the separating of meaning-in-language from the model as it has been the encompassing of meaning-in-language within the framework of one of its strata, in this case, syntax. The vicissitudes of the Standard, Extended, and Revised versions throughout the seventies are for him simply the agonized results of an attempt to confine meaning-in-language within a distributional framework. 'In retrospect it seems clear that, behind the facade of technical progress, we were in fact witnessing the death throes of distributionalism...' (Matthews, in Collinge, 1990:131). Whatever its utility elsewhere, a purely distributional approach should not have been selected to encompass meaning-in-language. The constructs and strata of a psychologically real grammar are overlapping and quite possibly these strata require highly particular tools for correct analysis of their internal operations. Perhaps, rather than a generative, thematic, semanticist, relational or other overarching approach to human grammar, what is required is a focal approach, with each the perspective is acknowledged to begin with, and the resultant framework is used for analytic purposes in one stratum and one stratum alone.

(c) Terminological misunderstandings exacerbate conflicts. Beyond arguments borne out in the data, it has been very difficult for theorists and researchers to ascertain precisely what others have in
mind. Searle maintains that Chomsky 'crucially' misread Descartes (in Harms:21). Allerton believes that he misconstrued de Saussure's concept of langue (1979:56). Chomsky himself has lamented that the project has 'just been wildly distorted in the most amazing ways' (1982:38). However, Gleason notes the inherent slipperiness of TG terminology when he complains that '...generative grammarians sometimes seem particularly prone to clever devices, some of which hardly reflect any significant reality, but which do produce the desired end' (1965:243) is equally pertinent here. Whether the theoretical buttressing of the transformational component in the seventies and eighties was valid seems questionable in light of the move alpha rule. The revisions and the attendant confusion, nevertheless, have been an ongoing source of acrimony as Harris (1993) has ably documented. Yet, on the other hand, its many insights might not have been arrived at had these revisions not been ongoing.

Since Verbal Behaviour was the foil for much subsequent development, it is worth quoting Skinner's defence of it here - a rebuttal which has as much to do, apparently, with terminological misunderstanding as anything: 'The book is not about language...Verbal Behaviour is an interpretation of the behaviour of the speaker, given the contingencies of reinforcement maintained by the community...Those who want to analyze language as the expression of ideas, the transmission of information, or the communication of meaning naturally employ different concepts...but I see no point in arguing with those who want to do things in a different way' (in Harris, 1993:269). Hockett had responded to Chomsky's behaviourist critiques in 1968 yet Sampson wonders whether his points were even understood by the transformationalists (1980:79). The most salient lesson to be drawn from this chapter is Hockett's (in Lepschy, 1970:118): No physical system is well-defined: well-defined systems are the inventions of human intelligence.

(d) It would be grossly unfair to the TG project to summarize it in terms of a series of caveats. If anything, it is the developments which have taken place since the the TG trajectory resulted in Government and Binding Syntax which have stimulated much interest. In particular, judging by the continuous research into the Principle and Parameters model, we may justifiably identify Universal Grammar as the framework for future research in academic circles. A cursory glance at some titles of recent monographs confirms this: Frederick Newmeyer's On the Applicability of Transformational Generative Grammar (AL, 1982), Michael Sharwood-Smith's The Role of UG in Second Language Learning (in Second Language Learning, 1982), Gunilla Anderman's Linguistics and
Modern Language Teaching - A Typological Approach (IRAL, 1985), Vivian Cook's Chomsky's Universal Grammar and Second Language Learning (AL, 1985), Jacquelyn Schachter's Second Language Acquisition and Its Relationship to Universal Grammar (AL, 1988), and Thiru Kandiah's Exploiting the Theory of Universals in Adult Second Language Teaching (IRAL, 1994) all suggest the resonance of a project far from over. Within the framework of the Language Awareness Movement (to be discussed in the last chapter), future research is clearly foreseeable.

(e) The project is ongoing. The debates perhaps more ramified than ever will doubtlessly continue. However, they must continue in light of one comment in particular, the apposite, albeit show-stopping one which Chomsky made at the TG terminus. In discussing the most recent investigative research of the Principles and Parameters approach, he has this to say:

[The P&P model] constituted a radical break from the rich tradition of thousands of years of linguistic inquiry, far more so than early generative grammar, which could be seen as a revival of traditional concerns and approaches to them...In contrast, the P&P approach maintains that the basic ideas of the tradition, incorporated without great change in early generative grammar, are misguided in principle - in particular, the idea that a language consists of rules for forming grammatical constructions (relative clauses, passives, etc.). The P&P approach held that languages have no rules in anything like the familiar sense, and no theoretically significant grammatical constructions except as taxonomic artifacts. There are universal principles and a finite array of options as to how they apply (parameters), but no language-particular rules and no grammatical constructions of the traditional sort within or across languages. (1993:5)

Jakobson once remarked of a predecessor that the latter's renown permitted him the privilege of publishing seminal contributions to his field in obscure journals. This statement is somewhat applicable to Chomsky, who, it appears, may arrogate to himself the privilege of demolishing a thirty-year old framework with a single quote only five pages into the 1993 publication. Nevertheless, in the middle of his journey in 1972, Chomsky wrote the most appropriate epitaph for Transformational-Generative grammar himself: 'A great deal has been learned about the mechanisms of language, and, I would say, about the nature of mind, on the basis of this hypothesis' (1972a:111).
'What do we mean by the 'social functions of language' in terms of the daily life of *homo grammaticus*, - the Talking Ape?'

(M. Halliday, 1973:25)
The Ethnographic Perspective

Beyond structuralist, descriptivist, and generative analyses, the typological analysis of language indicates that there are also semantic, syntactic, and phonological constructs which are held in common by members of the species. Beneath the diverse surface structure phenomena of the world's languages theorists such as Comrie (1981) and Greenberg (1966) have conceptualized the underlying linguistic universals of language in a sense quite distinct from the UG project initiated by Chomsky. Cross-linguistic affinities have enabled typologists to establish broad taxonomies of 'absolute', 'implicational' and 'non-implicational' universals (Rutherford, 1984) and a high premium is placed on ensuring that categories demonstrate a cross-linguistic validity. 'Failure to ensure this cross-language comparability would mean that we are not doing language universals research, but are simply analyzing each language as an independent unit - and unlike those linguists who maintain that this is the only way to study languages, we would be doing so surreptitiously by pretending, through use of the same term, that our results are comparable across languages' (Comrie, 1981:127). The tension here is familiar and ultimately perspectival: the approach points not to irreducible conflicts but to competing emphases.

The ethnographer acknowledges the import of structuralist, distributionalist, and typological analyses but seeks to complement them with yet another perspective which has its roots in synchronic science as well: the perspective of individual interacting with environment. Such a linguistic ecologist will point out that while the other perspectives study the tool itself in a variety of ways, these perspectives draw the reader away from the vantage point of the tool-user. The linguistic ethnographer selects the functionality of the system in the daily lives of individuals as above all significant and in support, he might well point to the way in which noun and clause enable speakers, among other things, to designate membership and to promote health.

The ethnographic literature is replete with evidence pointing to the functional utility of linguistic form. Itkonen (1991:35) for instance, notes that early Indian grammatical science can be reliably traced to its ritual origins and Van de Walle similarly refers to its 'quasi-religious' nature. The latter goes on to suggest that the impetus behind the phenomenal development of Sanskrit grammatical science was actually the belief in the divine origin of the language (Van de Walle, 1989:23); the intertwining of religion and language is a well-attested phenomenon in the literature. From the linguistic perspective, however, few formal objects carry as much functional weight as the proper noun, whose operations in the culture of a community demonstrate this formal/functional permeability to a notable degree.
Among the Lozi, a central African people, the mishiku ('descent-name') signifies not only human ancestry but kinship to the deity. With it, Radcliffe-Brown tells us, a Lozi can point to a birth-site, claim a right to it and thus ensure his or her membership in the culture (1970:170). For the Marind-Anim, a Papua-New Guinea band, the system of pa-igiz ('head-name') was an integral element in the pre-colonial belief-system of headhunter culture and functioned to replenish the exhausted store of names: 'A father takes pride in having names in stock which he may bestow on his children. Not every father is a successful headhunter and not everyone has a head-name to spare for a newborn child' (Van Baal,1966:717). Evans-Pritchard recounts that the cot-thak ('ox-name') is given to the young Nuer male to signify his initiation into manhood (in Hymes,1964:222). With the Plains Cree, the newborn will receive a 'dream' name that accords with the visionary experience of the tribal shaman (Mandelbaum,1979:141). The contention that linguistic objects are merely internally defined ignores the parallel, functional reality.

A purely intrinsic orientation to these objects runs the risk of inadvertently concealing their ritual value to the community and taboos in language constitute a case in point. Sanctions surrounding naming practices play a covert but powerful role and provide another instance of the extent to which form is made beholden to function. Among the Tikopia, a Polynesian tribe, children may not pronounce their parents' real names, nor a spouse that of the partner: the 'house name' will be used instead to convey respect (R. Firth,1961:135). The winkte ('secret name') was conferred among the Colorado Sioux to ensure longevity and it could never be used when addressing a person directly (Hassrick,1964:273). A clear example of the depth to which the connotations of the proper noun are almost impenetrably embedded within a culture is provided by Vizenor (1984:69).

Benjamin Lee Whorf referred to these underlying taboos and seemingly inexplicable occurrences as 'cryptotypes' of a culture. Such cryptotypes were as requisite for the understanding of the culture as a grammar handbook was for the understanding of form. The cryptotype '...is a submerged, subtle, and elusive meaning, corresponding to no actual word, yet shown by linguistic analysis to be functionally important in the grammar' (in Carroll,1987:70). Whorf's analysis of the 'hidden orientations' of a society manifested through the culture would chime distinctly with Halliday's attitude toward formal objects and their functional purposes (Kress,1976:xx). Sapir and Swadesh (in Hymes,1964) provide six examples of the notional latitude of the clause in six aboriginal cultures, all strikingly evocative instances of the filters through which individuals must view their world.
It is among the Navajo, however, that the clause rises to the level of ritual significance. For the Dine, the clause was a potent weapon in the maintenance of universal hozho ('harmony'). An individual Dine upset this balance of harmony and came to grief through stubbornness, negligence, or behavioural excess (Wyman, 1957:6). As the genesis of the malady lay in the moral conduct of an individual, medicinal remedies were of little use. The individual Dine thus relied upon the ritualistic and repetitive chanting of the clausal unit in order to effect mental and or physical healing. As all energies in this life are directed toward the preservation of equilibrium and harmony, such losses were grave and the Dine consequently expended much energy in observing taboos and in following rituals. Correct recitation of ritual 'Chantways', combined with sincere contrition, realigned individuals with the supernatural forces or the Diyin Dine e ('The Holy People'). 'The language of Navajo ritual is performative, not descriptive. Ritual language does not describe how things are, it determines how they will be. Ritual language is not impotent, it is powerful. It commands, compels, organizes, transforms, and restores. It disperses evil, reverses disorder, neutralizes pain, overcomes fear, eliminates illness, relieves anxiety, and restores order, health, and well-being' (Witherspoon, 1977:34). The clausal unit not only predicates but also heals.

It was this type of ethnographic analysis that Bronislaw Malinowski carried out among the Trobriand Islanders in the opening decades of this century. Among other findings, Malinowski came to the noticeably structuralist conclusion that the description of the linguistic system of a culture from without was fundamentally misguided. In the same way that a Navajo Chantway could never evoke a comparable response from a non-Navajo, individual utterances were not necessarily commensurate across cultures. Speech, in this 'extreme form' of structuralism (Malmkjaer, 1991:158) is wholly saturated with subtleties internal to the culture, a belief congruent with Whorf's independent assertions later.

[Malinowski] found that to understand the meanings of what was said, it was necessary to possess some knowledge of the cultural characteristics of Trobriand society, as reflected in the contexts of situation in which particular types of utterances were typically produced, and which were themselves regarded as embedded in the context of culture. Meaning was seen in terms of the function of utterances, or even of whole texts, in contexts of utterance, or, more generally, in their typical contexts of situation. (in Butler, 1985:4)

The utterance, for Malinowski, was determined by the functions of the exchange ('context of situation') which in turn move and have their being within the permissible patterns of interaction ('context of culture'). In order to comprehend the flow of sound and meaning at every level of grammar as an appropriate, expectable, and interpretable cog in communication - the observer must delve into the social milieu in
which it is embedded, a background of potential choices and options that a culture this time places before its members. As Halliday would put it much later: 'Language comes to life only when functioning in some environment. We do not experience language in isolation, - if we did we would not recognize it as language - but always in relation to a scenario, some background of persons and actions and events from which the things which are said derive their meaning. This is referred to as the 'situation', so language is said to function in 'contexts of situation' and any account of language which fails to build in the situation as an essential ingredient is likely to be artificial and unrewarding' (1978:28). Malinowski's 'context of situation' first became the concept of central importance to Halliday's teacher, the Orientalist J.R. Firth.

J.R. Firth's Linguistics

The student of Firthian linguistics will notice several pervasive features in the work of the man who, together with Malinowski, founded the London School. This perspective can be sensed almost immediately by anyone schooled in the North American linguistic paradigm. In noticeable contradistinction to Bloomfieldian, Chomskian, and descriptivist quests for overarching frameworks, Firth seems to have favoured the heterogeneous explanation tolerant of multiplicity, in preference to the homogeneous explanation subsuming many data within few rules. The kind of theorizing characteristic of the transformationalist school of American linguistics would doubtlessly have been puzzling to him. Unlike other linguists who accorded pride of place to economy in explanation Firth demurred, especially in connection with his preferred stratum of analysis, the phonological. Although much could be usefully encompassed within a uniform 'phonemic' principle and perhaps equally much explained distributionally, easily as much, he believed, risked being lost in the process. The linguist, from Firth's perspective, ought not only to tolerate heterogeneity in linguistic explanation but also to welcome a variety of explanations for any given environment. While never eschewing elegance or economy in analysis, he opted for clarity above all in which the clearest, but not necessarily the most parsimonious, explanation was considered the most worthwhile. "A theory derives its usefulness and validity from the aggregate of experience to which it must continually refer in renewal of connection. Under equal circumstances one will prefer that theory, which covers a larger field of phenomena, or which from some points of view appears to be simpler, or as I should prefer - clearer.' "

The key words here are usefulness and clearer. It is no mere whim that causes Firth to prefer clarity to simplicity. The whole purpose of theory is some kind of utility. It must be of use, and that use must be the illumination of the nature of language. A theory that captures all possible generalizations about language and in the process of statement manages to obfuscate all of them is certainly less useful than a theory that captures fewer generalizations but that presents them in a clear form. (Christie,1980:19)
The ex cathedra statements of behaviourists and the methodological excisions of distributionalists were quite unpalatable for the British linguist who never accepted the 'structuralist' designation (McIntosh, 1966:40). His predilection for transparency meant that linguistic discourse should be yoked neither to any one all-embracing attitudinal stance nor to one overarching theoretical system. A loyalty to de Saussure went only so far however: 'Linguistic analysis must be polysystemic. For any given language there is no coherent system (dù tout se tient) which can handle and state all the facts' (in Palmer, 1968:24). Firth believed that instead of an overarching theoretical edifice, the varied objects and strata of language might be better grasped discretely, embedded within their immediate environments, functioning symbiotically and efficiently but, if not in phenomenological lockstep, then neither in conceptual accord. Chomsky's LAD, in this connection, would perhaps have been regarded as an effective explanation for the syntactic stratum, but certainly not as an explanatory model into which the objects and operations of the other strata of language could be fitted. Firth much preferred 'a model in which the concept of one huge, integrated super-system for a language was replaced by a large number of individual systems set up for different environments' (Butler, 1985:3). The irreducibly localistic nature of linguistic systems comes to the fore in Firth's linguistics and suggests an analytic approach which is focused, partial, but ultimately aimed at total congruence with the data. Whereas the descriptivists had isolated strata for methodological or 'artifactual' purposes, Firth seems to be saying that at another conceptual level, it is the particular, individual, and discrete realities which actually define the formal matrix.

This polysystemic approach in which formal objects may be viewed discretely, and from different angles can be extended to the syntactic and semantic strata. He believed that the English passive and active voices, for example, could only be awkwardly compared with those of French where passive, active, and middle voice comprise a tripartite rather than bipartite system. Similarly, in the contextual realm, Firth is quoted referring to the fact that "[a] singular in a two-number system has a different grammatical meaning from a singular in a three-number system or a four number system such as in Fijian, which formally distinguishes singular, dual, 'little' plural, and 'big' plural" (in Hill, 1969:224). The structuralist weave is particularly vivid here in his emphasis on the uniqueness of language systems. Perhaps a result of this penchant for the variegated rather than for the uniform explanation, it has been claimed that Firth never produced a unified theory and was thus vulnerable to later critiques that his theory was fragmentary and unsystematized e.g., Hill, (1969), Sampson (1980), and Kress (1976).
A second facet of Firth's linguistics, which would signally inform Halliday's theory, is what might be termed its ecological vista. Even before developing Malinowski's concept of the 'context of situation', Firth was foremost an original linguist whose studies of Sino-Tibetan languages led him to underscore an organic conception of language - to focus as much on the environment as on the object. For Firth, any language datum was ensconced within a host of internal as well as external orientations: "Formal relations are those between one formal item and another, for example, the relation between lexical items in collocation, or the syntactical relations between grammatical categories... Situational relations are those between language items and nonverbal constituents of the situation" (in Hill, 1969:223). Firthian grammar may be likened to a lattice of window-panes, each one functioning as an interface for both social and formal realities, serving to transmit meaning between and among. De Saussure's earlier metaphors for language - a sheet of paper with two sides, a coin with two realities - reappear here in Firth's ecological, multifaceted, and interdependent linguistics. One of his shining achievements was to re-assert the intrinsic ethnography of language foreshadowing the future discipline of sociolinguistics. 'For Firth, language had to be studied as part of the social process, as "a form of human living, rather than merely a set of arbitrary signs and signals" (in Hill, 1969:221).

A third, and possibly somewhat reactive facet of Firth's linguistic philosophy, was his dissatisfaction with the attention which had been focused on syntagmatic phenomena to the virtual exclusion of equally valid paradigmatic phenomena. A solely segmental approach was impoverished and unduly constraining to Orientalists such as he who were immersed in the tonal or 'suprasegmental' phenomena of languages such as Mandarin. The syllable - but importantly not the phoneme - for example, is considered to be the basic phonological unit among Japanese and Chinese speakers (McIntosh, 1966:25). Bloomfield's linear morphophonemics, on the other hand, Firth believed manifestly incapable of treating these subtleties and consequently other equally relevant phenomena 'above' the syntagm remained unannounced at the door. 'Prosodies' as Firth termed them, were much more heavily implicated in the phenomenology of non-Indo-European languages, a fact which proved 'something of an embarrassment to American-style phonemic analysis' (Butler, 1985:8):

Americans were forced to recognize certain 'suprasegmental' units, such as phonemes of stress and, in tone languages, phonemes of tone, which co-occur with whole syllables rather than forming part of particular vowels and consonants; intonation patterns might stretch over sequences of many syllables. But 'suprasegmental phonemes' were felt to be an awkward inelegance in phonemic theory, and they were allowed only in connection with certain special phonetic parameters such as loudness and pitch. To Firth this was irrational. (Sampson, 1980:218)
Distressed by what he believed to be the 'phonematic' yoke being imposed upon the discourse by certain descriptivists, Firth proposed to return his preferred stratum to its theoretical richness by complementing 'phonematic' theory with 'prosodic' theory and this prosodic orientation to the phonological stratum allows introduction to a fourth characteristic of Firth's linguistics: his paradigmatic orientation. This attitude was notably absent among American descriptivists of the day and inevitably, Firth considered much of descriptivist science inescapably lopsided. Any coherent theory of language from the European perspective must embody both paradigmatic and syntagmatic relations and this belief corresponds to the modern consensus that '...every linguistic unit has both a contrastive and a combinatorial function' (Lyons, 1968:72;1970:73). Attention along the eastern seaboard as we have seen had been focused almost exclusively on the horizontal axis of language with the result that the more evocative perpendicular axis along with its relations was almost entirely neglected.

The phenomena of the paradigm highlight a fifth facet of Firth's theory related to the centrality he accords paradigmatic relations: every item resides within a system and systems involve choices and choice is central in both formal and situational contexts. Every formal or situational selection implies that other equally meaningful choices from among the paradigms were not made. Linguistic paradigms operate according to an infinity of overlapping relations and, as we saw in chapter two, conjure endless 'might-have-beens' to provide the selected object with its formal and situational meanings. This is congruent with de Saussure's belief that formal systems have their meanings determined in a fundamentally negative manner. Such considerations - choice, system, relation, evocation - were a necessary part of the science and their exclusion from the discourse was unwarranted.

Firth's attitudinal ecology, polysystemic predilections and paradigmatic approach usher in a sixth and far more significant facet of his theory: the centrality of meaning-in-language, which he believed was the sine qua non of the discourse. 'Firth never regarded semantics as a separate area of linguistics...the principle underlying all linguistic description was the statement of the function of linguistic items in their context, and that for Firth was meaning. Thus all the linguist's activity was about the statement of meaning, about semantics. There could be, for him, absolutely no justification for talking about a separate level of semantics' (Kress, 1976:xiv). The relegation of semantics was an unwarranted amputation, an irrationality mandated by a mistaken refusal to acknowledge one entire axis because of the difficulty involved in determining its parameters scientifically. Such a stance negates the possibility of meaning-in-language
being determined in the first place as semantic sense results from intersection. An analysis of syntagmatic objects isolated from the paradigmatic axis of language makes absolutely impossible any conceptual connection with the social situations in which they were embedded. Syntagmatic analysis thus becomes little more than a mental game of segmentation and dissection entirely divorced from, and therefore irrelevant to, the interactions which first engendered its forms.

This ethnographic dimension is mentioned in passing by de Saussure (CLG, 1988:6) but is considered less important as efforts at the time were directed towards the establishment of a science of synchronic linguistics. Bloomfield’s methodology developed in a way quite unlike anything which the European structuralists after de Saussure had envisaged. For members of the London School, there could not be any attempt at excising the quintessence of the discourse - meaning-in-language (Kress, 1976:xiv). The anathema was wrong and Firth responded squarely: "I propose to split up meaning or function into a series of component functions. Each function will be defined as the use of some language form or element in relation to some context. Meaning, that is to say, is to be regarded as a complex of contextual relations, and phonetics, grammar, lexicography, and semantics each handles its own components of the complex in its appropriate context" (in Hill, 1969:223). Formal systems thus necessarily possess a formal and a situational orientation.

Firth was clearly attempting to connect polysystemic linguistics to a broader anthropological discourse. Meaning-in-language was an interface which not only opened onto the social domain but illumined the cognitive realm. From this perspective, both Saussurean structuralism and American descriptivism were far too hermetic. While furnishing a useful framework, Structuralists had rendered the science too abstruse in the form of four dichotomies. Bloomfieldians, on the other hand, had approached language inordinately preoccupied with labelling the joints and dissecting the parts. The ecological reality as Firth saw it, however, responded to neither structuralist nor distributionalist analyses solely. It was form embedded within situation. Language and personality, Firth wrote, "...are built into the body, which is constantly taking part in activities directed to the conservation of the pattern of life. We must expect, therefore that linguistic science will also find it necessary to postulate the maintenance of linguistic patterns and systems...within which there is order, structure and function. Such systems are maintained by activity and in activity they are to be studied. It is on these grounds that linguistics must be systemic" (in Butler, 1985:7) [italics mine].
The insights of Firth foreshadowed the emergent discipline of sociolinguistics; there were many others vaguely uneasy with a logico-mathematical bent of modern linguistics. These were sociologists of language who sought to supplement the theory with equally pertinent situational variables, to reorient the discourse away from the vista of 'encoder' and toward that of 'decoder'. The American ethnographer Dell Hymes fought the extending supremacy of the former with the memorable clarion call of the ethnolinguist: 'There are rules of use without which the rules of grammar would be useless'. Hymes was primarily interested in establishing a theoretical framework within which the formal objects of language could be related to their social milieu. He noted that the formal objects of language are deftly put to work in any number of functional ways in order to obtain a variety of non-formal objectives. 'A sentence interrogative in form may be now a request, now a command, now a statement; a request may be manifested by a sentence that is now interrogative, now declarative, now imperative in form' (1972:57). Christie reiterates the perspectival leitmotif here: 'It is not the case, as we might like to tell ourselves it is, that we merely discover a framework lying in the data and waiting to be found. Various frameworks are possible for given batches of data, and the framework chosen will influence the data we find' (1980:19). This ethos is the methodological point of departure in any quest for a 'psychologically real grammar'.

Hymes's framework of 'communicative competence' was conceived as the pragmatic complement to the framework of 'grammatical competence' being developed at MIT. In so doing Hymes was hoping to construct a sociolinguistic superstructure above the cognitive infrastructure outlined by Chomsky in Aspects. He was also attempting to bring an increasingly recondite discourse back to its proper coordinates in human activity. While accepting of Chomsky's basic competence/performance dichotomy, Hymes would nevertheless reorient the discourse away from a discussion of idealized algorithms to one in which Malinowski's 'daily communions' and Firth's 'situational realities' were central. The daily grammar of the child was a reflection of the cultural and interpersonal assumptions of her 'speech community', her tacit understanding of the 'speech situation', along with her 'speech event', 'speech networks', and 'speech acts'. The expanse of Hymes's realm of pragmatic competence is rather breathtaking, although there is an distinctively Firthian theme throughout: 'Speech is here taken as a surrogate for all forms of language, including writing, song, and speech-derived whistling, drumming, horn-calling, and the like. Speech community is a necessary, primary term in that it postulates the basis of description as a social rather than as a linguistic entity. (Hymes, 1972:54) [italics mine].

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Hymes's insistence upon the significance of the daily communions of the talking ape was fully in accord with the goals envisaged for linguistic ethnography advocated by Malinowski and Firth. This deliberately contextual approach to language was intended to accomplish for the developing science of pragmatics what transformational analysis had carried out for syntax: to establish a performative edifice above the bedrock of formally construed competence. 'The fundamental justification for introduction of the notion of communication into models of grammar', Hymes relates, 'is to ensure a scope to grammar that is adequate to encompass the full range of devices and relations people employ in whatever they do with language' (in Pütz, 1992:39).

Michael Halliday's Linguistics

In the late sixties Michael Halliday was also considering language from the point of view of its social implications and he concurred with Hymes in seeing '...the linguistic system as a component - an essential component - of the social system' (1978:51). He diverges from the ethnographer, however, on a number of issues, but principally because he envisaged a different orientation for the discourse. Whereas Hymes was attempting to buttress the generative infrastructure and in particular the competence-performance distinction, Halliday believed that the structure was fundamentally misshapen to begin with. What is needed is a theory '...which, rather than being directed towards sociological or psychological investigations, is intended to illuminate the internal structure of language itself, explaining why language is patterned as it is, and not in one of the many other possible ways' (Butler, 1985:46). While Hymes was laudably involved in rescuing the functioning individual from almost total immersion in deep syntax, he was nevertheless throwing along a needlessly weighty anchor. Competence and performance, for Halliday, were artifacts of the Logical Structure of Linguistic Theory. Recapitulating almost verbatim Hockett's criticism, Halliday maintained that '[a] language is not a well-defined system, and cannot be equated with the 'set of all grammatical sentences', whether that set is conceived of as finite or infinite. Hence a language cannot be interpreted by rules defining such a set. A language is a semiotic system; not in the sense of a system of signs, but a systematic resource for meaning...' (in Benson, 1985:7). Chomsky's idealized speaker-hearer is a bloodless creature alienated from the myriad realities of market, home, and playground. '[W]e reject the distinction altogether on the grounds that we cannot operate with this degree and this kind of idealization. We accept a much lower level of formalization; instead of rejecting what is messy, we accept the mess and build it into the theory' (1978:37).
Halliday's point of departure is functional; Chomsky's is 'psycholinguistic' and that of Hymes a hybrid 'psycho-sociolinguistic' approach.

We could say, following Dell Hymes, that it is part of the speaker's 'communicative competence' that he knows how to distribute lexical items in a text according to different kinds of language use; but there is really no need to introduce here the artificial concept of 'competence', or 'what the speaker knows', which merely adds an extra level of psychological interpretation to what can be explained more simply in direct sociolinguistic or functional terms' (Halliday, 1978:32)

In an attitude reminiscent of Firth's notion of language as activity, Halliday suggests the term 'languaging' to emphasize the essence of what he is describing - formalized activity or actualized form.

Along with Chomsky, Lamb, Bloomfield, and Jakobson, Halliday states that '[w]e take it for granted that language is...organized into levels, or 'strata' (Halliday, 1985:30; Benson, 1985:10). However, the admission that grammar was stratified was as far as he would go and Christie recaps the traditional view of grammar which Halliday sought to change:

```
  MEANING
      Semantics
      Syntax
      Morphology
      Phonology
      Phonetics
  SOUND
```

It was a fundamentally bi-stratal view of grammar essentially in which the meaning of a sentence begins at the topmost level of semantics and accrues formal objects of various kinds on the way down to the level of sound (Christie, 1980:37). While the stratified nature of the model does not appear to disturb Halliday, it is the 'compositional' attitude to meaning-in-language that does. As Christie puts it: 'The traditional view has been one of layers of structure with meaning flowing through them, as it were, on its way to becoming sound...But this view retains a notion of meaning as something a sentence has rather than something a speaker does. If meaning is use, then such a flow-through model as this is unnecessary and inappropriate' (1980:37). Halliday proposes instead a functional revision in which grammar would still be stratified but in terms of three proposed levels: (i) 'sounding' (phonetics and phonology), (ii) 'wording' (morphology, syntax, and lexis), and (iii) 'meaning' (semantics) (1973:76; 1978:128). 'When linguists talk about 'the semantic system', the 'lexicogrammatical (or syntactic) system' and 'the phonological system', they are simply referring to the meaning, the wording, and the sounding' (1978:208).
Functional Grammar

Halliday's model of grammar is thoroughly scalar as opposed to discrete or perhaps even stratified. Never seeking the degree of formal idealization at which Chomsky aimed and which Halliday considers misguided and pointless anyway (1978:37), the latter placed much more emphasis on the overlapping, fuzzy nature of grammar and comparatively less on its boundaries and terminal junctures. Grammar is a continuous weave with no clear frontiers between semantics and grammar, structure and phonology (in Hasan, 1989:5ff). Intonation, for example, in a highly novel perspective, is simply the 'most delicate mood' of the grammar (ibid:6). This is a conception of grammar in which the realities of the playground and the structures in the clause are two ends of the same tapestry. At the time that interpretivists and semanticists were embroiled in controversies over 'trans-derivational' constraints at campuses around America, Halliday envisaged a functional-formal continuum rather than purely formal stratification (1973:101) [I have added the numbers for clarity.]

<table>
<thead>
<tr>
<th>Uses of Lg.</th>
<th>Situation types (social contexts and settings)</th>
<th>Meaning potential (networks of semantic systems)</th>
<th>Functional components of grammar (macro-functions)</th>
<th>Formal potential (networks of grammatical systems)</th>
<th>Grammatical structures</th>
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It is to the discussion of this seamless and intricately woven tapestry that Halliday now turns in order to provide a theoretical counterpoint to generative grammar. [Between (3) and (4) I have included what may appear to be a digression from this continuum; however, the concepts discussed therein are both psychologically intriguing and resonant].

The Uses of Language (1)

There is an infinity of purposes to which language is daily put so that it might convey meaning, i.e., there are as many meanings and shades of meanings as there are speakers and situations (Halliday, 1973:97) and in discussing the uses of language, all possible scenarios of meaning must be included. These are the headwaters of Halliday's current - the 'meaning potential', the totality of functional possibilities that any culture lays before its members. The exploration of these realms of meaning is everyone's prerogative but Halliday leaves the definite impression that such a taxonomy of all its uses is likely impossible (1973:36) and five years later such a taxonomy is deemed chimerical: 'The meaning
potential...to which the members of a culture have access in their language, can be characterized in two ways, corresponding to Malinowski's distinction between the 'context of situation' and the 'context of culture'... Interpreted in the context of culture, it is the entire semantic system of the language. This is a fiction something we cannot hope to describe' (1978:109). Nevertheless, in the theory of the British sociolinguist Basil Bernstein, Halliday located some potential contours.

Recourse to Bernstein's sociolinguistic and controversial theory is not really a digression for Halliday as all formal relations have their origins in the semantic systems of human beings (1975:4). Semantic systems are in turn derived from behaviours; language is 'sociosemantic'. Since formal relations are tied to social meanings and vice versa, what happens in society will ramify in the grammar. Bernstein's discussion of the nature of certain power relations in British society on the one hand and his interest in the issue of standard and non-standard dialects in England on the other thus provides significant appeal to a linguist for whom all linguistic discourse is ultimately political (Hasan, 1989:2).

Although his nascent theory came under almost immediate fire, Halliday points to Bernstein's foundational observation that educational failure in Britain 'was not distributed randomly in the population' but tended to vary directly with social class (1978:87). Such failure had been tentatively linked by Bernstein to the observation that children from more socio-economically depressed backgrounds stood a statistically higher chance of educational failure in the school system of the day. Bernstein maintained - in what Halliday believes to be the correct version of Bernstein's theory - that children who did well in the educational system had access to the standard, 'elaborated' linguistic code of British society, whereas the children who fared poorly in some or all of the educational uses of language had access to only a 'restricted' version of the same language. The juxtaposition of linguistic failure and dialect variation, however, unfortunately led certain critics to charge that Bernstein was arguing that restricted codes were linguistically inferior to elaborated codes. This was manifestly not, according to Halliday, what Bernstein was proposing. What was misunderstood throughout was that although the many uses of language are equally open to all regardless of dialect ("Every normal child has a fully functional linguistic system"), only some of these, usually middle- and upper-class dialects, were valued:

The child who speaks the nonstandard dialect is at a disadvantage because certain contexts demand the use of the standard. Many such factors could be cited, but they tend to fall under three headings: the teacher, the subject-matter, and the system. The child who speaks nonstandard may be penalized by the teacher for doing so; he has to handle material presented in the standard language, for example, in textbooks; and he has to adjust to an educational process and a way of life that is largely or entirely conducted in the standard language...(1978:104)
This is the ethnographic argumentation of the kind that Malinowski and Firth found entirely plausible and categorized under the 'context of the situation'. Such differential results showed clearly that cultural valuations are deployed right into the heart of language on a daily basis and Bernstein's analyses provide some empirical support for Halliday's evolving model. Class systems are consolidated and renewed by educational failure which in turn is predicated upon differential access to the prestige dialect. Bernstein's contribution was to show that language is utilized by members of a society to transmit cultural success to some of its members and, tragically, to transmit failure to others: 'From [Bernstein] we have learnt just what it is that is achieved through language - the transmission, maintenance, and modification of the patterns of culture...' (in Benson, 1985:5).

After having construed Malinowski's 'context of culture' in distinctively Bernsteinian terms, Halliday proceeds to 'the context of situation' which, somewhat confusingly, he terms a 'fiction' as well; however, 'it is something that may be more easily describable. In sociolinguistic terms the meaning potential can be represented as the range of options that is characteristic of a specific situation type' (Halliday, 1978:109). Painter relates that it is the social system which engenders the 'Situation Types' and feels that '...for a Marxist linguistics to be viable, this step is an absolutely crucial one' (in Hasan, 1989:7).

The Situation Type (2)

This system of differential access under which children from all classes labour largely unawares is, Halliday contends, best understood in terms of field, tenor, and mode. First elaborated by McIntosh et al in 1964, these three categories sum up the 'environmental determinants of text' (Halliday, 1975:131) - the primarily linguistic options which are accessible to the speaker in the sociolinguistic environment. (The notion of text will be discussed later in connection with the 'macrofunctions' of language). The varied Uses of Language (1) must conform to the 'semiotic structures' of field, mode, and tenor which together define any 'situation type'. An exchange beside the bathtub between Halliday's son Nigel and Nigel's mother thus has a different semiotic structure in terms of its field, tenor, and mode than that between a sales clerk and a bank customer for example.

This structure can then be interpreted on three dimensions: in terms of the ongoing activity (field), the role relationships involved (tenor), and the symbolic or rhetorical channel (mode). The first of these, the field, corresponds roughly to Hymes's 'setting' and 'ends'; it is the field of action, including symbolic action, in which the text has its meaning...The second, the tenor, which corresponds in general terms to Hymes's 'participants' and 'key', refers to the role relationships that are embodied in the situation, which determine levels of formality and speech styles...The third heading, that of mode, is roughly Hymes's 'instrumentalities' and 'genre'; this refers to the symbolic channel or wavelength selected, which is really the semiotic function or functions assigned to language in the situation.' (1975:131)
It is at the linkage of (2) and (3) that another crucial connection is made in describing the scale from social to formal relations. These semiotic structures of field, tenor, and mode - the determinants of text - correspond to three basic 'sociosemantic networks' of the next modem in the continuum and are best explained in these terms.

The Sociosemantic Connection (3)

The 'socio-semantic' filter in its most simplified form represents the interface between society ('socio-'), and language proper ('semantics'). It is important to remember that for Halliday, language is fundamentally semiotic, semantic behaviour and only secondarily formal. Linguistic analysis is first and foremost the exploration of social behaviour that is 'languaged'. The child's linkage of his behaviour and the behaviour of others to emitted sounds in the environment results in this construction of meaning. Meaning just happens to be conveyed through articulation. This notion of 'semantic' must be distinguished clearly from previous uses of the term. What Halliday has in mind when he discusses the term is something even more rudimentary than language - perhaps corresponding more closely to nothing more and nothing less than observations about the objects and relations in the environment - observations of cause and effect, for example, which become imprinted in the mind. This is a pre-linguistic phase in every sense of the term, it seems. 'The term semantic is not to be understood in the restricted sense of 'lexicosemantic', i.e., concerned with the meanings of words. It refers to the totality of meaning in language, whether such meaning is encoded in the form of vocabulary or not...[I]t is our contention that the learning of language is essentially the learning of a semantic system...' (Halliday, 1975:9).

To recap for the moment, behaviour is first situated in the culture, then semiotically ('conceptually') categorized in terms of field, tenor, and mode, then socio-semantically translated. This socio-semantic modem in the continuum is responsible for translating what is not language into what is language and is perhaps the most crucial link of all. 'The range of options at the semantic level is the potentiality for encoding in language that which is not language...Semantics, then, is "what the speaker can mean". It is the strategy that is available for entering the language system' (Halliday, 1973:72). What the speaker can mean - sociosemantics - is organized into 'networks'. 'A semantic network is a hypothesis about patterns of meaning, and in order to be valid it must... account for the range of alternatives at the semantic stratum itself; and it has to relate these both 'upwards' in this instance to categories of some general social theory or theory of behaviour, and 'downwards', to the categories of linguistic form at the stratum of grammar' (1973:76). This downward process from behaviour to grammar seems to lend itself to
an analogy to the modern a conception, however, which does not figure at all in Halliday's exposition. These networks are those of (i) transitivity, (ii) mood, (iii) modality, (iv) time, (v) place, and (vi) information structure (1973:80). [This set of six networks would later be streamlined into three broad socio-semantic networks: the networks of transitivity, mood, and theme].

3.1 The Socio-semantic Network of Transitivity: As Butler notes, this term implies much more than the relationship between a particular kind of verb and its dependent arguments. Indeed, this is one reason why Halliday preferred not to adopt the theoretical framework of the erstwhile transformationalist, Charles Fillmore. As all grammar is ultimately situated, functional, and semantic, Halliday reacted to a syntactic framework of arguments, predicates, and transformations which were not explicitly linked to the meanings being negotiated in society (Kress,1976:16). Grammar was, among other things, fundamentally about social rather than syntactic processes: ‘Our most powerful conception of reality is that it consists of “goings-on”: of doing, happening, feeling, being...Transitivity specifies the different types of process that are recognized in the language, and the structures by which they are expressed’ (in Hasan,1989:213ff). That is, the sociosemantic network of transitivity refers to the processes, the participants in these processes, and the circumstances surrounding these processes. Such a conception leads directly to the formal exponents to be outlined in the discussion of Scale and Category Grammar: verbal groups (processes), nominal groups (participants), and adverbial groups (circumstances).

3.2 The Socio-semantic Network of Mood: With behaviour construed in terms of process, participant, and circumstance, Halliday now turns to the speaker’s attitude toward these processes, participants, and circumstances, the orientation of mood. Attitudinally, a participant may declare a fact or interrogate it and then might take different perspectives to the fact just asserted. Likewise an individual can assign roles to the interlocutor(s) - whether those roles are wished for or not. Halliday is careful to point out at various times that there will not be one-to-one correspondences between the categories at the different nodes in the continuum and that such an identifiable watermark is not to be expected of the linguist (1973:56). These socio-semantic notions of transitivity, mood, and theme appear to be artifactual or tactical categories only in the description, serving to clarify a concept being put forward and nothing more than this.

Like Chomsky with his ‘components’ and language acquisition ‘device’, Halliday has to utilize what is essentially a metaphor in order to describe his conception of grammar - a ‘network’, in this instance, of
theme, mood, and transitivity. The consistent recourse to metaphor to describe the relations of grammar, whether formal or sociosemantic, is the point to be noted here. The various models of grammar being proposed by these authors all rely, at crucial junctures in the exposition, on analogy, simile, and metaphor. This observation suggests that a 'psychologically real' grammar can only be understood as a 'metaphorically-understandable' grammar. The metaphors and analogies for grammar and its operations will be discussed in the concluding chapter.

3.3 The Socio-semantic Network of Theme: Butler (1985:176) refers to Halliday's work in this area as 'among his most original contributions to the description of English'. Halliday came to the conclusion that a simple delineation of situations in terms of the information being passed around by participants under certain circumstances and with various attitudes was incomplete. It did not capture an element crucial to the exchange - the varying emphases within each sentence or clause. This third socio-semantic network refers essentially to the way in which a speaker structures the information being imparted. Generativists described this in terms of 'topic' and 'comment' but Halliday finds their formulation less than profound. The 'topic-comment' framework analyzes 'new' and 'old' information; however, as Butler points out (1985:178), this ignores the reality that a clause itself may be considered either 'new' or 'old' information depending upon its placement in the sentence. There are many gradations, nuances, and linkages in articulate communication and the syntactically attuned framework of topic and comment mentioned does not have the semantic resources to explain the ways in which information itself is coherently structured, over many clauses, by speakers. Information structuring involves what Halliday terms thematization. 'Thematization... is related to information distribution, but is a different kind of choice, having the clause as its point of origin' (ibid:178).

Berry and other have remarked that one of the weaknesses in some of Halliday's descriptions is that they merely provide a potential taxonomy but lack an external metric by which to judge their explanatory adequacy a requirement upon which Chomsky, on the other hand, insisted and on which he was to base the entire superstructure of TG. Halliday nowhere claims that his emerging theory is formally verifiable in Chomsky's sense or even that there is a 'received version' of the theory. Nevertheless, he does contend that if the functions and forms of language are viewed objectively by looking at the empirical reality, the researcher will come to understand why homo grammaticus evolved grammar. Halliday saw the origins of grammar in the behaviour of his son Nigel.
Ontogeny and Phylogeny

For Chomsky, studying the evolution of the language module - considered a cognitive organ like the rest - is about as interesting as studying the evolution of the heart muscle. For Halliday, however, this line of inquiry is the heart, muscle, and sinew of the whole discussion: grammar is an organ which has evolved to streamline communication. ‘The human brain would have been capable of constructing a hundred and one different types of semiotic system; why is it that language evolved in this particular way as a semiotic system with the particular properties that it has? If we examine this question developmentally, we can see that the adult linguistic system is structured in a way which reflects very closely its functional origins’ (Halliday, 1975:8). The functional origins of language are seen in the rudimentary social needs of the developing child and these may be found in Appendix 5.

This possibility that each child’s development or ‘ontogeny’ reproduces that of the species’ development or ‘phylogeny’ has attracted the attention of various authors over the years. Malinowski, for one, was clearly thinking in these terms when he mused that ‘...language in its structure mirrors the real categories derived from the practical attitudes of the child...’ and that ‘...the fundamental outlines of grammar are due mainly to the most primitive uses of language’ (in Halliday, 1973:23). McNeill furnishes some anthropological perspective into the functional precariousness of the newborn:

A newborn baboon, which is not premature, can immediately change posture, locate food, and view the world. Shortly after birth, it can locomote, explore, and play. These activities serve important needs, but a human infant, being more primitive, accomplishes none of these things by itself. Rather, a human baby must indicate to its mother what it needs and its mother must recognize the significance of what the baby indicates. There is a communication problem for newborn homo sapiens that is unique among the primates. (1970:53)

More communicatively dependent than the neonates of other species, the infant evolves a ‘linguaging’ strategy that is intended to be understood in the same way that the evolution of upright gait is considered: both are evolutionary adaptations needed to survive.

Halliday could thus draw upon phylogenetic data in support of his contention that function is a factor of significance in discussing the evolution of grammar. In observing Nigel’s development, he came to believe that in his son’s vocalizations there could be heard the echoes of the earliest vocalizations of grammaticus. ‘We cannot know for certain that ontogeny reflects phylogeny. All we can say is that when we examine how a child learns the linguistic system from the functional standpoint, we get a picture which could be a picture of how human language evolved’ (1978:53); the savanna lies literally in the nursery.
In the seventies he explored the origins and ramifications of this hypothesis. While the emergent theory of functional grammar got its ethnography from Malinowski and Bernstein, it was from Nigel's psycholinguistic development that Halliday found ontogenetic support. In three publications in particular, Exploring the Functions of Language (1973), Learning How to Mean (1975), and Language as Social Semiotic (1978), Halliday distilled what he believed were the six functional intentions of every developing newborn and these are reproduced in Appendix 6. In counterpoint to the purely syntactic universals posited by Chomsky, e.g., structure-dependence, rule cyclicity, and movement, Halliday contended that these operations constituted a more basic set of 'functional' universals (1975:33). In addition, they unfolded in a predetermined sequence in which the last, informative function is the ontogenetic link to the adult's linguistic system (1975:40).

In Phase I, the earliest vocalizations - instrumental, regulatory, and interactional - are not even recognizable as words - they were vocalizations 'entirely of his own invention' (1978:55). The phonological coordinates of these utterances can be barely transcribed and consist of little more than 'postures and prosodic values' (1975:38). These utterances did comprise a rudimentary system but not a language. A semantic system of linked sounds and functions precedes grammar; communication is thus irrevocably semantic before it is grammatical. It is perhaps here that the rift between Halliday's semiotic and Chomsky's syntactic approaches begins to appear. For Chomsky, at least initially, the most interesting facet of language was a genetically predisposed module of syntactic behaviour whereas for Halliday, syntax was a tertiary consideration: 'linguaging' was first and foremost a semiotic system, an evolutionary strategy which arbitrarily linked sounds to meanings for purposes of survival. Before language and syntax there was meaning.

Even though in Phase I, the child's linguistic learning seems haphazard (1975:11) - 'elements of the system come and go; they get learnt and they get forgotten, or else modified and altered' - the child nevertheless demonstrates underlying designs on the world and its occupants but in a very rudimentary way. '[This] system differs from the adult language system in that it has no intermediate level; it has no stratum of grammar...intermediate between the meanings and the sounds' (1975:12). In this phase, there is only one sound equivalent to one meaning, not the multilayered meanings which constitute mature articulation (1978:187). The child's system has only 'sounds' (phonology) and 'meanings' (semology). In order for a vocalization to qualify as an articulation, it must have (i) systematicity,
i.e., 'a constant relation between content and expression' and (ii) functionality, i.e., an articulation 'interpreted by reference to a prior established set of functions' (1975:14). In an important quote, Halliday redefines the semiotic origins of language: '[T]he learning of language will be interpreted as the learning of a system of meanings. A child who is learning his first language is learning how to mean; in this perspective the linguistic system is to be seen as a semantic potential' (1975:8).

At the cusp of Phase II the child continues to explore the functional results of linking sound with purpose. However, the child is impelled out of this hermetic, bi-level world into the second phase (10.0 - 18.0 months) for two principal reasons. One is the fact that the environment is directing more and more information his way. The bi-level system of 'one vocalization=one need' served the child admirably but its delicate weave is being continuously rent by the ever-increasing demands made by peer and parent. The child is no longer enthroned as initiator of all significant exchanges, but now must assume a socially humbler, but cognitively more complicated role as participant. He is now partaking in the 'adoption, assignment, and acceptance of communicative roles...' (1978:56). As his egocentricity is tolerated less and less, the child finds that not only his responses but also his purposes are progressively curtailed by a bi-level system in which one sound conveys only one meaning. The semiotic system of six functions, in Halliday's terminology, is lamentably 'univalent'.

The 'multivalence' of the adult's system, on the other hand - the capacity to convey many meanings simultaneously through one utterance - is the goal toward which the child is being drawn. How the child twigs to the usefulness or necessity of conveying many meanings through one form, or indeed if he ever does consciously realize this, is left unanswered. Vygotsky's theory of the proximal development may provide the key i.e., the tutelage of a mentor. In the event, Halliday suggests that the child makes this leap by learning how to distinguish 'function' from 'use' (1975:78). Perhaps by serendipity, the child intuits that a vocalization may accomplish unexpected results and '[g]radually in the course of Phase II he moves on, through a stage of "each utterance typically one principal function, the other subsidiary" to a final stage of "every utterance all functions". This is the pattern that is characteristic of the adult language' (1975:77). The child has moved, in a sense, from telegraph to switchboard.

Belief in this metamorphosis derives from Halliday's acute observation that Nigel was intelligently manipulating certain prosodic contours of English. When Nigel was merely observing an event his intonation was falling, whereas his requests, intrusions, and demands showed contours that rose.
Halliday calls this observing function 'mathetic' and the intruding function 'pragmatic'. The former is the developmental omega of the instrumental and regulatory functions and the latter arises out of the personal and heuristic functions (1975:28) i.e., they encapsulate the six original functions. The unfolding of these two learning strategies signals the last stages of Phase II and in turn announces the arrival of Phase III, or the foundations of the adult, multivalent system of scales and categories.

Like Halliday, Jean Piaget held that learning was contingent upon interaction with the environment and his research resonates with much of Halliday's insight. Piatelli-Palmarini sums up one of the cardinal tenets of Piagetian 'genetic-epistemology', namely, that the origins of the child's cognitive development lies in interaction with the environment (1980:55):

According to Piaget, the hallmark of cognitive development is a “construction of the new”...Through assimilation, some structure without is turned into some corresponding structure within. Once assimilated, the structure belongs to the subject and can enter, as a component, into more complex constructions, and can then possibly pile up onto the next level according to a combinatorial algebra of constructions of constructions...

Piaget's approach chimes most congenially with that of Halliday here. Language development is not based solely upon an unfolding of internal syntax; it is the product of an even more profound stratum of intelligence based on environmental intelligence: 'For Piaget, language is part of a more general cognitive organization that has its roots “in action and in sensorimotor mechanisms that reach deeper than the linguistic capacity”' (Palmarini,1980:133). These sensorimotor mechanisms bear a striking resemblance to the semiotic sound-meaning dyad of Halliday's theory. Whatever other kinds of 'intelligences' the child is constructing - spatial, musical, kinesthetic, mathematical - the child is inventing a semiotic system out of environmental cues that will eventually evolve into language. The environment becomes first semiotically then linguistically translated. In her book Children’s Minds, Donaldson corroborates in this way:

In the early stages, before the child has developed a full awareness of language, language is embedded for him in the flow of events which accompany it. So long as this is the case, the child does not interpret words in isolation - he interprets situations. He is more concerned to make sense of what people do when they talk and act than to decide what words mean. (1983:88)

The Macrofunctions of Language (4)

In discussing the mathetic and pragmatic learning strategies in which the individual enacts the role of 'learner' and 'intruder' respectively, Halliday is simply buttressing the macrofunctional node on the continuum. In Nigel's mathetic and pragmatic strategies, Halliday sees the origins of the two macrofunctions of adult linguistic systems, the ideational, derived from the mathetic, observer function,
and the interpersonal - derived from the pragmatic, intruder function (1975:78). In converting mathetic to ideational and pragmatic to interpersonal, Halliday is differentiating the child's immature strategies from those of the adult. The six basic functional strategies of the child can be categorized under either the 'metafunctional' mathetic or pragmatic strategies and these two metafunctional strategies merge into the two macrofunctions constitutive of adult language. However, the ideational and the interpersonal are complemented by a third macrofunction characteristic of adult articulation - the 'textual'.

The uniquely Hallidayan concept of text may rank as the most original contribution which Halliday has made to grammatical science, not because the notion of cohesion has not appeared elsewhere but rather because of the importance attached to it in his model. Halliday relates the notion to the works of Bühler and the Prague School linguists (1973:107). By text, Halliday is not referring to the content of the message - the ideational part - or to the role relationships - the interpersonal part - but rather to coherent intelligibility of the message being sent. This third adult macrofunction has to do with the informational principles underpinning social conduct. These are the tacit beliefs and assumptions which allow speakers to send and receive coherent messages. Not limited to any medium or time, its purview is the entire spectrum of written or spoken meaning. It ultimately refers to the way in which an exchange is consistent with the behavioural norms of that group (1973:107). For instance, the morpheme [yes] may at once be a citation in the dictionary (meaningless as an exchange and therefore no text), or it may be the elliptical answer to a question of thirty words and therefore quite meaningful text. Text refers to the speaker's tacit assumption that in speaking, both 'encoder' and 'decoder' share similar expectations about what linguistic structures, social information, and interpersonal assumptions the speakers will draw upon, how this discussion will be carried on, and how it is likely to be interpreted. Intelligible text requires that both speakers tacitly abide by similar logical, social and linguistic principles (1978:60). Together these ideational, interpersonal, and textual macrofunctions constitute 'the abstract functions of language' (in Parret, 1974:93).

It would not be correct to present Halliday's theory too monolithically for the model was constantly being revised in the course of the seventies and eighties and Halliday, as we saw, makes it clear that there is no 'received version' of functionalist theory. The broad strokes of the model, however, are discernible and begin with the cultural node from which interlocutors derive articulate meaning and here correspond to Malinowski's 'context of culture' with Bernstein's sociology supplying the enrichment.
The Uses of Language which originate in the culture are semiotically framed in terms of field, tenor, and mode. Field incorporates semiotic signalling processes involved in the activities, circumstances, and attitudes of the participants. Tenor involves role adoption and assignment. Mode refers to the channels through which communication takes place (1975:131). (The semiotic systems of field, tenor, and mode are not held to be in any one-to-one correspondence with the following sociosemantic networks of transitivity, mood, and theme, nor with the ideational, interpersonal, or textual macrofunctions of language.) Grammar is intentionally fuzzy. The ideational content of linguistic behaviour, the interpersonal attitudes to processes and relationships, and the coherence of linguistic behaviour are all involved in the fields, the tenors and the modes of linguistic communication. A schematic assessment of Halliday's Functionalism might look like this:

<table>
<thead>
<tr>
<th>Malinowski's 'Context of Culture'</th>
<th>Halliday's semiotic network of:</th>
<th>Halliday's sociosematic network of:</th>
<th>Halliday's macrofunctions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Bernstein's sociology)</td>
<td>a. field</td>
<td>a. transitivity</td>
<td>a. ideational</td>
</tr>
<tr>
<td></td>
<td>b. tenor</td>
<td>b. mood</td>
<td>b. interpersonal</td>
</tr>
<tr>
<td></td>
<td>c. mode</td>
<td>c. theme</td>
<td>c. textual</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Uses of Language of Situation</td>
<td>Meaning potential (networks of semantic systems)</td>
<td>Functional components of grammar (macro-functions)</td>
<td>Formal potential (networks of grammatical systems)</td>
</tr>
<tr>
<td>types (social contexts and settings)</td>
<td></td>
<td></td>
<td>Grammatical structures</td>
</tr>
</tbody>
</table>

ONTOGENY
Metafunctional Strategies:
(i) mathetic
(ii) pragmatic

This model would be later even further streamlined as categories (5) and (6) especially came to be reworked as the internal level of formal relations or 'lexicogrammar'. We are now at the most specific end of Halliday's epistemology - where 'grammar proper' begins in the nature of closed and open systems.
Lexicogrammar (5) - (6)

In keeping with his belief that grammar is most realistically encountered as a model of scale and fuzzy categories rather than as a model of components and isolatable strata, Halliday collapses lexis and structure ('taxis') into one. Grammar is henceforth to be understood as lexicogrammar - the 'wording' between the 'meaning' and the 'sounding' to which he referred earlier. In interpreting the relationship between lexis and taxis, there are historically two schools of thought. Chomsky's view of the lexicon, at least in the initial stages of the interpretivism, is representative of that school of thought which considers the lexicon to be a separate compartment in the grammar - the repository of all of the meaningful phenomena whose behaviour fell outside the rules. Halliday's approach, on the other hand, '...considers grammar and lexis are on a 'cline' with no sharp cut-off point, being quantitatively but not qualitatively different' (Butler:128). Meaning is a weave of formal objects and functional intentions. Butler states that for Halliday, '...there is no clear line between semantics and grammar, and a functional grammar is one that is pushed in the direction of the semantics' (1985:xix) and he goes on (1985:59) to outline how lexicogrammar will fit into Halliday's 1973 schema. Three broad categories - behavioural, sociosemantic, and lexicogrammatical - supersede the earlier nodes which are provided here for the sake of comparison:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uses of L</td>
<td>Situation types (social contexts and settings)</td>
<td>Meaning potential (networks of semantic systems)</td>
<td>Functional components of grammar (macro-functions)</td>
<td>Formal potential (networks of grammatical systems)</td>
<td>Grammatical structures</td>
</tr>
</tbody>
</table>

- 'Can Do' behavioural potential realized by
- 'Can Mean' sociosemantics (linguistic behaviour potential) realized by
- 'Can Say' lexicogrammatical potential

It is the 'Can Say' category - the nodes (5) and (6) above - that interests us here and Halliday had sketched its dimensions as far back as 1961. The bedrock of many subsequent Hallidayan concepts may be seen in a publication that year in which the axes of de Saussure, the contextual ethnography of Malinowski, the attitudinal notions of Firth, and his own highly original insights all productively unite. The analysis now moves to the most detailed end of the continuum.

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Scale and Category Grammar (1961)

In discussing the most formal component of the model - lexicogrammar - Halliday begins from the premise that linguistic objects are analyzable in terms of three levels: context, form, and substance.

<table>
<thead>
<tr>
<th>Can Do</th>
<th>Can Mean</th>
<th>Can Say</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(a) context/extratextual features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) substance</td>
</tr>
</tbody>
</table>

[Unless otherwise noted, all references in the following section are from Kress (1976)]. The level of 'substance' in Scale and Category grammar is relatively transparent and refers to the phonic and graphic media in which language is transcribed (1976:53). The contextual construct appears to be the interface between the formal objects of the level just below and the linguistico-behavioural notions described above. If the contextual level is the interface, this formal level is the switchboard, the nexus which relates substantive grammatical objects to the 'doings' and 'meanings' of society above. Great care is taken to describe the objects at this interlevel in neutral terms: items, events, units, and describidenda. The objects - still undefined - at the most formal level of lexicogrammar are ranked as units. These units are subsequently described in terms of classes, structures, and systems (1976:55). Characteristic of Halliday's approach is that all objects at this level have multiple interactions internally in terms of their classes, structures, and systems.

In the 1961 framework form is everywhere considered to be dependent upon meaning and thus there are two kinds of meaning reminiscent of Firth's earlier distinctions: (i) 'formal meaning' and (ii) 'contextual meaning'. Formal meaning, Halliday tells us, conveys information in a strictly internal manner: 'The formal meaning of an item is its operation in the network of formal relations' (Kress, 1976:53). The second kind of meaning does not convey information within the grammatical system in any way but is oriented externally: 'The contextual meaning of an item is its relation to extratextual features' and has been outlined above. Formal meaning is now subdivided into the kind of meaning which obtains in (i) 'closed systems' or in (ii) 'open sets'. Closed systems are those configurations in every language which either do not admit new members i.e., auxiliary verbs, pronouns, prepositions for example in English or do so only with great difficulty. Open sets are essentially the content words of the lexicon. Halliday then relegates the latter and focuses on the patterning of the closed systems. The 'grammar' in 'lexicogrammar' then is properly understood as the behaviours within closed systems (Butler, 1985:16), a model looking like this:
Halliday feels that these categories of unit, structure, class, and system can be justified cross-linguistically (1976:55): 'Why these four, and not three, or five, or another four?', the answer must be: because language is like that - because these four, and no others, are needed to account for the data: that is to account for all grammatical patterns that emerge by generalization from the data. As the primary categories in the theory, they make possible a coherent account of what grammar is and of its place in language, and a comprehensive description of the grammars of languages, neither of which is possible without them. These four categories may now be viewed from two complementary perspectives.

The Paradigmatic Orientation: Grammar as Hierarchy and Length

Halliday’s approach argues, at least initially, in favour of equitable treatment for both the paradigmatic and the syntagmatic orientations. From a paradigmatic angle, grammar begins with relative extension: patterning studied in its most elemental form - the comparative lengths of its units. Units then are simply ‘stretches of language’ of which English has five: sentence, clause, group/phrase, word, morpheme. Notice is served in Scale and Category grammar that the sentence is simply one kind of unit among units of different lengths. Its significance lies only in the fact that it is merely the longest stretch ‘about which formal statement can be made’. Apart from that it appears to be a rather empty concept, concealing more interesting phenomena within. ‘Describing a sentence as a construction of words is rather like describing a house as a construction of bricks, without recognizing the walls and the rooms as the intermediate structural units’ (Halliday, 1985:159). Also left open in the above paradigmatic orientation is the possibility that other languages might not necessarily use the same conceptual units. Relative length appears to be simply one parameter which suits a description of English; however, such a notion might not be appropriate for typologically distinct languages in which the boundaries between sentence, clause, and even word are not so easily identifiable.
The different lengths of each unit determine different ranks. The two extremes of the hierarchy - sentence and morpheme - are simply the longest and the shortest ranks in the hierarchy. Berry provides some guidance remarking that: 'A morpheme has no grammatical structure of its own. 'Having structure' implies that something is made up of things smaller than itself. The morpheme is the smallest grammatical unit and therefore there are no smaller things from which it can be constructed' (Halliday, 1975:93). Since the sentence is constitutive of no higher structure in a formal hierarchy, it is left unanalyzed (although Butler does make brief reference to its 'free' and 'subordinate' constituents at one point (Halliday, 1985:15)).

The Syntagmatic Orientation: Grammar as Distribution and Extension

Grammar may be looked at from a complementary perspective in which formal objects are analyzed in terms of their distributional properties in which considerations of length are not particularly relevant. This perspective is clearly that of mainstream grammatical analysis familiar to traditionalists although its descriptions have shifted over the years. This distributional approach to analysis, however, is understood in terms of structure, pattern, class, and ultimately system. The first and the last concepts in particular have undergone considerable change with the decreasing importance of structure varying inversely with that of system which would come to define the formal half of Halliday's 'Systemic-Functional' grammar.

Structure: Proceeding horizontally, each unit contains patterns of structure. At the rank of clause, for example, the structure being carried is fourfold: (S)ubject, (P)redicator, (C)omplement, and (A)djunct. At the next rank below, that of group/phrase, the structures is twofold: (N)ominal group and (V)erbal group. (The distinction between group and phrase is a technical one: 'A phrase is different from a group in that, whereas a group is an expansion of a word, a phrase is a contraction of a clause' (Halliday, 1985:159)). At the rank of word, the structure carried is threefold: (M)odifier, (H)ead, and (Q)ualifier. A model of paradigmatic and syntagmatic orientations looks like this:

```
Paradigmatic Units                        Syntagmatic Units

  Sentence                                      Sentence
  Clause                                        (S)ubject (P)redicator (C)omp. (A)djunct
  Group                                          Group (N)ominal (V)erbal
  Word                                           Word (M)odifier (H)ead (Q)ualifier
  Morpheme
```

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The elements of structure may be looked at paradigmatically as well. The primary elements of structure at the unit of word - (M)odifier, (H)eadword, and (Q)ualifier - are the secondary structures of the groups above, namely, the (N)ominal and (V)erbal groups. The (N)ominal and (V)erbal groups in turn, are the secondary structures of the primary structures of the clause. Halliday's grammar of rank...is a "consists of" relationship if one is thinking downwards along the scale, and a constituency relationship if one is thinking upwards along the scale. Each unit consists of members of the unit next below and each unit provides the constituents of the unit next above' (Berry, 1975:105).

**Pattern:** Having dissected stretches of language according to structure, Halliday puts the second term 'pattern' under the lens. Patterns are objects which repeat one another in even more microscopically identifiable ways. 'In terms once again of language as activity, and therefore in linear progression, the patterns take the form of the repetition of like events' (in Kress, 1976:59). What constitutes a 'like event' is unclear but Butler makes the connection with the following examples:

<table>
<thead>
<tr>
<th>John</th>
<th>kicked</th>
<th>the cat</th>
<th>rather violently</th>
</tr>
</thead>
<tbody>
<tr>
<td>The old man</td>
<td>has spent</td>
<td>fifty pounds</td>
<td>during the last fortnight</td>
</tr>
<tr>
<td>Everyone in the room</td>
<td>would have made</td>
<td>their excuses</td>
<td>immediately</td>
</tr>
<tr>
<td>Good boys</td>
<td>don't tell</td>
<td>lies</td>
<td>about anything</td>
</tr>
<tr>
<td>My father</td>
<td>was</td>
<td>ill</td>
<td>yesterday</td>
</tr>
</tbody>
</table>

The similarity in syntagmatic patterning shown by these five sentences (and countless others like them) can be captured by the recognition of four basic elements of clause structure, which Halliday labels S(ubject) P(redicator), C(omplement) and A(djunct). (Butler, 1985:18)

'Like events' appear to be nothing more or less than the syntactic slots of descriptivist grammar: the places along the syntagm into which the traditional form classes fit and Halliday's quaternary model of patterns bears more than a passing resemblance to Fries's Nominal, Verbal, Adjectival, and Adverbial categories.

**Class:** Halliday had previously stated that only units at the same rank may be compared in terms of their classes along the horizontal axis. What this means is that the elements of the clause may not be compared with the elements of the group because the two ranks comprise different lengths. Halliday then goes on to say this: 'The class is that grouping of members of a given unit which is defined by operation in the structure of the unit next above' (in Kress, 1976:64). This is rather confusing since the term appears to be cross-appointed, connecting paradigmatically in terms of unit rank and syntagmatically in terms of structural class. However, when it is realized that the terminology used constitutes a perspective on the grammar and not the grammar itself, the problem is resolved immediately. The terms
will vary according to the orientation to a particular problem. Perspective is key once more: primary structures and primary classes refer to nothing more than the same objects viewed from two angles. ‘Primary classes stand in one-to-one relation to elements of primary structure’ (Malmkjaer, 1991:387). Thus, units may be disassembled into primary elements of structure paradigmatically, or primary classes syntagmatically. The essential point here once again is that grammar is perspectival, defined in terms of its hierarchical nature in which units are subsumed within one another based on their relative lengths or defined in terms of its distributional patterns. In its most distilled form, lexicogrammar is length and distribution.

System in Functional Grammar

Halliday now turns to the last of the four broad categories, system. ‘Up to this point the theory has accounted for three aspects of formal patterning: the varying stretches that carry patterns [=units], the ordered repetition of like events that makes up the patterns [=elements of structure], and the groupings of like events by their occurrence in patterns [=classes]. What remains to be accounted for is the occurrence of one [like event] rather than another [like event] from among a number of like events’ (in Kress, 1976:67). This notion appears to be related to Firth’s polysystemic notion of linguistic objects in which systems of various kinds are considered to operate at different points along the syntagm. ‘A system, as the concept was developed by Firth, can be interpreted as the set of options that is specified for a given environment. The meaning of it is ‘under the conditions stated, there are the following possibilities’ (Halliday, 1973:50). Halliday is questioning why it is that ‘like events’ or classes pattern in certain ways. They pattern in certain ways because they comprise even more microscopic systems which have their own internal constituencies. Halliday gives the following example:

If class 1 is the primary class (say of the group) operating at X in (clause) structure, and this has secondary classes of 1.1, 1.2, and 1.3, then 1.1, 1.2, and 1.3 form a system of classes operating at X. (in Kress, 1976:67)

To try to capture what Halliday has in mind, let us examine the unit of clause and take X as the (S)ubject. (S)ubject has the (N)ominal group below it. The (N)ominal group in turn is comprised of the secondary classes of (W)ord: (M)odifier, (H)eaddword, and (Q)ualifier next below it. These last three classes together constitute what Halliday means by a (three-part) system operating at the point in structure known as (S)ubject. Taking the example of These four old mats, the following diagram will attempt to capture what Halliday has in mind here:
What essentially differentiates (M) from (H) from (Q) is the individual distributional qualities and thus the notion of system in Halliday's grammar appears initially to be a fundamentally distributional notion. This concept of syntagmatic system, however, would eventually migrate to the hierarchical axis where it would become the defining concept in the theory (Kress, 1976:xix). System ceased to be associated primarily with the sequential configurations of the syntagm and came to denote the 'non-sequential, abstract, non-physical' relations of the paradigm. Structure has proportionally ceded its preeminence in the theory while remaining associated with the horizontal plane of analysis: 'System and structure are interpretative concepts for generalizing about relations on these two axes respectively. Structures are set up to interpret syntagmatic relations; systems are set up to interpret paradigmatic relations' (Halliday, 1981:13).

Paradigmatic relations in the later theory were considered primary and the locus of meaning within the model (Halliday, 1978:40). Systems became Halliday's 'deep relations' of grammar and these deep relations are irrevocably semantic (Butler, 1985:219). The distributional characteristics of the system along the syntagm came thus to refer to the configurations of meaning throughout the paradigm and the defining feature of a system in paradigmatic grammar is choice. In a transformational grammar, on the other hand '...there is no place for explicit statements of what could have been selected at a given point in place of what was actually selected...[I]f systemic contrasts can be equated with (subconscious) choices made by the speaker...then it is likely that a systemic grammar will offer better possibilities as a model of language processing than a grammar which concentrates almost exclusively on syntagmatic relations' (Butler, 1985:219). In terms ringingly evocative of de Saussure's associative axis and Firth's polysystemic ecology, Halliday makes this concept transparent. Systemic choice is explicit, semantic, paradigmatic, and, interestingly for the purposes of the last chapter, binary:
Let me just define it: a system is a set of options, a set of possibilities A, B, or C, together with a condition of entry. The entry condition states the environment: 'In the environment X, there is a choice among A, B, and C'. The choice is obligatory; if the conditions obtain, a choice must be made...It is equivalent to saying 'if you have selected X (out of X and Y), then you must go on to select either A, B, or C'. The 'then' expresses logical dependence - there is no real time here - it is a purely abstract model of language as choice, as sets of interrelated choices' (1978:40).

There is one final concept in Halliday's model of grammar that must not be overlooked since, in a sense, it is what binds and governs his conception of grammar, the notion of delicacy. Delicacy refers to the degree of detail in any given grammatical explanation (Butler, 1985:19) and may perhaps be clarified by referring to the nominal group above, *these four old mats*. The first three words are all primary elements of the class of (M)odifiers yet they are clearly not interchangeable *these old four mats*. Thus the notion of (M)odifier can be more delicately disassembled by sussing out the distributional arrangements of each lexeme. They then appear as (D)eictic *these* (Q)uantifier *four* and (M)odifier *old* among others. There is really nothing noticeably novel here: each form class has its own distributional properties. However, it is how this notion is utilized that is of significance. For the descriptivists and transformationalists, distributional analyses resulted in constituency trees and phrase markers. For functionalists, however, distributional analysis connects the dictionary to the grammar. Ultimate constituency, in this view, should be correctly termed 'exponence': that form for which no further refinement is possible. It is the last exponent of the grammatical system - the idiosyncratic lexeme. 'Ultimate constituent', 'formative', or 'lexeme' all refer to the same datum except that in terms of the last, an explicit connection between closed systems and open sets is made. 'At the ultimate level of delicacy of grammatical description, the grammar will be linked directly to the data, because the last statement made will specify which item from a given system (subsystem of a system) actually appears in the text' (Malmkjær, 1991:387).

This notion of grammatical delicacy allows Halliday to realize 'the grammarian's dream' - the unification of lexis and taxis into lexicogrammar. Instead of trying to attach the lexicon to a syntactic module as Chomsky had tried (and eventually abandoned in favour of the 'Lexicalist Hypothesis'), Halliday exploited the notion of a seamless conception of grammar in which there are not only the most general connections between social behaviour and formal patterning, but also connections between the formal patterning of closed sets and the open sets of the lexicon. The lexicon is simply the most delicate distributional catalogue of all: 'Lexicogrammar is, in folk-linguistic terminology, the level of 'wording' in
language that comes between meaning and sounding; it is grammar and vocabulary...There is no very clear line between the meanings that are coded as grammatical structures and those that are coded as lexical items; the latter represent, as a rule, the more specific or more 'delicate' options' (Halliday,1975:68).

Summary

The most salient point to note about scale and category grammar - from the point of view of the teacher in the classroom - is that grammar may be usefully construed paradigmatically and/or syntagmatically. To take the latter orientation first, it seems a matter of indifference whether Halliday's or Chomsky's syntagmatic model is adopted since the support upon which the formal side of lexicogrammar as well as generative grammar rests - terminology notwithstanding - is essentially distributional. However, the distributional tool in Halliday's hands is wisely assigned to its proper syntagmatic niche in a restored and balanced model of grammar. The paradigmatic orientation of Halliday's grammar is much more ramified. The behavioural, semiotic, sociosemantic and functional nodes of grammar as outlined in his 1973 continuum provide the teacher with a host of paradigms to consider in the classroom, only some of which will be considered here.

A paradigmatic orientation to grammar is widely ramified since it takes meaning-in-language or, a system of deep semantic relations as its unifying construct. The ensconce ment of meaning-in-language at the heart of a functional-formal model, however, comes at a price. Its gradations necessarily span cultural, semiotic, sociosemantic, macrofunctional, functional, and formal domains - from group behaviour to dictionary entry. The teacher who requires precise formalism ought therefore to realize that the essence of Halliday's model is cline and scale rather than cut and component. Although it was Chomsky's 'immense achievement to show how natural language can be reduced to a formal system', Halliday tells us, meaning-in-language is not susceptible to his applied mathematics. 'When social man comes into the picture, the ordering...and even the concept of rules is seen to be threatened' (Halliday,1978:4). The teacher might therefore consider framing discussions in the classroom either in terms of the 'deep relations' - the behavioural, social, semantic, evocative, relational, scalar aspects of the paradigmatic axis or in terms more appropriate to the distributional surface relations of a model - the patterns, cuts, constituencies and segmentations of the syntagmatic axis. Halliday is really attempting to instantiate de Saussure's coaxial theory.
The functional ramifications of Halliday's model are many and his project has demonstrated the same fecundity in its own functional hemisphere as Chomsky's did in the formal hemisphere of syntactic inquiry. Perhaps the most noticeable development concerns the political paradigms implicated in language discussed from a Bernsteinian vantage point above. In being explicitly political, SF has provided much of the theoretical hardware for the rapidly expanding domain of 'Text Linguistics' and SF linguists are solidly represented in an emerging phalanx of researchers who have made it their purpose to unearth the political weave in the linguistic fabric e.g., Kress (1991), Fowler (1982), Fairclough (1991), and Sinclair and Coulthard (1975). The paradigms of language are enormous - involving the behavioural, semiotic, sociosemantic, functional and formal evocations of his original continuum. For example:

Those children who don't learn to read and write, by and large, are children to whom it doesn't make sense; to whom the functional extension that these media provide has not been made clear, or does not match up with their own expectation of what language is for...Reading and writing are an extension of the functions of language. This is what they must be for the child equally well. (Halliday, 1978:57)

The differences between Halliday's systemic and Chomsky's formal perspective deserve mention and are predictably legion. The salience which he attaches to an environmentalist, 'inter-organic' approach necessarily leads Halliday to question the basic notion of Chomsky's nativist, 'intra-organic' approach - the belief that observed performance is ultimately predicated upon an underlying competence. Halliday rejects the notion for a variety of reasons: such a dichotomy treats language as species of logic rather than the form of behaviour (1973:53); the dichotomy operates at a level of idealization which renders it virtually useless with respect to its functional nature (1973:53); and ultimately a solely psycholinguistic stance is misguided (1978:37).

The significance attached to a lexicogrammatical perspective and its attendant notion of 'delicacy', is worthy of particular note. These two notions do not only interpret the data correctly but also circumvent the theoretical problems which so bitterly and so lengthily exercised transformationalists in the late sixties and early seventies. 'The lexical system is not something that is fitted in afterwards to a set of slots defined by the grammar. The lexicon...is simply the most delicate grammar' (1978:43). Butler relates that transformational analyses are syntagmatic, sentence-based, and disective; systemic analyses are paradigmatic, text-based, and holistic (1985:230). Generative grammar, adds the Systemicist, W. Christie, (1980:4), is not even appropriate for an analysis of performance. Although such a purpose is not one which Chomsky ever intended, it nevertheless resonates with the language instructor hoping to glean something of pedagogical value.
Halliday rejects a formal, transformational, rule-based attitude toward grammar for the reason cited above but is also reinforced by Piagetian and Vygotskian insights from the domain of L1 acquisition theory. In light of his own belief that the child is inventing a socio-semantic system (not a language), Halliday finds Chomsky's essentially linguistic approach misguided. From the perspective of the adult linguistic system, the utterances of the child's sociosemantic system are completely inadequate. Such an approach, for Halliday however, mistakes the means for the eventual end. Chomsky's innatist approach to the child's utterances '...brings out their relationship to the adult forms; but it blocks the way to the recognition and interpretation of the child's own system' (1973:2). The child's speech, whether considered linguistic system or sociosemantic set of functions, is 'coherent, well-formed, and contextually relevant' on its own terms' (1973:45). If the lesson from ontogeny is that developmental level is most appropriately studied on its own terms, then perhaps this metric may be extended to the analysis of the language system itself, involving a focal, particularistic stance with regard to the objects under study. A polysystemic and perspectival approach provides more insight into the multiplicities of grammar.

Finally, Butler remarks that Systemic Linguistics has not attracted much attention outside of its own theoretical arena (1985:77). The resonance characteristic of a fecund theory, however, is there and the monograph by Michael McTear Systemic-Functional Grammar: Some Implications for Language Teaching suggests some wide avenues for further exploration. Although Halliday's model(s) of grammar have come in for their own share of criticism - largely, however, from theorists who are fundamentally in accord with his beliefs - Butler does note (1985:81ff) some inconsistent, if not contradictory positions in the exposition of Systemic-Functional grammar, an occasional lack of explanatory adequacy in certain crucial areas, and a dearth of empirical support for certain claims. Such criticisms nevertheless must be leavened by the evident resonance with which his theories have been greeted and Chomsky's 1972 comment about his own corpus is doubly appropriate here as well. His perspective is very similar to Pike's (1959) expression of the perspectival philosophy. 'Like the water I was contemplating at Niagara Falls, language is at once particle, wave, and field...and depending on which kind of meaning we want to be foregrounded, so our representation of its structure needs to adapt to the appropriate mode' (in Benson,1985:8).
Chapter Five: Perspective(s)

'When one looks back upon it all, one is perhaps inclined to say:
What is it good for? Is it just a game? To the linguist it is more than a
游戏: it is a thing of beauty and wonder, and it needs no more justification
than this. At the same time, with a bit of a sigh, he will say that it can
be of practical value. It has obvious applications to foreign language
teaching and - with great help from the teachers themselves -
these applications are now being exploited. '

(W. Moulton, in Donoghue et al. 1967:84)
The Theoretical Milieu

Numerous authors have made the point that much of the new is indebted to the old, a fealty moreover, that applies equally well to transformationalist (Ross, 1972:311; Carroll, 1973:355; Wilkins, 1972:91; Mohrmann, 1966:108) as to structuralist (Allen et al, 1964). A leading structuralist of the day contended in fact that traditional accounts were in many ways superior to those of his contemporaries (Hill, 1967:13) and Mackey approved highly of the ‘abundant and serviceable grammars of the past’ adding that much of the new terminology was significantly less complete than the old (in Ollner, 1973:6). While these observers were not unaware of the traditional grammarian’s logical missteps (H.B. Allen, 1964:77), his prescriptivism and his subjectivity (Allerton, 1979:9), no less a whilom transformationalist than James McCawley could write in his introduction to Otto Jespersen’s The Philosophy of Grammar that the Dane ‘...was decades ahead of his time in the fields of syntax, sociolinguistics, language acquisition studies, language pedagogy, phonetics, and the theory of language change’ (Jespersen, 1992:1). The point simply bears repeating here that traditional grammarians bequeathed a trove of erudition to the world and illuminated frameworks which constitute the professional reference for linguists and language teachers alike. The ‘new’ and ‘revolutionary’, Miles Roddis points out, was already to be found in significant quantity and of estimable quality in the writings of Jespersen, Sweet, and Poutsma (IRAL, 1968:347).

The framework in the hands of their successors has experienced its share of vicissitudes however. In 1966, the British linguist Angus McIntosh could still write that ‘what is held in common by linguists everywhere is much more fundamental than what they disagree about’ (1966:41). Two years previously, however, the Danish linguist Bertil Malmberg had complained that European and American linguists were scarcely acquainted with one another with the result that their schools were not ‘mutually comprehensible without translation’ (1964:168). Ten years after that, the Welsh linguist Glyn Lewis described a cross-Atlantic gulf of mutual indifference, isolationism, and even antipathy (1974:43). According to the linguist O. Thomas, structuralism was a house divided against itself. Some Bloomfieldians had accepted the compatibility of meaning within the confines of a formal model, others had not (Malmberg, 1964:165). As for the transformationalists, the sequential implosions of their school have been more than well documented in the literature.
The science of theoretical grammar reflected the uncertainty of the times - at least in North America - and this uncertainty owed significantly to the fundamental reorientation to core grammar inaugurated in 1957. Although Chomsky made it clear in 1965 that structuralist thought had much to recommend it (in Bjarkman, 1986:307), the publication of SS and the ensuing debate about its central concept was the catalyst to this reorientation. The thesis in question had been initially and technically expressed as the determination of 'grammaticality' (Chomsky, 1957:13). It was later more philosophically expressed as the 'tremendous intellectual achievement' of mother tongue acquisition (Chomsky, 1967:3). Notions of grammaticality and creativity were thus placed at the heart of the discipline in North America.

Linguists were well aware that in these more specific terms, their discipline was far from monolithic. This is particularly clear in matters concerning core grammar and following is a sample of attitudes toward core grammar. De Saussure, as far as we can tell, conceived of langue as the matrix in which sound and meaning were syntagmatically and paradigmatically interrelated. Beyond these two axiomatic strata, the number of levels varied according to author or school predilection. The traditionalists, Wilkins believed, studied the phenomenon of language with the precepts of morphology and syntax uppermost in their minds (1972:68). J. Lyons, however, believed that the traditional strata were three: phonology, grammar, and semantics (1981:100). The following chart indicates only some subsequent permutations:

<table>
<thead>
<tr>
<th>Linguist</th>
<th>Levels</th>
<th>(in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boas</td>
<td>phonetics (phonology), morphology (grammatical categories), syntax</td>
<td>Kroeber, 1953</td>
</tr>
<tr>
<td>Hjelmslev</td>
<td>morphemes, pleremes, cenematemes</td>
<td>Kroeber, 1953</td>
</tr>
<tr>
<td>Fries</td>
<td>phonology, morphology, syntax</td>
<td>Allen, 1964</td>
</tr>
<tr>
<td>Hockett</td>
<td>grammatic, phonologic, morphophonemic, semantic, phonetic</td>
<td>Allen, 1964</td>
</tr>
<tr>
<td>Harris</td>
<td>phonology, morphology</td>
<td>1951:3</td>
</tr>
<tr>
<td>Chomsky</td>
<td>phrasal, transformational, morphophonemic</td>
<td>1957</td>
</tr>
<tr>
<td></td>
<td>phonological, syntactic, semantic</td>
<td>1965:141</td>
</tr>
<tr>
<td>MacIntosh</td>
<td>phonemic, phonological, grammatical, lexical, contextual</td>
<td>1966:5</td>
</tr>
<tr>
<td>Bolinger</td>
<td>dist. features, phonemes, morphemes, 'constructions', intonational matrix</td>
<td>Michel: 291</td>
</tr>
<tr>
<td>Anthony</td>
<td>sound, grammar, lexicon</td>
<td>1970:3</td>
</tr>
<tr>
<td>Oller</td>
<td>phonological, syntactic, semantic, pragmatic</td>
<td>1973:45</td>
</tr>
<tr>
<td>Spolsky</td>
<td>phonological, grammatical, semantic</td>
<td>1978:2</td>
</tr>
</tbody>
</table>
During the contiguous halves of the sixties and seventies, the TESOL Quarterly and the British Journal of Applied Linguistics were two notable forums for discussions of matters grammatical and their articles not only characterize the fluidity of the discussion but also the significant additions to the model of grammar. As the tide of scholarly interest in communicative language teaching and learning rose in the late sixties, these levels of linguistic description above became tellingly more additive. External and foreign observers surveying the field came to much the same conclusion: consensus did not exist (Light, 1968:219; Carroll, 1971:102; Watts, 1973:7; Girard, 1972:10) and Chomsky, perhaps somewhat wryly, commented on the 'significant' decline in confidence within the psychological and linguistic domains (in Oller, 1973:29). 'Linguists have different notions about what language is, about how it may be described, about what its fundamental units are, about how these are related, and about what processes may operate' (Wardhaugh, 1974:56). About all that linguists agreed upon was that language was systematic (Wilkins, 1972:68).

The Pedagogical Milieu

In light of the intuitive linkage between linguistic theory and pedagogical practice, it is not surprising that the pedagogical discipline has experienced similar uncertainty. De Camp gives an account in the then Current Discrepancy between Theoretical and Applied Linguistics: 'We read the linguists - as soon as we found out about them - and we applied them. As soon as we heard about the phoneme, we started using minimal pair drills. When we discovered the idea of immediate constituents, we added substitution and pyramid drills. When we discovered the idea of immediate constituents, we added substitution and pyramid drills' (1968:4). Terence Quinn however, warned of the temptation for '...practitioners to seek intellectual legitimacy and prestige by claiming descent from the dazzlingly brilliant world of linguistics' (in Jarvis, 1974:332) and Stern complained that the enterprise of language pedagogy suffered from 'oversimplification and primitivism'. '...Anything that shakes us and helps us to rethink, in the light of what we actually see and experience as we teach, can only be to the good' (in Oller, 1973:21) [italics mine]. However, such rethinking involved deciphering the terminology and this was the most polished apple of discord for teachers.

In H.B. Allen's 1964 compendium Readings in Applied English Linguistics various authors examined this problem. Fries diplomatically referred to the 'not always easy terminology of linguists' (1964:44) and G.P. Faust believed Trager and Smith's Outline of English Structure to be 'simply unreadable without training in structural linguistics' (1964:96). The consensus of which McIntosh spoke in 1966 eluded many in 1964. Murguía considers the exchange of traditional for
descriptive terminology has been a problem in itself (in Donoghue:86). The terminology was either too arcane and abstract (Oller:36; ECAL,1975:46) or idiosyncratic to the theorist (Martinet, in Kroeber,1953:576). 'One suspects that the greater the technicality of the issue, the less its likely relevance to language teaching' (Wilkins, 1972:220). With such intradisciplinary disagreement, it is not surprising that Jarvis chided linguists for not having communicated 'a linguistic way of thinking to non-linguists' (1974:350) with Bell in particular finding the terminology of modern symbolic logic to be beyond most teachers (1981:106). Although Roderick Jacobs could point to the 'vast quantities of linguistic facts, generalizations, properties and rules' that were the useful stock-in-trade of the theoretical realm (1969:117), the voluminous nature and ongoing debates engendered for Oller two unwholesome results: theory that was destined to be either 'inapplicable' or 'misapplied' (1973:36).

The tidal onrush to apply linguistics, though, has long since ebbed. While the wave was doubtlessly an exciting one to ride, its trough left a good deal of confusion and disappointment when expectations were not met with results. 'Our field is afflicted with many false dichotomies, irrelevant oppositions, weak conceptualizations, and neglect of the really critical issues and variables' (Carroll, 1971:102) and H.D. Brown, viewing the flotsam and jetsam left behind, found '...no end to the number of linguistic and psychological controversies in second language acquisition' (TQ,1972:263). In a summer issue of TESOL, perhaps as a result of the arrival of distinctive feature theory on the scene, Archibald Hill complained that it was '...impossible to know what is meant by such a term as phoneme, which means quite different things according to who is using it' (1967:18). The same fate, Taylor notes, has befallen Chomsky's competence/performance distinction (1988:88). Rosenbaum referred to those who had the experience but missed the meaning citing the 'disappointing lack of progress' that had been made in showing the relevance of linguistics to teaching (ECAL,1973:256) and Quinn believed rightfully, as it turned out, that '...in 1973 [the] era is viewed as coming to an end. The reality is that linguists seldom have much to say about language teaching these days and language teachers turn to other fields for the stimulus of new ideas' (in Jarvis,1974:329). Diller's assessment was bleak: 'There is no longer any consensus on methods of foreign language teaching' (1978:138) and four years later, Wilkins was bleaker: current theories of language behaviour and learning were in 'a conceptual stone age' (in Crystal, 1982:225).
The reality today, once again, is that of an academic chessboard with various end games. In 1995 '...teachers are pulled in all directions: to focus on the code, on its use, on grammar, on lexis, on meaning, on the book, on the task, on the learner, on the teacher, on society' (G. Cook, 1995:9). With such a perspective in mind, the fundamental questions may still be raised: What can be gleaned from the theoretical discourse? How can theoretical and practical agendas be merged? What is a psychologically real grammar? Thirty years ago, discussing The Promises and Limitations of the Newest Type of Grammatical Analysis, Archibald Hill surveyed the scene and enjoined linguists and teachers alike to become more '...fully conscious of their limitations, and realize that human conditions make absolute and final truth something for another world only' (1967:22).

Theoretical and Applied Linguistics

The business of the theoretical linguist is to describe linguistic systems accurately, exhaustively, and systematically (Allen 1964; McIntosh, 1966; Wilkins 1972; Corder 1973). Being a systematic phenomenon, the theoretical science may be divided into general, descriptive, historical, and applied domains (Donoghue, 1967:85). For the language teacher, however, the descriptive realm of the science is the one which is closest to his pedagogy. The descriptive linguist aims at 'a scientific theory of the structure of human language' (Lyons, 1970:45) and attempts to write a formal grammar of descriptive adequacy (ECAL, 1974:60), where such adequacy comprises the features enumerated in various places throughout this thesis: explicitness, precision, generalizability. Such a grammar must be carefully distinguished from a pedagogical grammar for which other considerations are uppermost, principally applicability, selection, gradation and evaluation. From a distinctly Chomskian perspective, Saporta tells us, scientific grammars serve the important function of delimiting the frontiers of grammatical science: they enumerate the grammatical sentences, provide us with their semantic interpretations, and furnish the structural descriptions of the language (ECAL, 1973:266) and to the criteria of rigour, exhaustiveness, generalizability, and delimitation, Wilkins adds efficiency (1972:216).

The business of the applied linguist/language teacher on the other hand is distinct. The crucial difference between the two lies in their respective aims. For one it is a descriptive grammar, for the other it is a 'pedagogical' grammar and some of the assumptions of the latter are usefully enumerated by Noblitt (IRAL, 1972:315ff). The defining characteristic of a pedagogical grammar, however, is that it is organized from the learner's point of view (ibid:316). The necessary objective of the descriptive linguist - explanatory adequacy - is not sufficient for the applied linguist/language teacher whose aim is practical.
Some scientists have at times helped to interpret the significance of the knowledge they have won and have often filled the double role of both scientist and engineer. But it is the function, not of the scientists but of our professions - the doctor, the teacher, the engineer - to take the knowledge and understanding that has been achieved by science and to explore its usefulness for man. We must not assume or expect that the scientists themselves can or should be able to lead the way in practical applications of the knowledge of their science, or even to take the responsibility for explaining its practical significance’ (Fries, in H.B. Allen, 1964)

The language teacher has often been considered an 'applied linguist' although this sense is somewhat stigmatized in the literature. The term 'Applied Linguistics' dates traceably to the 1940s but in the 1990s, Margaret Rogers states, it remains definitionally elusive (IRAL, 1988:1). First used to describe a post-secondary programme in Britain in 1956 (G. Cook, 1995:9), AL sought to utilize the insights of the descriptive science toward practical ends, one of which, naturally enough, was first or second language pedagogy. Gradually however, the term became synonymous with professional language teaching, an equivalence that, as a multitude of authors has pointed out, is problematic for several reasons. The AL label, Stern contends, is a misnomer if it is promoted as the scholarly underpinnings of language teaching alone (in Donoghue, 1967) for the sub-domains of descriptive linguistics invite many other applications as well: telecommunications, speech pathology, and machine translation, etc.

Some contemporary commentators have, if not condemned this equation outright, found even the term in the sense just described controversial, since it implies either a relationship of theoretical dominance or the unison of aims, prerogatives, and/or assumptions. Bugarski for one, believes that AL does not even merit a separate domain, its borders determined entirely by the needs and dictates of the applied domains. It '...does not seem to exist as a distinct and coherent field of study' and is little more than '...an external orientation within the study of language: ...[neither] the name of a motivation, nor of a separate field of investigation' (in Tomic, 1987:4). Van Ek has underscored the numerous controversies, misfirings, and generally inconclusive results of various 'applications' and argues that AL be understood quite generically (IRAL, 1971:333). Perhaps the most congenial definition of AL has been that recommended by S. Pit Corder, for whom AL is 'the ongoing collaboration between a linguist and a specialist in another field' (ECAL, 1973:282). It is the definition which will be adopted here.

The sub-domain of language teaching, however, has tremendous latitude. At the very least, its purview comprises the methodics of language teaching which is, to quote Halliday once again, '...that domain where linguistics and teaching fuse'. The 'step-before' perspective which has been the leitmotif
of this thesis should be borne in mind in this connection. (Thus, the Contrastive Analysis hypothesis, for instance, will be valued principally for what it first tells the teacher about the phenomenon he proposes to teach rather than for what it may do to enhance learning). Other authors have suggested a variety of terms since language pedagogy is already vaguely cross-referenced in many minds with language learning; pedagogical linguistics, or linguistic pedagogy are possibilities to refer to the theoretical preparation and Mackey has suggested the term 'Language Didactics' (1961) with Girard proposing its adoption (1972:14). It will ultimately be up to instructors to determine the preferred emblem of a component which is beholden neither to the 'pure' nor to the pragmatic science.

The writers of the Edinburgh Course in Applied Linguistics e.g., 1974:65, have noted that conceptual frameworks are not necessarily interchangeable - in particular those of first and second language acquisition. Such a constituency, bearing this in mind, has already been appropriately called 'Educational Linguistics' - understood to be a sub-component on par with the other orientations of the theoretical discourse. A model, with room for many other applications, might look like this:

<table>
<thead>
<tr>
<th>Educational Linguistics</th>
<th>Speech Pathology</th>
<th>Cryptography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Teaching</td>
<td>Language Learning</td>
<td>...</td>
</tr>
<tr>
<td>L1 L2</td>
<td>L1 L2</td>
<td>Lexicography</td>
</tr>
<tr>
<td>'Methodics' 'Didactics'</td>
<td>Methodology</td>
<td>Information Theory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Translation</td>
</tr>
</tbody>
</table>

Applied Linguistics is here understood then to be an external orientation of the science of descriptive linguistics. Within this domain, Educational Linguistics is a part. The lefthand border of the frame, especially as regards the classroom, is best conceived of as a permeable border with pedagogy. Educational Linguistics is thus considered dependent upon the two cornerstones of its name.
Relating Educational and Theoretical Linguistics: Four Approaches

The issue at this juncture concerns the formulation of a framework to relate Educational and Theoretical linguistics. The 'literature of linkage' - which has been only partially reviewed above - is enormous. Apart from affirming the inherent appeal of the undertaking, a lengthy list of authors who have opted for one approach or another is not envisaged here since as was pointed out in the first chapter, inventories offer little or no perspective. There appear to be three vistas from which to view the relationship - isomorphically, allomorphically, and epimorphically - based on the assumption that while the objects are the same, the objectives of each discourse are distinct. One aims at a scientific knowledge, whereas the other aims at practical knowledge (although not to the exclusion of the theoretical formation).

(i) Isomorphism

An isomorphic stance holds that the objects and objectives of theoretical and educational linguistics are identical. Comparatively few authors have stood under this banner but those who have, it seems, have been indicted for their naivete. While Wilkins does not support such a stance, when he states that linguistics and language teaching have the same subject matter (1972:215), he provides the essential starting point for adherents of this approach. The belief is that the perspectives, approaches, operations, and constructs of the one domain can be reflexively applied to the other and Quinn summarizes the ethos of this approach: 'What is valid in linguistic theory must also be valid in language teaching'. This 'Principle of Transfer of Validity', he hastily adds, is 'an unjustified logical leap' and to be scrupulously avoided (in Jarvis, 1974:331). Carroll describes it in another way when he notes that it has been '...assumed that if one is able to do a thorough description of the forms of a language, one is by that very fact able to teach it. These assumptions are obviously ill-founded, for there have been outstanding language teachers with no knowledge of linguistics' (Carroll, 1959:192).

The misapplications which have resulted militate against such an approach and it appears that the Audio-lingualists have drawn the most fire for 'unthinking' linkages. A most caustic assessment of the descriptivists' contributions to pedagogy may be found in Ralph Long's Linguistics and Language Teaching: Caveats from English in the Modern Language Journal. Fries, Hill, Roberts, Francis, Trager and Smith in his opinion have misguided attempts to jettison the insights of a tradition of 2,000 years only to substitute mistaken analyses of their own. The determination to press syntactic phenomena into the morphophonemic mould of the day (Trager and Smith), and a reflexive desire to apply Audio-lingual orthodoxy seemingly at any cost (Francis and Hill), convinced Long that the project of these 'New
Linguists' was unsalvageable - and the examples which he cites are admittedly sobering (1961:151ff). (Of historical interest is his favourable view of '...the most recent types of Bloomfieldian analysis - the transformational grammar of Harris and Chomsky' as an auspicious remedy to descriptivist excess). Wilkins in a similar anti-descriptivist vein cites the attempts of R. Morton who attempted to sequence his teaching materials in a manner identical to the established orthodoxy of the structuralist school at the time: teaching which proceeded in theoretical lockstep through a phonetic, phonological, morphophonological, and syntactic continuum (1972:227). Although the listening-speaking-reading-writing sequence may be the natural order of acquisition, Ross feels that such a theoretical sequence is demonstrably inapplicable to the pedagogy (1972:308ff). Otherwise valid tenets, Wardhaugh notes (1974:165) ought not to be unthinkingly applied in the practical domain.

The linguist William Bull considered the reflexive transfer of Bloomfieldian phonemics to language teaching little short of 'disastrous' (in Jarvis,1974:330) an estimation with which Spolsky concurred: the application of this principle to the teaching of reading in particular, was an unmitigated blunder (1978:2). Wardhaugh, on the other hand, finds very little substance to the claim that it is a linguistic method:

In essence, the method entails little more than the presentation of regular phoneme-grapheme, or sound-spelling, reading texts, in many ways a kind of neo-phonics. The material developed by the followers of Bloomfield and Fries reflects the concern: these materials give no indication that the possible linguistic contribution to reading involves anything more than the systematic introduction of the regularities and irregularities of English spelling. There is, in fact, scarcely more than an occasional passing reference to any other than this one solitary point that linguists have made about English. (1974:46)

There is much that is purely marginal in linguistic theory. The Audio-lingualists were not the sole recipients of the criticism, however, and Bell describes a glaring misapplication of transformational theory to the teaching of Italian (1981:106) and any teacher who attempts to use Chomsky's morphophonemics in teaching is in an 'absurd' situation: 'Wherever linguistic analysis contains [abstract] forms that have no direct realization in utterances in the language, teaching cannot follow' (Wilkins:225).

(ii) Allomorphism

This perspective belongs to those language teachers and linguists who maintain that the objects and objectives of theoretical and educational linguistics are mutually exclusive. Mackey, perhaps thinking in terms of success, comments soberly here that '...few linguistic theories have been applied to anything' (in ECAL,1973:248). Those which have, Bell adds, thinking here in transformational terms, are '...no more than misunderstandings or trivializations' (1981:107). Although a growing number of people believed that a linguistic description was of little help in learning the language, others have taken the next
step and stated that linguistics is of no help at all an approach that has been referred to in the literature as the 'Mugwump' alternative. Total allomorphy dissolves the relationship altogether and is the logical extreme of its isomorphic counterpart. While it is definitely the stance of a minority within the discourse, its assumptions bear considering if for no other reason than Bolinger's acute observation (1972:117): 'It is sobering to remember that human beings are capable of learning a second language with no formal guidance whatever, and linguistics is as capable of being dispensed with as anything else if it cannot make a reasonable bid for attention'. Politzer supplies some philosophical ammunition believing that '...the very concept that application consists of extending theoretical principles to practical situations is an oversimplification which is in need of reexamination' (1968:152). Jakobovits is concerned by 'the tyranny of irrelevant expertise' and questions even the most tenuous linkage of educational with theoretical linguistics: '[T]o expect research in or insights from linguistics and other scientific descriptions to solve our problems represents a dangerous form of reductionism - the view that the problems of an applied field can be reduced to those of a theoretical field' (in Jarvis, 1974:332). The most notable proponent of absolute allomorphy, however, is Geoffrey Sampson who believes (1980:10) that linguistics has no contribution to make whatever 'The many people who claim that it has seem to me to deceive themselves and others'. It is difficult to find any other statement anywhere which frames the belief so starkly. It is nevertheless important to distinguish those who adopt such an uncompromising attitude from those who, equally disillusioned by the results of well-meaning but incautious applications, do not therefore insist upon diametrical otherness.

(iii) Epimorphism

An epimorphic approach may be characterized as a Janus-like stance in which the two disciplines are considered to be distinct but nonetheless mutually enriching (Oller,1973:6; McIntosh,1966:41; Bolinger,1972:109; Spolsky,1978:3). While Stern believes it 'a mistake to identify language teaching with applied linguistics', he does not follow Sampson down the road to total irrelevance, however; language teaching does overlap linguistic theory (in Donoghue,1967:91). Mackey expresses the epimorphic approach most clearly of all:

The problems of language teaching are central neither to psychology nor linguistics. Neither science is equipped to solve the problems of language teaching. The only sensible solution is the elaboration of the science of language didactics starting from a synthesis of the relevant findings in the appropriate fields. (Mackey, in Oller 1973:13)
The theoretical linguist furnishes the descriptive adequacy to undergird the theoretical practice. 'Linguistic knowledge...has always been fundamental to language teaching' (Corder, 1973:284) and thus it is the linguists who are competent to write these grammars (Mackey, 1961:251; Wilkins, 1972:216; Wardhaugh, 1974:10). However, the immediate caveat of Bell is important: 'The linguist can properly advise on what can be taught - the content of the course - but, as linguist, has no special qualification to advise on how the teaching should be done; the pedagogical must be distinguished from the descriptive grammar' (1981:96). The linguist is outside his competence in matters of the classroom.

The adjectives which have been used to characterize previous attempts at this relationship - 'disappointing', 'inadequate', 'specious', 'irrelevant', 'unsound', 'limited', 'inaccessible', 'simplistic', 'marginal', 'misleading' - are indeed sobering. Yet it can be argued that this dark litany has been the result of an underlying isomorphism. Wilkins has thus suggested an approach in which the epimorphic relationship between theoretical and educational linguistics can be characterized in terms of 'insight', 'implication', 'application', and, tellingly 'non-application' (1961:221ff). This approach uses a sliding scale to conceptualize the relationship based on their connection with the 'decision-making process' in syllabus or classroom. Non-applications are simply misguided or misconstrued. Applications '...add scientifically to the information we put in language teaching materials' and he cites the Contrastive Analysis hypothesis as one hypothesis which has shown promise. Implications '...are on their way but a long ways off'. The most appealing rubric - the insight - is clearly what Wilkins has in mind for the beginning researcher. 'By "insights" I mean linguistic notions that increase one's understanding of the nature of language and consequently of the nature of language learning. They do this without necessarily providing specific points of information that can be built into language teaching' [italics mine]. From this utilitarian perspective, the realities of the classroom entitle the teacher to an autonomous project (Jarvis, 1974) based on his or her pragmatic needs (ECAL, 1973).

The observation that the pedagogical preoccupations in the classroom - selection, grading, presentation, and practical evaluation of materials - are different from those in the library is self-evident to any practitioner. 'The safest course is... the eclectic one in which the individual teacher uses what is best wherever he finds it...' (Wardhaugh, 1974:127). An 'eclectic' attitude, of course, can be little more than an anodine or the slipshod approach that Light (1968:219) pointed out in the first chapter - little more than a farrago of theoretical snippets. The dangers of eclecticism for Diller are inconsistency and wooly-
-mindedness (1978) while Quinn worries that the term shades into 'ecumenism' - a belief that any discipline can be made relevant to language teaching. Widdowson, Bolinger, Sledd, Quinn, Wilkins and others point to the dangers of dilettantism and/or adhockery as problematic issues for the language teacher. Although the teacher might feel insecure about a 'pick and choose' approach to the pedagogy, such an approach, provided that it is can in some way be justified, is not unsound either theoretically or practically. McIntosh, for one, sees nothing slipshod or unprincipled about basing substitution exercises based on tagmemic models, expansion exercises on IC analyses, and/or negative and passive constructions upon a transformational framework (1966:3). Gefen (1966) finds a principled eclecticism in pedagogy 'all to the good': The parsing of the traditionalist, the completion and substitution drills of the IC analyst, the substitution and correlational exercises of the tagmemicist, and the conversion, expansion, and reduction strategies of the transformationalist are fruitfully combined in optimal language teaching. A theory-driven, eclectic approach has virtually universal appeal in the literature (Van Buren, in ECAL, 1974:293; Robinett, 1973:434; Light, 1968:230; Allen and Widdowson, ECAL, 1975:50).

Part II: Questions
(1) What is Grammar?

In the absence of a distributional awareness, grammar is for many a rote, fusty, and an irremediably dry undertaking. Yet Widdowson, in typically insightful fashion (1990:86ff), identifies its intrinsic appeal for the teacher: 'Grammar is not a constraining imposition but a liberating force: it frees us from a dependency on context and the limitations of a purely lexical categorization of reality...Grammar is a device for indicating the most common and recurrent aspects of meaning which it would be tedious and inefficient to incorporate into separate lexical items...Grammar simply formalizes the most widely applicable concepts, the highest common factors of experience: it provides for communicative economy'. In chapter four Christie had outlined a traditional approach to grammar study in terms of a perpendicular continuum between meaning to sound (1980:37) in which a sentence, for example, can be progressively disassembled into its smaller and smaller constituents of meaning. However, such a depiction leaves the impressions upon the reader that meaning-in-language is a directional rather than permeable notion. To convey the same model this time in a horizontal manner is problematic as well since if anything such a rendering implies that meaning-in-language i.e., semantics, is just one of a number of discrete strata.

<table>
<thead>
<tr>
<th>MEANING</th>
<th>Semantics</th>
<th>Syntax</th>
<th>Morphology</th>
<th>Phonology</th>
<th>Phonetics</th>
<th>SOUND</th>
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At the very least, given the phonological implications of Jakobsonian theory, the problems with its discrete syntactic construal in generative theory, and its thoroughgoing pervasiveness in systemic theory, semantics should be better construed as the circumference of any model.

The question of meaning-in-language and its formal placement ought perhaps to be understood now in terms of a fundamental dichotomy which appears never to have been questioned. The first is formal. For Fries '...the grammar of a language consists of the devices that signal structural meaning' and his definition underscores its formally configured networks. The second, equally important component of grammar which the descriptivists relegated, is the semantics of formal systems - the meanings that exist beyond the structural joints of the system. Thus the cardinal distinction to be made is one between the 'closed' system and the 'open' (=lexical) set. What most linguists agree on with respect to grammar proper is outlined by W.N. Francis:

When the grammarians looks at English objectively he finds that it conveys its meanings by two broad devices: the denotations and connotations of words separately considered, which the linguist calls "lexical meaning", and the significance of word-forms, word-groups, and arrangements apart from the lexical meanings of the words, which the linguist calls "structural meaning". The first of these is the domain of the lexicographer and the semanticist, and hence is not our present concern. The second, the structural meaning is the business of the structural linguist, or grammarian. (in H.B. Allen, 1964:77)

This involves a mental picture of a pedagogical grammar not as a continuum but rather as a field of meaning whose polar ends are lexis and taxis, to use Halliday's terminology. These two divisions of grammatical science are the twin bases of any grammatical system (McIntosh, 1966).

The corroboration for this basic distinction may be found in considering the difficulties encountered and the conclusions reached by various theorists in attempting to formally circumscribe semantics. TG had eventually to acknowledge the lexicon as one of the twin pillars of the base component along with the categorial. The first would handle the idiosyncratic, maverick elements utilized within grammar whereas the second would concern itself with the predictable algorithms of grammar. The lexicon, Girard agrees, '...hardly lends itself to structural treatment' (1972:60) and for Wilkins (1972:112) and Palmer (1972:101), the separation of lexis and grammar is a fact. Halliday's lexicogrammar is an explicit acknowledgement this basic dichotomy: lexis is simply the most delicate extrapolation of taxis. Studies in lexical semantics suggests that the lexicon is not in reality as unstructured as it may seem to those preoccupied with other matters, however. It may actually be conceptualized in terms of lexical fields and paradigmatic associations of hyponymy, incompatibility, and antonymy (Palmer, 1972:201).
The status of phonetic science - the sonic substrate of the model - is somewhat indeterminate. For McIntosh, the basic dichotomy is between form (linguistics) and substance (phonetics). In keeping with the preeminence which the latter has always maintained in British theory, phonetic science is considered a pillar of linguistic science with grammar and lexis but two components of the other pillar:

In grammar, and lexis, we account for the meaningful contrasts in the language. In phonetics we account for the nature and production of the sounds. What is needed ... is a discipline that can state which are the sounds used in the particular language as exponents of all such contrasts; one that can link substance to form. This discipline is phonology. Languages exploit their phonic resources in ways that are too complex to allow us to match phonetic statements directly to grammatical and lexical statements; the bridge is provided by phonology. This is why phonology is where linguistics and phonetics meet. (1966:24)

The evolving model, then, consists of sounds on the one hand and meanings on the other united by a phonological bridge. Mackey, once again (1961:77) sums up the foregoing components in a model which might serve the language teacher well in conceptualizing his art: 'If we add together the elements in all these systems - phonetics, grammar [taxis], vocabulary [lexis], meaning [in-language] - we still do not get a complete picture of a language. For a language is not a group of these systems; it is a system of them - a system of systems. Many points in each of these systems are related to points in the other three systems.' His conception of grammar '...functions as a whole whenever a person finds himself in a situation which requires speech, when he makes conversation, gives orders, argues, or relates an anecdote'. His view of language is one constituted by four interrelated sub-systems:

- semantic system
- grammatical system
- lexical system
- phonetic system

This model does incorporate many of the insights and conclusions derived in the foregoing discussions.

The fundamental criterion of division between *lexis* and *taxis* (grammar) is finitude: 'Where the choice is limited to a finite number of alternatives we are said to be dealing with closed systems' (Wilkins, 1972:70) and to make this more crystalline, Bell provides a clarifying analogy: 'Typically, the linguist sees language as a closed system - like those of mathematics, chemistry, symbolic logic - internally consistent but insulated from the environment in which it occurs. The numbers of mathematics, for example, have no external meaning. They mean the same whether they refer to atoms, human beings, stars or whatever' (1981:19). This seems to be what people frequently mean when they talk about
'grammar'. Lexis, or the province of open systems, following Allerton, is the study of the lexemes of the language, their phonological form, their morpheme structure, and their meanings.

The boundary between lexis and grammar, is however, far from clear. Firstly, many grammatical categories have fairly concrete lexical meanings e.g., plural, past...[and] secondly, lexis is said to study particular facts of the kind that go into a dictionary, but some patterns above the word level are fairly idiosyncratic (1979:47)

With such a model proposed, there are two points which require mentioning. It seems unimportant whether the phonetic or the semantic component is considered primordial; both are best construed as coeval. The place of meaning-in-language is rather problematic however.

As semantics is understood to be the pervasive concept of the model, it is only poorly conceptualized as a square in a model. Meaning-in-language must be considered more the circumference of the model rather than a component within that circumference. The adoption of this fourfold system thus leaves something to be desired but what the model lacks pictorially it makes up for artifactually and intuitively. In terms of the first, it incorporates both the truth of de Saussure's belief in sound and meaning as the primordial substrates, and the truth of Hockett's dualistic design feature of language. Its lexical and grammatical antipodes correspond to Halliday's insights but also point to a reality familiar to all language teachers. Students arrive in class with the tacit understanding that there will be sound and possibly some meaning in the classroom. That they come with both a formal and a lexical resource - a grammar book in one hand and a dictionary in the other - affirms the intuitive rightness of the model.

What is Fuzzy Grammar?

The observation that the foreign language teacher must keep in mind here is de Saussure's foundational belief that the essence of language as system is interrelation. This results necessarily in what has been called fuzzy grammar suggesting that Halliday's ethnographic perspective of language as a continuum of functional to formal operations was fundamentally correct and that Hockett was too when he fought against the suzerainty of the 'well-defined' grammatical model in the late sixties and early seventies. A 1997 definition of language is similarly construed. It affirms the intricacies of grammar which it says can be viewed variously: as '...a genetic inheritance, a mathematical system, a social fact, the expression of individual identity, the expression of cultural identity, the outcome of dialogic interaction, a social semiotic, the intuitions of native speakers, the sum of attested data, a collection of memorized chunks, a rule-governed discrete combinatory system, or electrical activation in a distributed network' (G. Cook,1995:4)
Internally, the borders of fuzzy grammar are necessarily indeterminate. The original legislated segregation of the levels seems to have been mandated for several reasons but principally as a result of Hockett's dualism - sound and meaning, Wardhaugh notes, are conceptually different things. A separation of the levels also avoids circular definitions and promotes 'artifactual' clarity. The descriptive linguist artificially separates the strata of language so that they might be more minutely studied as McIntosh suggests:

The facts of language are such that we must proceed by a set of abstractions at several levels at once, all constantly interrelated but each level having its own conceptual categories. These categories enable us to arrange systematically the mass of events constituting a language (McIntosh,1966:5)

As regards Chomsky, Roderick Jacobs considers his distributionalist framework, i.e., that syntax was to be held separate from semantics, a 'holdover' from his structuralist days (1969:117).

For the language teacher, linguistic considerations notwithstanding, a conception of grammar as fuzzy appears realistic on balance, keeping in mind that artifactual separation of the levels is a procedural necessity rather than a reality required by the phenomenon itself. The mind cannot encompass itself and an artifactual approach invites transparency of presentation in which a problem is held up in isolation and clarity. Yet the language teacher should also be aware that linguists have concluded that the system is not made up of discrete strata but is rather a 'system of systems' to use Wilkins's terminology with multiple interfaces, reflexes, and intertwined realities.

If we proceed in terms of conventional 'levels' of analysis, what the linguists have said in this connection is of interest. Rutherford, for example, states emphatically that the strata are interwoven: phonology cannot be divorced from syntax and syntax may not be separated from semantics and he speculates on an intermediate realm of 'semantax' (1969:143). R. Jacobs (1969:117) and W. Bennett (1974:161) agree: semantics and syntax/form are interdependent. Wilkins believes also that for the linguist, the distinction between morphology and syntax is 'largely artificial' (1972:68). That syntax is 'dependent' upon phonology is a given for Hunt (in Allen,1964:375) and that morphology is inextricably intertwined with syntax is affirmed by Faust (ibid:96). For Wardhaugh, the maturation of TG in the seventies permitted teacher to see the fundamental interdependence of grammatical strata: 'No longer are phonological, grammatical, and semantic systems discussed as though they were independent of each other' (1974:119). McIntosh conceives of phonology as the conceptual bridge between the linguistic and the phonetic sciences (1966:24) and Wardhaugh has this to say here:
No more than a very weak case can be made for teaching phonology as a part of language which is somehow separate from syntax and semantics. Note that the separation of syntax, phonology, and semantics in a generative-transformational grammar is acknowledged to be an artifact of presentation, not one of theory as it was in structural grammar. (Wardhaugh, 1974:168)

For these authors, there is nevertheless something irrevocably permeable about the phonological stratum, this pervasiveness being a point upon which Wilkins (1972) elaborates: 'Phonological rules apply stress patterns to morphemes, words, and sentences, reduce vowels, and produce vowel and consonant alternations...'. This interrelatedness has given rise to a science of interlevels - 'semantax', 'morphosyntax', 'morphophonemics', and of course 'lexicogrammar' to name some terms that have surfaced at various moments in the readings.

Suggestions for future research into these interstratal realities have been offered in Wardhaugh and Brown’s 1976 Survey of Applied Linguistics. Awareness of the manner in which phonological, morphological, syntactic, and semantic phenomena all intertwine in language is considered essential for the student's ultimate mastery of the language. Awareness of this grammatical tapestry must therefore form part of the teacher's prior competence. Following Wardhaugh (1976), no longer should a syntactic construction such as Mary bought a cake be discussed in isolation. Instead it must be related to its morphosyntactic variants e.g., Mary's buying of a cake or Her buying a cake. Some insights into the complex area of fuzzy grammar are offered in Appendix 6.

What is a Focal-Peripheral Approach?

If the notion of 'fuzzy grammar' is accepted by the language teacher, what follows from this is a 'focal-peripheral' attitude in which the reality of the traditional stratum is defined in terms of its 'best cases' with the peripheral realities being those formal problems which can be viewed from complementary perspectives. Mackey's 'system of systems' described above would therefore have to be elaborated so as to include other possible interfaces.

![Diagram of linguistic systems]

- **semantic system**
- **grammatical system**
- **morphosyntax**
- **lexicogrammar**
- **morphophonemics/morphophonology**
- **lexicographic system**
- **morphological system**
- **phonetic system**

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A focal-peripheral approach, moreover, bears some resemblance to Chomsky's most recent theorizing as Rutherford and Sharwood-Smith point out. UG, they relate '...consists of a highly structured and restrictive system of principles with certain open parameters, to be fixed by experience...The (relatively unmarked) core is supplemented by a marked periphery containing language-specific rules...' (1985:277). The notion of fuzzy grammar as focus-periphery also finds some resonance in Eleanor Rosch's theory of prototypes described in Cognition and Categorization (1978:35) [italics mine]:

In terms of the principles of categorization...cognitive economy dictates that categories tend to be viewed as being separate from each and as clear-cut as possible. One way to achieve this is by means of formal...criteria for category membership...Another way to achieve separateness and clarity of actually continuous categories is by conceiving of each category in terms of its clear cases rather than its boundaries...

The elaboration of lithic indeterminacy clearly requires much more research. Nevertheless, a 'fuzzy-focal' approach would seem to be recommended in the foreign language classroom.

What is Binary Analysis?

An emergent theme in the foregoing chapters is one which Derek Bickerton in his book Language and Species addresses in passing - the dualistic nature of our thinking. 'The first step we take in dealing with almost any area of knowledge is to divide its subject matter into two parts: Good and Evil, Mind and Body, animate and inanimate...The fundamental role of dichotomy in human inquiry could well have the same source as the binary properties that are built into so many aspects of language structure: antonym pairs, syntactic structure, predicability trees and the lexicon in general' (1990:223). It is not so much that duality is 'built in' to various aspects of language structure; it is one of the defining features of the articulate system of homo loquens. In the linguistic literature, this characteristic is referred to as the 'duality of structure' or the phenomenon of 'double articulation' and most clearly enunciated by Charles Hockett in his article entitled The Origin of Speech. The last of thirteen defining characteristics which differentiate human from animal communication, the duality of articulate communication was described in terms of one meaningful, one meaningless substrate. Words - meaningful events - come from a very small stock of sounds 'which are in themselves wholly meaningless' (in Wang, 1982:7):

This duality of patterning is illustrated by the English words 'tack', 'cat', and 'act'. They are totally distinct as to meaning, and yet are composed of just three basic meaningless sounds in different permutations. Few animal communicative systems share this design-feature of language - none among the other hominoids - and perhaps none at all.
The duality of language is implicitly recognized in Christie's model described above: at one end are the emic realities, at the other the meaningless, etic building blocks which compose them.

Lyons looks at the notion in these terms (1970:12): "By duality of structure...linguists refer to the fact that in all languages so far investigated, one finds two levels of structure or 'patterning'. There is a primary level composed of meaningful units; for simplicity, let us call them words. And there is a secondary level, the units of which themselves have no meaning...the secondary units of spoken language are sounds'. The meaningless sonic substrate of language may be usefully compared to de Saussure's 'tranches de sonorité' or acoustic sound images. For de Saussure, sound acquires meaning only when it has been united with a concept in the mind of the speaker (CLG, 1988:66). These sounds form the basis of the meaningful phonemic inventories of the world's languages. This relationship between sound and meaning is considered by Hockett to be a 'design feature of human language'. The point here is that 'duality of structure' is a definite contour of the psychologically real.

Other writers have shown a similar predilection in their own analytic spheres. McIntosh conceived of grammar as divided between two grammatical units, the contextual unit (the sentence) and the lexical unit (the word) and held them to be universal units of grammar (1966:7). In this universalist vein Diller notes, all languages exhibit relationships such as subject and predicate (1978:30) and '...if nouns and verbs are the most basic elements of syntax,' Bickerton asserts, 'then predications is its most basic act' (1990:59). This grammatical dyad of noun and verb and their interrelations relations has been discussed since at least the times of the ancient Greeks who speculated as to its connections with logical categories (Bolinger, 1972:109). The noun and verb distinction may not in fact be universal, Chafe points out, but it is nevertheless a pervasive construct 'common to all human experience' (in Donoghue:75) as the mind appears to frame its experiences in the world in terms of object and event. Grammarians have merely codified this experience nominally and verbally.

Allen informs us that the eight basic tense relations in English can be framed in terms of a 'three dimensional system of binary contrasts: each tense unit is either 'present' or 'past'; either 'continuous' or 'non-continuous'; and either 'perfective' or 'non-perfective'...(ECAL, 1975:30). Later in the same volume he and Widdowson note that the premises of certain major theories are implicitly based on this notion: both Bloomfield's theory of Immediate Constituent analysis and Fillmore's Case grammar by way of exemplification (ibid:56, 69). Allerton cites the opinions of Wells, Trager, Smith, and Gleason who have all adopted this dualism in linguistic analysis either implicitly or explicitly (1979:120).
In terms of the authors with whom this thesis has been most concerned, we may judge to what extent dualistic analyses are prevalent. De Saussure, according to Blache, '...tended to think in terms of dichotomies' (1978:29) and Jakobsonian theory is predicated upon such an approach:

The basic idea behind the distinctive feature concept such as it has been worked out by Jakobson-Fant-Halle is that the receiver of the message, when listening to the sound wave, is confronted with a two-choice system and consequently has to choose either between two polar qualities of the same category (grave/acute, compact/diffuse) or between the presence or absence of a given quality (voiced/unvoiced, nasalized/non-nasalized). All identification of phonemic units thus supposes a binary choice...The binary code represents an extreme simplification, and, therefore, the highest degree of efficiency. (Malmberg, 1967:121)

Hockett's meaningless substrate of sound is thus conceived of abstractly but no less dualistically. Learning a pronunciation system means essentially learning to operate a system of contrasts (Wilkins, 1972:57). In 1968, Chomsky and Halle would collaborate to modify the original system, retaining some features, dropping others and developing still others yet the base metric was not abandoned.

This duality was later to be called 'binarism'. Students and colleagues of Jakobson in later years often could not recount why things were binary as opposed to tertiary, quaternary, etc. Some, such as Halle, simply felt that 'That's the way it has to be!' (personal discussion, S. Singh, Ohio State University, 1969). Fant...posited the idea that it is a question of economy. (Blache:36)

Hill feels that the most important insight of Bloomfield and his school was the realization of the importance of studying contrasts in language: 'The things which are different are the contrasts, set in a framework of things which are the same. Almost the whole of the Bloomfieldian position follows from this statement; as one goes on identifying 'sames' and 'differents', one draws a map of the total structure of language' (in Allen,1967:10). Sledd pointed out that among the leading descriptivists, Fries had explicitly accepted a 'dogma of binary constituents' and the principle of contrast was basic for Fries (Wardhaugh,1974:44). The greatest efflorescence of binarism, of course, was the development of the Contrastive Analysis Hypothesis outlined in Lado's book Linguistics Across Cultures a hypothesis with enormous ramifications for language teaching e.g., Carroll (1971), Donoghue et al (1967). This hypothesis has been considered one incontrovertible contribution of theory to language teaching (Wilkins,1972:225; Poldauf,1995:13; Rutherford et al,1985:280).

Within the framework of transformational theory, clear binary perspectives are not as perceptible. Chomsky, Sledd tells us, at least initially, found the binary analysis associated with descriptivist analyses to be 'unrevealing' and constrained its analytic latitude (in H.B. Allen, 1964:416). Chomsky, '...though proposing mainly two-constituent constructions in 1957, had moved away from this in 1965 (though never
adequately explaining why...’ (Allerton, 1979:120). Yet J. Friend, in his transformationally influenced Introduction relates the following (1967:83): ‘The fundamental assumption of TG is the familiar idea that the basic English sentence consists of two parts, traditionally called subject and predicate...In thus declaring that the basic English sentence is binary, Transformational Grammar is scarcely surprising.’ Allerton nevertheless states that ‘...the preference for binary constructions is far from universal: Pike and the tagmemicists - as well as Halliday in Systemic Grammar - have always spurned 'binarism', and Longacre...explicitly contrasts Immediate Constituent analysis with String Constituent Analysis' (1979:120). The linguistic jury is not decided but nevertheless manifests a strong predilection, a predilection perhaps corroborated by investigations into the neurology of language processing.

Wilkins noted in 1961 that ‘...the very prevalence of dichotomies suggests that we find them helpful in conceptualizing issues which we seek to clarify’. The pervasive nature of this metric has been analyzed by Marcel Danesi among others. His research leads him to believe that the neurological substrate is bi-modally constructed and language processing consequently involves both hemispheres of the brain (1986:103). Although, as Yorio points out, it is generally accepted that most people's language faculty is lateralized in the left hemisphere (1980:52), the latest research in this area cautions against assuming that the linguistic processing mechanism is consequently unimodal. In fact, each hemisphere has a significant role to play when it comes to interpreting linguistic information. Citing extensive research in the area, Danesi lists some of the ‘L-mode' (left hemisphere) and 'R-mode' (right hemisphere) traits: The left hemisphere seems to deal with speech, meaning, verbal memory, intellectual tasks, convergent and directed thinking, and the analysis of parts. The right hemisphere, on the other hand, is involved in the understanding of metaphor, spatial perception, visual memory, intuitive tasks, divergent thinking, concrete perceptions, free thinking, intuitive tasks, relational thinking, and the synthesis of parts (1986:167). Building upon these tendencies, some researcher have suggested left and right brain strategies for second language pedagogy, something which is presently beyond the scope of this thesis. What is germane, however, is Danesi's emphasis on the two-component nature of human language processing, whether of first or second variety. Referring to the various techniques utilized previously for teaching second languages - the Grammar Translation method, the Direct method - he believes that they were not as successful as they might have been as they overlooked the brain's bi-modal processing system.
The program of procedures, techniques, routines, etc., that determined classroom style was invariably biased in favor of L-mode strategies (e.g., rule-learning, mechanical practice, and so on). The research on the cerebral hemispheric functions makes it saliently clear that the unimodal focus goes counter to neurophysiological reality. The bimodal nature of the language learning process, suggests, essentially, that the only truly effective form that language teaching can take is one that aims at exploiting the "two-sided mind" (Danesi, 1986:109)

If language is indeed processed in this way - as the predilections and processes outlined above suggest that it is - then a binary approach to grammatical explanations is a valid, 'psychologically real' option.

There is danger in the urge to dichotomize, however, and various commentators have cautioned against a solely dualistic frame of reference when undertaking research. Such an attitude toward the analysis is frequently, Wilkins points out, accompanied by a latent wish to resolve this tension. "The desire to view all issues in either/or terms is dangerous as a foundation for our pragmatic decision-making in that it shows our unwillingness to recognize the true complexity of human language behaviour and of the factors that determine language learning" (Wilkins, in Crystal, 1982:228). Allen and Widdowson similarly warn against misguidedly opposing 'old' to 'new' grammar teaching (ECAL, 1975:47) and McIntosh refuses to accept the 'false' dichotomy between form and meaning (1966:40). Certain precepts of Audio-lingual teaching, i.e., 'language as habit formation' are not necessarily mutually exclusive of those of Cognitive Code learning i.e., 'language as rule-governed behaviour' (Bolinger, 1972:114; Carroll, 1971:103). Barrutia sees no difficulty moreover in the reconciliation of inductive and deductive methodology in the classroom, acknowledging however that he does run the risk of 'appearing a mugwump' (IRAL, 1966:163). The linguistic literature for Jarvis is replete with the deleterious effects of taking the competence-performance distinction to an extreme (1974:342). Its dangers must be balanced with its potential insights into psychologically real grammar nonetheless. As we have seen, this urge to dichotomize was present at the inception of modern structuralism in the thought of de Saussure (G. Cook, 1995:5) an urge which, if Danesi's research is correct, may relate ultimately to neurophysiological processes.

What is an Approach to Grammar Teaching?

With a fourfold, fuzzy model of grammar posited, the issue now relates to how the language teacher might go about conceptualizing (rather than explaining) the problems in the advanced grammar class. The methodologies of explanation are many and varied but the issue really comes down to the prior 'thinking-through-and out' before the explanation is even given - a sense of which this thesis has sought to convey. The suggestion here is to frame students' questions in terms of their paradigmatic or
syntagmatic associations in the teacher's own mind and the argument is as follows. Core grammar is a configuration of closed systems and open sets of elements formally related to one another with indistinct boundaries both within and between their levels. The clearer relationships may be conceptualized either in terms of associations they evoke in absentia (outside time), or in terms of their linear connectedness in praesentia - (in time). The paradigmatic, in absentia relations consist of all of the 'might-have-beens' which provide contextual contrast or resemblance and the analogy to the Mayan hieroglyphs is apposite here. The syntagmatic in praesentia relations are composed of the 'tactic' relations in time - the phonotactic, morphotactic, and syntactic relationships before and after the element in time and may be likened to a chain. Grammar may thus be viewed from the paradigmatic perspective of resemblance, contrast, evocation and memory in the mind or from the syntagmatic perspective of sameness, discreteness, catenation and contrast in speech. The relative merit of treating a problem from either perspective is to be evaluated by the teacher. The issue is now whether a given problem should be dealt with syntagmatically or paradigmatically or through a combination of both.

The analysis of linguistic problems along the syntagmatic axis has been the most familiar historically speaking in which the conundrums of the axis - whether phonological, morphological, or syntactic - respond optimally to the distributional techniques of segmentation, expansion, substitution, etc., which Bloomfield had first explicitly formalized. Despite its great relevance to linguistic theorists historically, the importance of syntagmatic analyses and techniques has diminished in training programs, likely the result of the conferral of most favoured notion status upon the Communicative Approach in recent years. These techniques of distributionalism need to be reasserted for contemporary teachers of language. They provide access to one entire axis of language and a whole dimension of insight into language and language teaching is being overlooked in their absence. Gleason's exhortation to teachers twenty-four years ago may be applied equally well to teachers today:

The...need then, is for a total change in the method of presentation of grammar. Two things must be done here. First, we must introduce students to the techniques by which grammatical formulations are arrived at, and show them how these statements are rooted in observations of language. This is most easily done by what is now often called inductive teaching, the leading of students to discover principles for themselves. Grammar happens to be a specially suitable subject for this kind of work, since the data are readily available and generally familiar. Second, our students must not only be made to be critical about language, but equally critical about our understanding of language. At suitable places they must see that there is more than one way to describe a significant point of structure. They should have at least a basic understanding of the major approaches to syntax. They should know something of school grammar, in part because it is assumed in so many places, but equally because its basic assumptions are worth examining. (in Savage, 1973:134)
A distributional attitude to language teaching involves a 're-recognition' of the centrality of this axis as it is difficult to imagine how the temporal patterns of language could even be approached let alone adequately analyzed in the absence of such a perspective. 'It is the mutual relations of the elements of a language and their distribution and combinatory possibilities which make it possible for the linguistic mechanism (the code) to function properly... It is the "inherent pattern" that constitutes the language. "Without the pattern the language could not be." This pattern exists and it is the task of linguistics to find it...' (in Malmberg, 1964:181).

The obverse to this approach may be termed a paradigmatic approach. It is tempting indeed to frame this axis as the axis of meaning in the model; however, the conclusion of the foregoing discussions must be reiterated, namely, that meaning is implicated everywhere in the system and that therefore such a simplistic dichotomy is not possible. To take one example, the first phoneme in /pR/ carries meaning because it paradigmatically evokes its voiced counterpart in /bR/; thus the paradigmatic association results in a datum of meaning. However, /pR/ also contrasts with the phoneme which follows it, or does not follow it, in the syntagm. Since there is a difference between /pR/ and /lR/ meaning is also conveyed by the presence or absence of /p/ in the line.

Understanding how a paradigmatic analysis functions involves returning to the original definitions offered by de Saussure decades ago. Since the paradigm is the axis of memory, evocation, contrasts and resemblances, it seems to follow that the closest analogue to paradigmatic associations in the classroom involves the use of strategies which employ contrasts, evoke memories, and suggest resemblances. Broadly congruent with similar findings about the left and right brain strategies, a paradigmatic perspective on grammatical explanation in the classroom thus involves recourse to metaphor, analogy, and simile. As opposed to a syntagmatic analysis of environmental samenesses and differences, a paradigmatic approach would be the approach of choice for the teacher who has determined that an explanation is better framed in terms of intangible rather than tangible (i.e., visual) realities.

The teacher must ask himself, then, whether the student's request is best construed in metaphorical, analogic, musical, religious, or innumerable other frames of mnemonic reference - the terms which appeal to the mental paradigms of a lifetime. Or perhaps the explanation is one which is better advanced by more traditional means using the dimensional world of chalk and slate in which lines, arrows, brackets, segmentations, and deletions carry the most direct visual impact. Both approaches are equally
It is worth pointing out how linguists themselves have utilized paradigmatic, metaphorical strategies when linear explanations of text fail. Many are partial to metaphors, analogies, and similes and some of these paradigmatic offerings are collected in Appendix 7.

In attempting to clarify de Saussure's conception of langue, various authors have suggested terms such as 'matrix', 'set', 'axis', 'intersection' as well as notions of otherness, boundary, and discreteness. The utility of spatial, topographical - geometric - analogy in teaching grammar may be a useful paradigm to explore. Notions of position and direction would seem to be of significance in teaching the syntagmatic realities of languages where the word order is rigidly fixed, as in English. The metaphors of grammar are various and may be of use to the teacher when framing his or her own epistemology of language teaching.

What is Language Awareness?

Although the Language Awareness school of thought incorporates many agendas under its banner, all adherents are united in their wish to enhance the pedagogy by bringing into the area of Language Arts important insights from, among other sources, descriptive linguistics. The LA approach is holistic: it deals with 'a person's sensitivity to and conscious awareness of the nature of language and its role in human life' (in Garrett, 1991:4). More germane to the purpose of this thesis - heightened formal awareness among teachers - is Poldauf's straightforward statement: 'Awareness is the ability, no matter how conscious, to view a language objectively, that is, as a phenomenon' (1995:3). The foregoing theoretical synopses have attempted to provide an inkling into the objectivities of the theoretical realm.

Originating in Great Britain, its underlying motivation in the early seventies was far from a theoretical one. Hawkins describes the status of language teaching in Great Britain in the early seventies and states that '...the main cause of anxiety in 1972 was the shocking evidence that, after a century of universal education, schools were proving unable to help children to profit from the teaching offered unless they came into school equipped from home with the tools for verbal learning which the school process requires'

To this anxiety there has more recently been added another. It is becoming clear that there is something missing from the language education offered to all children. Nowhere does our present curriculum offer children help in learning to understand language itself, the unique characteristic of the 'articulate mammal' (1984:1).

The original concerns were thus highly pragmatic and involved questions specifically dealing with the inadequacy of foreign language pedagogy. Of particular note is that the failing results had as much to do
with the children's facility in the mother tongue as it did with the learning of a foreign one. In response to the 'crisis' a committee of educators was struck whose 650 pages of recommendations came to be known as The Bullock Report. Its recommendations focused on promoting language acquisition by enhancing a phenomenological 'knowledge about language'. British children were to be given instruction that would throw the inherent patterns of language into higher relief, provide them with greater self-confidence in the mother tongue, and encourage increased tolerance of linguistic diversity (Hawkins, 1984:42).

The Report in particular looked at the connections between literate ability and success in school and exhaustively documented studies which showed that home background and school success were correlated. A salient conclusion was that levels of literacy appeared directly related to the amount of time that parents spent at home reading to their children. This seemingly innocuous statement became tinder when a correlation between functional illiteracy and socioeconomic status appeared. 'More saddening for the conscientious teacher and administrator was the evidence that the effect of schooling is to widen the gap between the 'haves' and the 'have-nots' in reading skills... What was becoming clear was that unless children brought into school from their homes the language skills that they would need to succeed at school, teachers were unable to help them' (Hawkins, 1984:13).

As the LA movement matured, its initial assumptions were revisited and increasingly, it appeared that there were different kinds of language awarenesses to be described. Garrett, in his 1991 compendium Language Awareness in the Classroom brings together some of these developing insights. One of particular note for the purposes of this thesis is the realization by educational linguists that although heightened awareness of the maternal tongue may facilitate SLA, the two must be kept separate conceptually; there are processes involved in the latter that are not implied by the former. In that volume Nicholas points out that adults, being more grammatically, pragmatically and reflectively sophisticated, must constitute a separate analytic category (in Garrett, 1991:79ff). Perhaps as a result of this distinction between adult or 'post-critical stage learner' and child 'pre-critical stage learner' the Language Awareness movement ramified in two different directions - a functional and a formal.

Sierwierska enumerates at least nine different varieties of this functional approach to language education of which SF grammar may be the most familiar. Central to the functional approach is the belief that the communicating individual is the fulcrum of any linguistic theory. Functional linguistics was emphatically unsympathetic to the explicitly formal, abstract, and computational approach to the phenomenon current in North America at the time as Sierwierska (1991:3) notes:
Whereas adherents of the formal paradigm view language as a potentially infinite set of structural descriptions independent of matters of use, functionalists take the very opposite approach in considering all aspects of the structural organization of language in the light of its role in human social interaction. The adoption of the communicative perspective entails extending the traditional domain of linguistic analysis consisting of semantic, syntactic, morphological, and phonological rules to include the complex and often ill-understood pragmatic principles governing the patterns of verbal interaction.

In Britain, the LA movement drew much of its inspiration from the linguistic school of thought developed by Halliday in which the 'making of meaning' constitutes the reason for the 'invention' and elaboration of the whole linguistic system to begin with. 'The grammar we utilize functions as it does in accordance with the choices broader than the purely syntactic. A native speaker makes meaning in terms of his or her cultural values, the audience for whom the message is intended, and the intended topics of the discourse' (Carter, 1990: 10).

A strand of thought within the functional school has been distinctly political although the political weave in the movement seems to have been of a piece from the beginning. The investigation of the manner in which language and power relations are intertwined in a society is generally referred to as 'Critical Linguistics' a term that was first coined at the University of East Anglia (Kress:88). In other parts of the world it is 'Critical Discourse Analysis' (CDA) and this politically engaged branch of functional linguistics is primarily associated with the names of N. Fairclough, G. Kress, and R. Fowler. R. Ivanic describes a standpoint (in Carter, 1990: 125):

Instead of just asserting that all varieties are equal, critical linguists and language teachers identify why some are more prestigious than others. Instead of seeing 'Standard English' as the best variety, it might be more useful to call it 'standardized' English and learn about the process of standardization... With a critical view of language, accuracy and appropriacy are not things to be learned, but things to be questioned and understood.

CDA, however, is not the exclusive province of Anglo-American researchers and Paolo Freire has published extensively on issues dealing particularly with literacy and empowerment. Emblematic of his cause is the parallel Brazilian term conscientizacao. Whether in British classroom or Brazilian field, language users are made more sensitive to the subtle ways that language can elevate individuals and groups and just as easily denigrate them. Linguistic analysis, from this perspective, could never simply be a purely formal exercise and the most famous attempt to show the social and political pattern in the formal tapestry has been Halliday's Systemic-Functional grammar.
However, there is the second complementary orientation to Language Awareness that is most germane to the purposes of this thesis. It would do an injustice to the Language Awareness movement to identify its concerns solely with the functional and cultural aspects of the language system, even if at times such concerns appear to be governing. The band within the prism of Language Awareness, and the last one with which this thesis will concern itself, is the formal awareness of language for the teacher. It was a formal problem which furnished the practical point of departure of this thesis in the first chapter and it is fitting that the enhancement of formal competence is the way to end the thesis. The research of two authors in particular, William Rutherford and Michael Sharwood Smith, is to be underlined here.

'Language Awareness', as Poldauf stated earlier is '...an ability to regard linguistic performance as the materialization of linguistic competence in all or most of its components...' (1995:6) and may be regarded as perhaps the most general definition of the movement encompassing all aspects of linguistic competence and sociolinguistic performance. In this guise, it comprises much if not all of the foregoing - Language Awareness is fundamentally the objective consideration of the phenomenon in all of its manifestations. Rutherford and Sharwood-Smith's term 'Consciousness-Raising' however, suggests a refinement of the term and a useful focus: 'By consciousness-raising we mean the deliberate attempt to draw the learner's attention specifically to the formal properties of the target language' (AL,1985:274). Consciousness-raising will thus be understood to refer to this more narrow definition of Language Awareness. Within the broadly functional (Systemic-Functional linguistics), in tandem with the political (Critical Discourse Analysis), exists the formal wing of the movement (Consciousness-Raising). It has been this last, formal concern which, as indicated in the Point of Departure in chapter one, has occasioned the thesis. The nature of this formal branch of the Language Awareness movement is extensive beyond the scope of this thesis and awaits further investigation. It fundamentals, however, may be sketched here.

Since it has been pointed out that, at the most advanced levels of grammatical analysis, the teacher is frequently student himself, what these authors say about the raising of students' grammatical consciousness in the classroom applies equally well to the teacher's. Consonant with Poldauf's incorporation of Chomsky's notion of competence and performance in language teaching, Rutherford and Sharwood-Smith outline the competence: 'Grammatical consciousness-raising in pedagogy carries one indispensable prerequisite, and that is that something be known about the grammatical structure in question' (1988:16). The foregoing chapters have been an attempt to outline these structures of grammar and to suggest in this chapter a tentative model.
These structures can be known, Sharwood-Smith continues (following Bialystok), either 'explicitly' or 'implicitly' in which the first term 'denotes conscious analytic awareness of formal properties' and the second term refers to 'an intuitive feeling for what is correct and acceptable' (1981:159). A slight rift in the teacher-student continuum described immediately above is apparent. For optimally transparent language teaching, the structures must necessarily be known explicitly. In terms of the student's formal consciousness-raising, as the authors point out, the question is not necessarily so cut-and-dried. There are many ways of drawing attention to form without indulging in metalinguistic discussion...Consciousness-raising can have degrees of explicitness' (Rutherford et al, 1985:275).

One can explicitly call attention to a grammatical feature and, if necessary, even articulate an informal pedagogical 'rule' as an instructional aid; one can implicitly call attention to a grammatical feature through calculated exposure of the learner to crucial pre-selected data; and one can choose to ignore a grammatical feature altogether, thus neither suppressing it nor giving it prominence. (ibid:277)

Sharwood-Smith outlines these broad strokes of Rutherford's schema in his monograph Consciousness-Raising and the Second Language Learner (AL,1981:158ff). Explicit consciousness-raising for the students is, first of all, not to be confused with the 'pedantic giving and testing of rules'. Suggesting that an inductive discovery of the rules on the part of the student is the ideal, he fleshes out different degrees of 'elaborateness' and 'overtness' in formal consciousness-raising ranging from the concise, metalinguistic terms of traditional grammars (where these 'technically sophisticated' descriptions may be lost on the learner) to less overt strategies which utilize allusive clues and hints dropped in the course of a lesson. He clearly opts for that strategy which '...may give the learner a greater feeling of self-discovery' and thus aid in the inductive ideal. Sharwood-Smith's discussion of the metalinguistic approach is described much more effectively in the pyramidal metaphor described by M. Scott in A Brazilian View of Language Awareness (in Garrett,1991:280). Scott illustrates what Sharwood-Smith has in mind when the task at hand is the teaching of the passive voice to students:

![Diagram](The Pyramid of Conscientização)

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'The first level is exemplified in traditional material by the phrase ‘Exercise 13’. Students do not yet know what the task is, as it is merely labelled by its position in the course. If the exercise states ‘Exercise 13: the Passive Voice’, we are at Level 2. Students still don’t know why the passive voice is important. Hardly any course books get beyond Level 2'.

If mere labelling and rule enunciation is frowned upon, the two authors with whom the Consciousness-Raising movement is primarily associated do so with a very definite purpose in mind. It is a point of view that chimes notably with the broader, more holistic conception of grammar described by Widdowson at the beginning of this chapter. Rutherford provides two concrete examples of the grammatical philosophy of these three scholars: ‘If French were the target language, for example, it would not mean teaching the mechanics of gender agreement so much as inculcating a thought pattern in which the whole concept of gender agreement becomes dominant. If English is the target language, it means not so much teaching the intricate rule system for deployment of definite and indefinite articles...it means rather engendering an inclination to match certain features of the determiner system with the notions of presupposition and raising-to-consciousness’ (AL,1980:63). This is the most genial, liberal understanding of the nature of grammar. Grammatical consciousness-raising, to use one of Halliday’s phrases, is a definite resource for making meaning in the classroom.

Conclusion

A psychologically real grammar may be conceived in terms of twin paradigmatic and syntagmatic realities. Its cognitive reality may be therefore usefully viewed as a matrix of metaphorical operations and distributional properties. The principal characteristics of the paradigmatic axis have been tentatively identified as evocations of resemblance and contrast while the primary characteristics of the syntagmatic axis are those of sequence and arrangement. The contours of a psychologically real depiction of language only begin to come into focus when the paradigmatic and the syntagmatic perspectives are balanced. Both approaches to grammar teaching need to be enhanced in the contemporary classroom.

Language, however, is a unified *behavioural* phenomenon and its cognitive events and operations constitute only half of the story. Its functional, social, and behaviourally meaningful uses and operations are its raison d'être as Halliday made clear. The functional side of language has been construed as 'meaning-in-language' or semantics and must be considered not as a discrete stratum but rather as a system pervasive throughout all levels. The centrality of meaning-in-language in any model of
grammar results in a conception of grammar in which the objects and events of its systems are necessarily fuzzy. Natural languages, while comprising well-defined objects (closed systems) are not justifiably analyzed on this basis alone - or on any one basis for that matter. The tool must be appropriate for its object.

The reader is left ultimately with some of the metaphors and models for grammar which have been suggested in the course of this thesis: grammar as matrix, lattice, grid, axis, sieve, set, configuration, continuum, telegraph, hierarchy, and switchboard. Perhaps the closest approximation that we shall get to a psychologically real grammar will be in the form of metaphor and analogy. The researcher of course will approach the teaching of grammar in his or her own way. The artifactual, discrete approach seems to be a favoured one amongst linguists for purposes of clarity. Philosophically, the educational linguist is entitled to approach the theoretical discipline eclectically. Practically, it has been suggested that one approach to grammatical pedagogy in the classroom may be usefully schematized in terms of a 'focal-peripheral' strategy. Another possibility is to view form in the terms of binary analysis, an approach that has both intuitive and disciplinary appeal. Such a vantage point, it must be emphasized, is merely one possible approach. The salient observation in all of the foregoing discussion has been that the hermetic analysis, the elevated methodology, or the isolated insight - the *fundamentally unstructural* - is fundamentally incorrect. The many fortuitous physiological, cognitive, social, and environmental variables whose synergy has given the species its stature and our tongues their grammar constitute a prism of awareness for the classroom, its teacher, and its students.
Appendix 1: Some suggested paradigms of the definite article in English:

**SEMANTIC PARADIGMS**

Definiteness

- a
- an
- some
- any
- all
- ...

**HOMOPHONOUS PARADIGMS**

'the' ('thy') ('though')

**ETYMOLICAL PARADIGMS**

this that those these

**ORTHOGRAPHIC PARADIGMS**

'th' 'ch' 'sh' 'ph' 'wh' 'th'

**PHONOLOGICAL PARADIGMS**

/+/- voice
/+/- stop
/+/- continuant
...
/+/- tense
/+/- round
/+/- tense
/+/- back
...

**MORPHOLOGICAL PARADIGMS**

VC
CV
CVC
VCV
VV

**SYNTACTIC PARADIGMS**

pre-adjectival
pre-adverbial
pre-headword
...

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Appendix 2: Critiques from A Review of B.F. Skinner’s Verbal Behaviour (1959)

(a) On the notion of ‘stimulus control’:

If we look at a red chair and say red, the response is under the control of the stimulus redness; if we say chair, it is under the control of the collection of properties (for Skinner, the object) chairness (110) and similarly for any other response. This device is as simple as it is empty. Since properties are free for the asking (we have as many of them as we have nonsynonymous descriptive expressions in our language, whatever this means exactly), we can account for a wide class of responses in terms of Skinnerian functional analysis by identifying the controlling stimuli. But the word stimulus has lost all objectivity in this usage. Stimuli are no longer part of the outside physical world; they are driven back into the organism. We identify the stimulus when we hear the response. It is clear from such examples, which abound, that the talk of stimulus control simply disguises a complete retreat to mentalistic psychology. (1959:553)

(b) On the notion of ‘verbal operant’:

The unit of verbal behavior - the verbal operant- is defined as a class of responses of identifiable form functionally related to one or more controlling variables. No method is suggested for determining in a particular instance what are the controlling variables, how many such units have occurred, or where the boundaries are in the total response. Nor is any attempt made to specify how much or what kind of similarity in form or control is required for two physical events to be considered instances of the same operant. In short, no answers are suggested for the most elementary questions that must be asked of anyone proposing a method for description of behaviour. (1959:554)

(c) On the notion of ‘reinforcement’:

From this sample, it can be seen that the notion of reinforcement has totally lost whatever objective meaning it may have ever had. Running through these examples, we can see that a person can be reinforced though he emits no response at all, and that the reinforcing stimulus need not impinge on the reinforced person or need not even exist (it is sufficient that it be imagined or hoped for). When we read that a person plays what music he likes (165), says what he likes(165), thinks what he likes(438-39), reads what books he likes (163), etc., BECAUSE he finds it reinforcing to do so, or that we write books or inform others of facts BECAUSE we are reinforced by what we hope will be the ultimate behaviour of reader or listener, we can only conclude that the term reinforcement has a purely ritual function... Invoking the term reinforcement has no explanatory force, and any idea that this paraphrase introduces any new clarity or objectivity into the description of wishing, liking, etc., is a serious delusion. (1959:558)

(d) On the ‘verbal reinforcement of children’:

Similarly, it seems quite beyond question that children acquire a good deal of their verbal and nonverbal behaviour by casual observation and imitation of adults and other children. It is simply not true that children can learn language only through “meticulous care” on the part of adults who shape their verbal repertoire through careful differential reinforcement, though it may be the case that such care is often the custom in academic families. It is a common observation that a young child of immigrant parents may learn a second language in the streets, from other children, with amazing rapidity, and that his speech may be completely fluent and correct to the last allophone, while the subtleties that become second nature to the child may elude his parents despite high motivation and continued practice. (1959:563)
Appendix 3: Notations in Syntactic Structures

A. Notations

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Sigma )</td>
<td>sigma</td>
<td>'sentence' (=S)</td>
</tr>
<tr>
<td>$</td>
<td>'empty slot'</td>
<td></td>
</tr>
<tr>
<td>&amp;</td>
<td>ampersand</td>
<td>'combines with'</td>
</tr>
<tr>
<td>( )</td>
<td>parentheses</td>
<td>'optional elements'</td>
</tr>
<tr>
<td>[ ]</td>
<td>brackets</td>
<td>'correlated replacement'</td>
</tr>
<tr>
<td>{}</td>
<td>braces</td>
<td>'select either'</td>
</tr>
<tr>
<td>#</td>
<td>'boundary'</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>plus</td>
<td>'concatenate'</td>
</tr>
<tr>
<td>↓</td>
<td>'rewrites as'</td>
<td>'is a'</td>
</tr>
<tr>
<td></td>
<td>'derives from'</td>
<td></td>
</tr>
<tr>
<td>( n )</td>
<td></td>
<td>'recursiveness'</td>
</tr>
<tr>
<td>*</td>
<td>asterisk</td>
<td>'incorrect' 'unattested form'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'in environment of'</td>
</tr>
<tr>
<td></td>
<td>double arrow</td>
<td>'dominates'</td>
</tr>
</tbody>
</table>

B. Phrase Structure Rules:

\( \Sigma \) #Sentence#

F: 1. \( S \rightarrow NP + VP \)
    2. \( VP \rightarrow Verb + NP \)
    3. \( NP \rightarrow NP \text{ sing.} \)
    3. \( NP \rightarrow NP \text{ pl.} \)
    5. \( NP \text{ pl} \rightarrow T+N+S' \)
    6. \( T \rightarrow the \)
    7. \( N \rightarrow \text{man, doctor, drink...} \)
    8. \( \text{Verb} \rightarrow \text{Aux + V} \)
    9. \( V \rightarrow give \)
    10. \( \text{Aux} \rightarrow C(M) \ (\text{have +en}) \ (\text{be + ing}) \)
    11. \( M \rightarrow \text{will, can, should...} \)
    12. \( \text{Tense} \rightarrow \{\text{Present, Past}\} \)

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Appendix 4: A Lexical and Transformational Comparison

A. Following Chomsky (1970) and Webelhuth (1995), it could be argued that the operations of the transformational component should be narrowed. This component is capable of legitimate morphological derivations as exemplified in (1) - (3):

<table>
<thead>
<tr>
<th>Verb</th>
<th>'Gerundive Nominal'</th>
<th>'Derived Nominal'</th>
</tr>
</thead>
<tbody>
<tr>
<td>pack</td>
<td>packing</td>
<td>package</td>
</tr>
<tr>
<td>drain</td>
<td>draining</td>
<td>drainage</td>
</tr>
<tr>
<td>break</td>
<td>breaking</td>
<td>breakage</td>
</tr>
<tr>
<td>trick</td>
<td>tricking</td>
<td>trickery</td>
</tr>
<tr>
<td>eliminate</td>
<td>eliminating</td>
<td>elimination</td>
</tr>
<tr>
<td>absolve</td>
<td>absolving</td>
<td>absolution</td>
</tr>
<tr>
<td>complain</td>
<td>complaining</td>
<td>complaint</td>
</tr>
<tr>
<td>laugh</td>
<td>laughing</td>
<td>laughter</td>
</tr>
<tr>
<td>flee</td>
<td>fleeing</td>
<td>flight</td>
</tr>
</tbody>
</table>

B. However, there are inexplicable gaps, nuances, and structural irregularities among other words in English, exemplified in (4) - (6), about which a purely transformational account is silent. In (4), for example, there are no derived nominal forms:

| (4) | creak      | creaking  |
|     | sprain     | spraining |
|     | stack      | stacking  |

C. The derived nominals in the following examples in (5) - unlike the transformational derivations in (2) and (3) above - have drifted in meaning:

| (5) | quack      | quacking  | quackery |
|     | discriminate | discriminating | discrimination |
|     | resolve     | resolving  | resolution |

D. Finally, the gerundive nominals in (6), unlike those in example (3) above it seems cannot be acceptably (elegantly) modified another facet in the argument:

| (6) | see      | seeing | sight |
|     | condemn  | condemning | condemnation |
|     | receive  | receiving | reception |

E. As a result of observations of this type, Chomsky suggested that such idiosyncrasies could be handled better by means of lexical specifications. The importance of this is that it underscores that grammar and lexicon are twin pillars in learning a language corresponding to the distinction between 'open' sets and 'closed' systems.
Appendix 5: Halliday's Six Functions of the Developing Child

1. The Instrumental Function

The instrumental function is the function that language serves of satisfying the child's material needs, of enabling him to obtain the goods and services that he wants. This is the 'I want' function of language.

2. The Regulatory Function

The regulatory function is related to this but it is also distinct. It is the function of language as controlling the behaviour of others, something which the child recognizes very easily because language is used on him in this way: language is used to control his own behaviour and he soon learns that he can turn the tables and use it to control others. The regulatory is the 'do as I tell you' function of language. The difference between this and the instrumental is that in the instrumental the focus is on the goods or services required and it does not matter who provides them, whereas regulatory utterances are directed towards a particular individual, and it is the behaviour of that individual that is to be influenced.

3. The Interactional Function

The interactional function is what we might gloss as the 'me and you' function of language. This is language used by the child to interact with those around him, particularly his mother and others that are important to him, and it includes meanings such as generalized greetings "Hello," "pleased to see you" and also responses to calls "Yes?" as well as more specific forms.

4. The Personal Function

Fourthly there is the personal function. This is language used to express the child's own uniqueness; to express his awareness of himself, in contradistinction to his environment, and then to mould that self-ultimately, language in the development of the personality. This includes, therefore, expressions of personal feelings, of participation and withdrawal, of interest, pleasure, disgust and so forth, and extends later on to more specific intrusion of the child as a personality into the speech situation. We might call this the 'here I come' function of language.

5. The Heuristic Function

Fifthly, once the boundary between the child himself and his environment is beginning to be recognized, then the child can turn towards the exploration of the environment; this is the heuristic function of language, the 'tell me why' function, that which later on develops into the whole range of questioning forms that the young child uses...

6. The Imaginative Function

Finally we have the imaginative function, which is the function of language whereby the child creates an environment of his own. As well as moving into, taking over and exploring the universe which he finds around him, the child also uses language for creating a universe of his own, a world initially of pure sound but which gradually turns into one of story and make-believe and let's pretend, and ultimately into the realm of poetry and imaginative writing. 20

Later on there is in fact a seventh to be added to the list but the initial hypothesis was that this seventh function, although it is the one which is undoubtedly dominant in the adult's use of language, and even more so in the adult image of what language is, is one which does not emerge in the life of a child until considerably after the others. This is the one that we can call the informative function of language, the 'I've got something to tell you' function.
Appendix 6: Fuzzy Grammar

A. Morphophonemics in Syntactic Structures

The phrase-structure section is a kind of constituent analysis with such rules as “Sentence — NP + VP, NP — T + N, and “N — man, ball, etc....Each rule of the form ‘X — Y is to be interpreted as ‘Rewrite X as Y” And each Y is either an analysis of the corresponding X into smaller parts or the substitution of a specific example for the symbol of a type. The morphophonemic section has rules of a similar form, such as “walk — /wak/” and “Take + past — /tuk/“. Obviously in a full grammar of this type each of these sections must include the whole lexicon - the phrase structure section by listing all the members of each of the categories (which will apparently be considerably more numerous than the traditional parts of speech), and the morphophonemic section as a sort of pronouncing dictionary (though I am sure Chomsky would never call it that). (L.M. Myers in H.B. Allen, 1964:26)

B. Morphophonology

If we add together the elements in all these systems - phonetics, grammar, vocabulary, meaning - we still do not get a complete picture of a language. For a language is not a group of these systems; it is a system of them - a system of systems. Many points in each of these systems are related to points in the other three systems. For example, every time a plural or third singular is used in the grammatical system, it brings into play a relationship with the phonetic system to determine whether the ending will be uttered as an /-s/, a /-z/, or an/-ez/, as in cats, dogs, and matches. The study of such relationships is sometimes called morpho-phonology or morpho-phonemics. Words in the vocabulary are connected with points in the grammar. For example, tell and say may be regarded as equivalent in the vocabulary, but the choice of one rather than the other forces the speaker to connect with a different series of sentence-structures. (Wilkins:77)

C. Lexicosyntax

Words in the vocabulary are connected with points in the grammar. For example, tell and say may be regarded as equivalent in the vocabulary, but the choice of one rather than the other forces the speaker to connect with a different series of sentence-structures. (Mackey, 1961:77)

D. Morphosyntax

Separation of levels means, among other things, that parts of speech morphologically defined are not the same as parts of speech syntactically defined. If you hear ‘Today is Sunday,’ ‘Today’s paper just came,’ and ‘He just came today,’ you can tell from the forms in the first two that today is a morphological noun. But in the second it is in some respects a SYNTACTIC ADJECTIVE, and in the last, Fully a SYNTACTIC ADVERB. It is only at the syntactic level that adverbs, prepositions, conjunctions, question words (e.g., when, why, what), some auxiliaries, and some adjectives can be assigned to parts of speech. To avoid confusion, it is always best to prefix either morphological or syntactic, whichever is proper, to the name of the part.” (G.P. Faust, in H.B. Allen, 1964:96)
Appendix 7: The Usefulness of Metaphor and Analogy

1.0 General

1.1 What is language?

Using a bold and imprecise metaphor, we can think of every language as a vast sieve with thousands of semantic slots in it. Any idea which we want to express in that language first has to be put through the sieve. And every language has a special sieve of its own. (Moulton, in Donoghue, 1967:78)

1.2 Why must the goals of linguistic analysis be specified along with its substance?

To say that linguistics is the study of language structure is like saying that astronomy is the study of stars of that chemistry is the study of elements. What is lacking, of course, is a statement of the goals one wishes to attain through such study, and for linguistics that goal is an understanding of the workings of the human mind - i.e., linguistics as one of the cognitive sciences. (Rutherford and Sharwood-Smith, 1985:276)

1.3 What is a sentence?

Grammatically, sentences in English do not consist of words in this strict sense; they consist of clauses, which in turn consist of groups, and these groups consist of words. To analyze a sentence grammatically as a string of words or morphemes is like trying to describe the patterns of a written paragraph by treating it as a string of letters. (McIntosh et al, 1966:9)

1.4 What is a verb?

In some languages, we do not find anything which we should want to call a 'verb' because there is nothing which displays enough of the properties of what are called 'verbs' in the languages to which this terms was first applied. To find what is common to all languages we must invoke more abstract concepts than these. It is rather as if we said that all human beings must drink, and therefore all societies have some means of drinking; but not all societies use cups, and sometimes we are doubtful whether a particular vessel should be called a 'cup' or not. (McIntosh et al 1966:2)

1.5 Is theory applicable to teaching?

A description of a language is not a prescription for teaching it. You can no more go from a geometric theorem to bridge building. What is essential is a blending of facts about language with facts about language learning. (Spolsky, 1978:3)

Fodor is quoted by the article in Time as saying that it would be as foolish to teach a man linguistic theory as it would be to teach him the theory of the internal combustion engine so that he could learn to drive a car. (De Camp, TESOL, March 1968:5)

2.0 Procedures

2.1 How should the language teacher proceed?

For a language teacher, the completeness of a grammar is more relevant than its scientific consistency; clarity is more important than conciseness; examples, more useful than definitions. For the language teacher to wait until more scientific grammars are produced is to put himself in the position of the tanner of hides who stops tanning until the chemists find the chemical formula describing exactly what is done. (Mackey, in Oller 1973:10)
2.2 How should the language teacher not proceed?

From the point of view both of contemporary analysis and of historical development, we should avoid deriving any one of the forms know, knows, knowing, knew, known from any one of the others, Sydney Lamb, was quite right when he suggested, in outline of Stratificational grammar (1966), that to derive one linguistic form from another existing alongside it is comparable to tracing man's ancestry to the apes existing alongside him on this planet at the present time. (R. Long, 1969:131).

3.0 Traditional Grammar

3.1 What is a problem with Traditional Grammar?

Linguistic scientists who have recently turned their attention to English have found that, judged by these criteria [of simplicity, completeness, consistency, and usefulness] the traditional grammar of English is unsatisfactory. It falls down badly on the first two requirements, being unduly complex and glaringly inconsistent within itself. It can be made to work, just as the Ptolemaic earth-centred astronomy can be, but at the cost of great elaboration and complication. The new grammar, like the Copernical sun-centred astronomy, solves the same problems with greater elegance, which is the scientist's word for the simplicity, compactness, and tidiness that characterizes a satisfactory theory. (N. Francis, in H.B. Allen, 1964:71)

3.2 What is a Behaviourist Approach to Language?

A behaviourist approach to language may be compared to the study of a piece of music in which we have available a recorded performance and a tape-recorder; we can repeat sections, change their order, or substitute one portion for another. But our study is clearly limited to the performances available. The danger inherent in a performance-bound study is pointed up by the sad but charming story of the Tongan concert party who learned to sing the "Hallelujah Chorus" by imitating a record: their imitation was perfect, even to the repetition of the scratch on the record they used" (Spolsky, in IRAL 1966:123)

4.0 Structuralist Grammar

4.1 What is The Structuralist Method?

Following the prevailing notions of physical scientists, the structuralist linguist adopted a strongly empirical and inductive approach to the description of language...i.e., "texts" - actual sound recordings or transcriptions - constituted the data which was then segmented into progressively small units. The parallel with physics is very clear: physical objects 'cut' into smaller and smaller pieces until the ultimate - the atom - is reached. (Bell, 1981:93)

4.2 What does an Audio-lingual teacher do?

Exponents of the Audio-lingual method are fond of comparing the teacher's role with that of a physical education instructor. If a novice swimmer makes a wrong stroke, his teacher can lay hold of the errant muscle and guide it. All that we can do with a speech muscle is to coax it indirectly. (D. Bolinger, in J. Michel, 1967:295)
5.0 Transformational Grammar

5.1 What is a TG?

A transformational grammar is a logical specification of the syntactic knowledge which the learner needs in order to produce grammatical sentences. As such, it should be thought of as being more like a computer programme for an automaton which can bring out an endless series of grammatical but communicatively disjointed sentences. (Bell, 1985:107)

5.2 What is the primary goal of TG?

To suggest that the goal of generative research is to provide better and better descriptions of language structure is like saying that the goal of medical science is to provide better and better descriptions of disease symptoms. What is lacking here, of course, is a clear conception of the proper ultimate goal: the development of theories by which phenomena - constructs and processes - may be explained. In this light then, the descriptive goals become secondary ones. (Rutherford and Sharwood-Smith in AL, 1985:275)

5.3 What Kinds of Games do Structuralists and Generativists Play?

Let me try to make clear why I believe that linguistics has failed to influence language teaching as it might have, and how I think it may yet fulfill the promise that seemed for a moment almost on the point of coming true. The failure rests in the kind of intellectual game that linguists play. With structuralism the rules were those of a super Erector set. There were pieces and arrangements. With generativists the game resembles an automatic chess player. The pieces and arrangements are there, but the focus is on rearrangements and their connections. In either case the explanations that result when the game is extended to teaching a language are of a kind that a bright student can ordinarily figure out on his own. How essential, really, is it for him to be given in careful detail each step of the passive transformation? (Bolinger, TQ June 1972:117)

5.3 Is TG appropriate for teaching?

The abstract constructs offered in a transformational description are designed solely for purposes of description and explanation... Consider an analogy from physical education, in particular the pedagogy of the forward pass. Any instance of the physical event identified as a forward pass has certain mechanical properties which are characterized by the Newtonian theory of mechanics. The descriptive apparatus of this theory, consisting of such constructs as mass, acceleration, velocity, time, distance, and so forth, is a consequence of the theoretical constraints imposed upon a description seeking to account for the mechanics of physical events. To teach a potential quarterback the mechanics of the forward pass is to teach him how this type of event works. It is not to teach him how to make it work. The Newtonian theory itself gives us no reason to believe that instruction in the mechanics of the forward pass will affect the quarterback's becoming a good passer one way or the other. Similarly, to study and practice the constructs of a transformational grammar may result in an understanding of how the student's language works, but not necessarily in an understanding of how to make it work. (P. Rosenbaum, ECAL 1973:264)

5.4 Is the Q-trans. useful?

We must know where to stop in teaching a linguistic structure-how much we can helpfully do, and how much can be left to the learner's brain to organize through mechanisms that are more efficient than anything we can devise. It is probably useful to give a learner the paradigms of verbs. That surely saves time. But being told that questions contain a Q element that transforms them from base structures resembling declarative is about as useful as being told that heat differs from cold by virtue of its caloric principle. (Bolinger, in TQ, June 1969:118).
6. **What is the 'Mugwump Alternative'?**

Some wavering or uncommitted people get quite upset at the necessity of choosing between two theories. Sometimes they try the “mugwump” alternative, sitting on the fence and saying that both theories are exaggerations and that the truth lies in the middle. Both theories, after all, are talking about the same thing - language - so any differences must be terminological...That is grossly unfair to both Hockett and Chomsky. It is like saying that any theological differences between Quakers and Moslems are merely terminological, since both believe in God. In practice it makes a world of difference whether a linguist looks at language and sees a system of conditioned habits or a symbolic system which a person knows; whether he sees in language use a process of mimicry and analogy, or a process of rule-governed creativity. (Diller, 1978:41)

7. **Why not become partisan?**

Linguistics can be taught, then, because it is true or tries to be true, which is perhaps the same thing. No one need become partisan, waxing polemical over each new thesis or discovery. We still recognize that science may need more than one model to represent the reality of a given phenomenon, and, just as the physicist needs both the wave theory and the quantum theory to explain the phenomenon of light, so the linguist may need more than one model to explain the reality of a language. (Savage, 1973:21)
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