Disciplined Mind:
Intuitive Cognition in Devised Performance

by

Christopher James Jackman

Submitted in conformity with the requirements
for the degree of Doctor of Philosophy
Centre for Drama, Theatre and Performance Studies
University of Toronto

© Copyright by Christopher James Jackman (2013)
ABSTRACT

Disciplined Mind: Intuitive Cognition in Devised Performance
Doctor of Philosophy, 2013
Christopher James Jackman
Centre for Drama, Theatre and Performance Studies
University of Toronto

Disciplined psychophysical training is commonly thought to facilitate spontaneity, freedom and creative flow, especially in the context of devised performance. My thesis develops an explanatory framework for intuitive creativity through a critical negotiation of empirical and phenomenological epistemologies.

I weave Stanovich’s tripartite model of consciousness and Vervaeke’s theory of relevance realization into an enactivist understanding of cognition, whereby performers and audiences alike make sense of the world around them through an exercise of embodied skills. This thesis demonstrates the persistent utility of this framework through an interdisciplinary analysis of the following:

- tacit versus mindful learning
- empathetic social coordination
- expert performance in cultural domains
- Vygotsky’s theories of play

I ultimately mark a departure from cognitive linguistic models of embodied metaphor and conceptual blending theory. Rather, I propose that in the optimally spontaneous enactment of sustained collaborative flow, devising performers can negotiate frameworks of meaningful play by intuitively coordinating their sense-making practice.
ACKNOWLEDGEMENTS

My first thanks belong to the honorable institutions I have been privileged to attend. The remarkable faculty at Queen’s University Drama Department should be credited with inspiring my initial “defection” to the liberal arts. In particular, Michelle Newman utterly transformed my understanding of performance, and Judith Fisher has been a mentor and friend ever since.

But of course, the Drama Centre at University of Toronto has been an incomparable home where I have been given every opportunity to play, present and research. Special thanks to the indomitable Lou Massey, the resourceful Rob Moses, and to the visionary Stephen Johnson, whose enthusiasm for both his Centre and his students has been unfailing. Thanks also to Tamara Trojanowska and Paula Sperdakos for their professional faith and guidance.

I also need to express my gratitude to those daring collaborators who have joined me in *Performative Exercise*, Open Corps Theatre, and Lock and Keynote Productions, notably the remarkable Sarah Williamson. Further thanks to my academic “Fight Club” of Toby Malone and Patrick Robinson, who have challenged and encouraged me every step of the way.

I am blessed to have worked with an incredible brain trust in the development of this thesis. Evan Thompson and Leslie Katz were excellent resources during my research, and Phillip Zarrilli has been generous in sharing both his wisdom and his hospitality. As for my thesis committee, I am grateful for the passionate insights of John Vervaeke and invaluable rigour of Kim Solga: both have kept me grounded throughout this process. Supervisor Bruce Barton has been an exceptionally steadfast advocate for my interests, and has had a profound influence on my academic thought. Thanks also to exam chair William Bowen, readers Stephen Johnson and Nancy Copeland, and my vigilant external examiner, Rhonda Blair. I am humbled by the thoughtful care each of you have brought to my work.

I would also like to thank the many others who personally enrich my life. This includes my friends, my siblings, my in-laws (Mike and Donna Porter) and my parents (Larry and Sheila Jackman). Mom and Dad, you have lovingly supported my decisions, and have always pushed me to live up to my potential – thank you.

And last but not least, I dedicate this work to my wife and partner, Shari. She is the most remarkable person I have ever met, and makes my life absolutely wonderful. She has been my favorite collaborator, most honest editor and my biggest fan during this entire process, and I could not have come through it without her.
# TABLE OF CONTENTS

INTRODUCTION ........................................................................................................... 1  

CHAPTER 1 ................................................................................................................. 9  

CHAPTER 2 ................................................................................................................ 41  

CHAPTER 3 ................................................................................................................ 72  

CHAPTER 4 ................................................................................................................ 107  

CHAPTER 5 ................................................................................................................ 147  

CONCLUSION ............................................................................................................. 180  

WORKS CITED .......................................................................................................... 188
INTRODUCTION

I have often felt like a latecomer to theatre studies, having begun my undergraduate education as a Biology major with serious designs on medical school. I incrementally turned towards theatre through extracurricular plays and elective courses until, lo and behold, I ended up with a Drama degree. A growing awareness of my own ignorance motivated me to begin graduate studies: I had simply liked what I was learning, and still had far too many questions to move on to anything else.

I have found that some of the best, most provocative questions I have encountered continually frustrate any conclusive answer, especially concerning what it means to be performing “in the moment.” For example, some wonderful acting teachers have taught me to “get out of my head,” open my awareness, and listen to my body. However, while I have understood the desired trajectory of these practices and may even have enacted them with some success, I could not articulate what they were actually doing, or coherently imagine how “embodied knowledge” was acquired and expressed. Similarly, as a director, I have found it mysterious how one might establish the right conditions for intuitive creation without over-preparing and excessive preplanning. Rare rehearsals had yielded accidental or unplanned insights, but even in the face of success, I could not have articulated why anything I did had worked, or have said whether or not it would work again.

This issue ultimately seemed to transcend creative acting and became a question related to human behavior in general, requiring me to understand why people may think or act in particular ways, especially when the end result is uncertain. As an intellectual opportunist, I wanted to use all the tools at my disposal to solve the problem at hand, so it was a logical choice to seek out cognitive research for further information. I soon found that others were already exploring the intersections of cognition and performance, and these writers challenged me to
think critically about the materials at hand without forsaking the performance discourses that brought me to these questions in the first place. Now, after a great deal of close reading, critical writing, and thoughtful walking, I am confident that I have conducted a thorough investigation, led by this personally provocative problem.

My doctoral thesis applies contemporary cognitive research to account for how disciplined psychophysical training facilitates spontaneity, creative freedom, and flow experiences in intuitively-led, physically devised theatre.

Concerns with interdisciplinary research

As I attempt to bring diverse forms of knowledge into conversation with one another, I am conscious that the path of interdisciplinary research is fraught with challenges. Following this path reminds me of the old fable about a group of blind men attempting to describe an elephant through touch: one man feels the tail and claims that the elephant is rope-like, while another feels the trunk to say it resembles a snake; one feels its flank and finds that the elephant resembles a wall, while another feels the leg and says it’s like a pillar, and so on. As each man shares his observations with the group, he finds that the other accounts sound nothing like his own. With each convinced of his own opinion, an argument ensues, and the group fails to arrive at any consensus.

I feel enormously sympathetic towards these men. Their independent conclusions are well founded and contain at least a germ of accuracy, but they fail under all-too-familiar circumstances. On the one hand, they are thwarted by the limits of their perception: they can only be in one place at a time, can only perceive that which is available to their senses, and can never truly penetrate the mind of another. On the other hand, theirs is also a failure of “vision” in the imaginative sense: they are so attached to the truth of their perceptions that they cannot reconcile the disparate information they receive into a coherent image.
My decision to engage with multiple disciplines begins to address that first problem around the limits of individual perception. Our ability to understand a performance phenomenon is necessarily limited, disclosed as it is through our own sensual experiences and through the discourses we have studied or otherwise accessed. Having a greater diversity of perspectives on hand is beneficial by virtue of its common sense, increasing the chances that we can hone in on more recognizable aspects of the phenomenon itself and reduce the chance that all the investigators are “clustered along the flank,” so to speak.

But the second problem – the need for a synthetic vision – is much more daunting. One must prepare an accurate, coherent image from a multitude of reports, considering both what was being reported and how it was being reported, and translating where necessary. It is important to locate each new disciplinary voice in relation to the others, deciding whether or not two voices are actually trying to describe the same part of the larger unknown thing, and simultaneously differentiating gaps in the image from genuine absences. Even as an image of the whole begins to coalesce, it needs to be revised with each new piece of information, which makes for a cautious progress.

Nevertheless, the realities such projects might disclose are impressive to say the least. Those opportunities are especially conspicuous in studies of the human mind, which are earning a great deal of attention in our popular culture. The New York Times’ David Brooks suggests that older, rationalist models of mind are now being supplanted by a “new humanism,”¹ brought to us by scientific researchers from fields as diverse as “neuroscience, psychology, sociology, behavioral economics and so on.” His article proposes that the formerly distant “poles” of reason and emotion are deeply intertwined, that we are more deeply social than we had ever imagined, and that the unconscious mind is a remarkably active player in our waking lives.

¹ Here, I am referring to Brooks’ own application of the term, “new humanism.” This differs from Jill Dolan’s use of the term to describe how recent, non-essentialized politics of identity might advance social justice (Utopia in Performance 75).
Brooks is not just being facetious when he says these advances might herald a cultural paradigm shift on par with Sigmund Freud’s framing of the subconscious: a reoriented understanding of cognition is resonating throughout the humanities as in the sciences themselves, and is forcing many of us to reexamine how our own chimerical visions of the world might otherwise fit together.

But here, too, as we learn more about cognition, it becomes increasingly clear that neurological research cannot give us the full picture. Creativity is a particularly complex process, involving divergent thinking and extra-daily processing, taking place through a broad range of practices, borne from heterogeneous subjects, and distributed across bodies and cultures (Dietrich 23-6). Dartnall therefore frames this creativity as the quintessential puzzle facing cognitive science, since an answer to its problems demands a thorough account of human experience in general: “cognitive science cannot succeed if it cannot model creativity, and it is here that it is most likely to fail” (14).

Building upon Dartnall’s assertion, I would further suggest that creativity in theatrical devising provides an especially robust challenge for cognitive science. Any satisfactory model of devising performers must be able to account for their ability to adapt or amalgamate multiple expressive tools, styles, aesthetics, and auditory or visual languages, drawn into orbit around one another by a legion of both rational and intuitive choices in the formation of novel dramaturgies. New skills change the terms of the actor’s engagement with the possibilities they recognize as being present, subtly and profusely influencing the opportunities disclosed to the opportunist. Moreover, the actor’s investment of time and energy in disciplinary practice resounds through countless spectra of identity, including the psychological, the muscular and the metabolic, all under the umbrella of a cohesive cognitive organism that will continue to exist and create long after the actor has left the rehearsal studio. Therefore, while this project may emphasize the
interface of psychophysical training with intuitive creation, subjectivity itself is its proper field of
inquiry, especially as it is enacted across a broad spectrum of experience.

**Chapter summary**

Chapter 1 identifies the central preoccupations of this thesis, especially as they relate to
both intuitively-led creation and interdisciplinary research. I adopt Phillip Zarrilli’s proposition
that most prominent traditions of twentieth-century actor training have been emphatically
*psychophysical*, emphasizing the cooperative integration of body and mind in performance
practice. I then explain how practitioner-theorists such as Stanislavski, Grotowski and Barba
have variously emphasized the use of physically disciplined training to facilitate creative and
expressive ‘freedom.’ I discuss how these pedagogical objectives speak to the interests of
devised theatre, where physically-led, ensemble-based improvisation is a primary method of
theatrical composition, but note that contemporary devising practices demonstrate an eclectic
blend of training regimens and diverse creative strategies. I therefore find it is necessary to
create a broad-based model of intuitively-led devising that accounts for diverse subjective
experiences.

This chapter also describes some of the epistemological issues facing the application of
cognitive research to performance studies, and elects to move forward on the premise that each
discipline offers unique insights into the phenomena in question. I recognize the domain-
specific theories of creativity proposed by Csikzentmihalyi and Sawyer, especially
Csikzentmihalyi’s theory of skillful, unselfconscious flow experience, but problematize their
treatment of these issues, and propose to recuperate them in chapters 3 and 4.

Chapter 2 describes Merleau-Ponty’s phenomenology as an alternative to Cartesian
mind-body dualism, describing the actor’s performance as an embodied, immanent practice
where multiple forms of material and cultural identity are disclosed. I further propose that
cognitive science may be used to extend phenomenological analyses of embodied subjectivity,
especially as a supplement to first-person accounts. To that end, finding fault with computationalist cognitive frameworks, I introduce enactivism as a framework that adopts a phenomenological understanding of subjectivity, but also accounts for psychological and biological realities using scientific data. Enactivism emphasizes our participatory enactment of the meaningful world around us, providing an intuitively open, culturally respondent model of creativity that lives in conversation with both empirical research and performance practices.

Enactivism provides a robust account of intuition, even framing basic perception as an active, skilled engagement with the world. However, to supplement its understanding of skillfully embodied consciousness, I also introduce Keith Stanovich’s dual-processing model of cognition. This distinguishes intuitive processing from so-called “higher” cognitive thought, in terms of functionality, as type 1 and type 2 processes respectively.

**Chapter 3** provides an explanation for how individual subjects acquire skills and experiences according to the enactive model I have proposed. It expands upon my earlier understanding of skilled perception to describe the anticipatory acquisition of implicit skills and object-directed knowledge. I further consider the interplay of type 1 and type 2 processing in task performance and explicit psychophysical training, considering the use of embodied, ‘offline’ simulations to predict or diagnose errors in performance. These processes each place demands on our cognitive resources, so I apply Vervaeke’s theory of relevance realization to describe the emergent processes mediating their allocation, and consider relevance realization’s impact upon both forms of processing.

Making reference to Zarrilli’s examples of psychophysical practice and Langer’s theories of mindful learning, I discuss how deepening one’s skilled inhabitation of a form permits the transcendence of existing perceptual knowledge and the integration of new information, leading to insight. Furthermore, each novel insight may afford another in what Vervaeke calls an insight cascade, which phenomenologically and neurologically correlates to Csikzentmihalyi’s flow
phenomenon. By attending to the flow experience as an optimal form of sense-making, an expert performer may even mediate her own flow experience.

Chapter 4 broadens my inquiry to consider the social dynamics of spectatorship and of creative collaboration, especially with practice-based reference to a dance theatre piece I directed called *Pictures at an Exhibition*. I outline the function of our neurological mirror system, more broadly embodied as a holistic Action Observation Network (AON), which lets us understand and learn from others’ actions through an empathetic simulation of those actions. Using the AON, we can understand others’ affects and actions (whether “real” or mimetically indicative), gaining insight into their intentions and mental states. I also explain how physical gestures supplement verbal expressions and may facilitate cognitive processing, which in a collaborative context may afford insight into another’s sense-making-in-process.

I subsequently discuss how the AON facilitates the rhythmic coordination of our sense-making practices with one another. Moreover, where patterns of rhythmic coordination are resilient and provisionally stable over time, I suggest that collective interactions may assume emergent identities, either as a habituated style of interpersonal collaboration or even as domains of cultural practice. One may even begin to attend to optimal styles of performance according to the specific skills and rhythms of these practices (as with *malicia* in capoeira or groove in jazz), which in turn yields opportunities for collaborative, domain-specific group flow.

Finally, Chapter 5 discusses how these processes are applied through meaningful, idiosyncratic frameworks, which include new dramaturgies, but are modeled here as a form of collaborative sense-making in Vygotskian play. Applying the cognitive skills I describe earlier in the thesis, members of an ensemble may introduce novel signs, then sustain and complexify the enactment of these signs through continued play. Indeed, the terms of pretend play may be renegotiated either through explicit directives or through elaboration of the scenario itself, at a preconceptual, intuitive level.
I further propose my enactive model as an alternative to two popular sets of theories in interdisciplinary studies of cognition and performance: Lakoff’s theory of embodied metaphor and Fauconnier and Turner’s theory of conceptual blending. Through a critique of these models I propose alternative explanations for immanent experiences of metaphor and for “blended” forms of meaning-making. Finally, I describe the spectatorship of meaningful play in light of the National Theatre of Great Britain’s *War Horse* and the University of Toronto Drama Centre’s *Performative Exercise*, finding that affective engagement in play may be piqued through a dialectic negotiation of type 1 and type 2 cognitive processing.
CHAPTER 1

This thesis will apply contemporary cognitive research to describe how disciplined physical training facilitates intuitively-led creativity in devised theatre. This first chapter will address the existing literature on intuitive creation, noting that psychophysical schools of actor training propose a positive correlation between skilled mastery and the facilitation of creative freedom. However, since the Canadian field of devised practice demonstrates an eclectic blend of training regimens and creative strategies, mine will be a broad-based model that accounts for diverse subjective experiences expressed in idiosyncratic creative contexts. Below, I establish a general basis for applying cognitive research to humanities discourse, identifying theories of domain-specific creativity and flow that I will complicate and recuperate in later chapters.

Applying cognitive science to humanities research

My own interest in interrogating performance studies via cognition (and vice versa) has been preceded by a growing field of impressive scholars, including Rhonda Blair, Amy Cook, Pil Hansen, John Lutterbie, and Bruce McConanchie. There is no formal agenda or coalition among them apart from the sort of cross-pollination that arises from periodic working groups, continued publication, and shared interests, but through these avenues, they are jointly debating how a dialogue between science and performance studies might best thrive. This increasing enthusiasm for scientific discourses, mirroring a similar boom throughout other humanist disciplines, is sometimes referred to as a ‘cognitive turn’ in performance studies.²

² Hart and McConachie adopted this term in the title of their 2006 collection, Performance and Cognition: Theatre Studies and the Cognitive Turn. Hart attributes it to the rising prominence of cognitive scientists like Edelman, Damasio and Dennett in the early 90s (“Performance, Phenomenology” 33), who “turn toward the human body as the source of both information to and constraint upon the mind” (31). It has since been deployed throughout the humanities, though it seems Steve Fuller coined it earlier when proposing the application of cognitive science to
Cook introduces the potential for interplay between scientific research and performance studies in enthusiastic terms, claiming that, “scientific research should provide new ways of questioning assumptions within our home discipline and illuminate new readings of text and performance” (“Interplay” 580). She cites cognitive linguistics as a particularly good fit for performance discourse, since it “links language, cognition, and the body in ways that impact practical and theoretical issues in performance” (ibid.). For their part, Hart and McConachie target other discourses that might benefit from cognition’s reinvigorating project. Hart finds that post-structuralism often treats embodiment as something that is imposed upon a body by culture, but cognition offers to pick biological materiality up from the wayside (“Performance, Phenomenology” 30). McConachie takes psychoanalytic theories to task for what he deems to be a speculative epistemology, whose claims of scientific authority would benefit from a more rigourously testable framework (“Epistemic competence” 53). In each case, cognitive science is convincingly sold and deployed as a strategically helpful arrow for our analytic quiver.

Yet unlike other theories in humanities scholarship, science doesn’t simply promise to “question our assumptions” or “illuminate our readings,” but historically has tantalized us with the forbidden promise of “truth.” The fact that we might never alight on exhaustible certainty detracts little from a degree of testable certainty that can verifiably cure smallpox or put a man on the moon. McConachie is particularly unabashed in his opinion that cognitive studies’ reliance on empirical findings makes it “better” than “any other [framework] as a road to truth” (“Preface” ix). He attacks the circuitous relativism and rhetoric often underlying much humanities scholarship, and proposes instead that factual moorings should be sought out if we hope to advance and deepen our collective discourse. For McConachie, falsifiable data relegates much existing performance theory to a “secondary status,” where at best it can “amplify and

extend what we can already know through scientifically valid approaches” (“Falsifiable Theories” 576). In other words, where there is dissent between our theories and the findings of science, he says we ought to bite the bullet and admit our mistakes rather than compound them.

This position strikes me as unpalatable, and not the least because it renders performance studies a parasitic discipline, lead through the wilderness by navigators who may not have our best interests at heart. It is naïve about the pace at which scientific “knowledge” actually changes over time due to technological advancements and cultural evolution; any scientific historian since Kuhn\(^3\) would find little comfort in McConachie’s addendum that “much is already known about the mind/brain that will very likely remain valid knowledge regardless of future models and modifications” (“Preface” x). Without any purchase in the validity of our knowledge, all our scholarship is rendered disposable should its moorings prove unstable, especially in cognitive studies where the models of mind that seemed cutting edge a few decades ago (i.e., computational frameworks) are falling rapidly out of vogue under the pressure of new research.\(^4\)

Most egregiously, such a view also naturalizes the scientific method as somehow existing apart from other social frameworks, forgetting that the rigid control conditions of laboratory testing generate knowledge specific to their own circumstances, only theoretically relatable to real-world phenomena. John Law’s After Method makes a strong argument that falsifiable data often fails to account satisfactorily for the lived experience of the phenomena it describes. An assumption of universality and certitude underlies the scientific method, especially where it attempts to describe phenomena that are understood and experienced according to highly subjective frameworks, and thus it can arrive at findings that “don’t travel well,” or may be inaccurate outside laboratory conditions. This is especially true where scientific methods

---

\(^3\) *The Structure of Scientific Revolutions*, 1962.

\(^4\) Computational understandings of mind will be critiqued in chapter 2.
statistically normalize difference among test subjects. The conclusions of a given study thus tend to nullify unique or personally significant findings if the incidence falls below a given threshold. This may be an acceptable decision for universalizing models, but it should be revisited when we are drawing it into a discipline that so highly values subjective singularity.

Furthermore, if taken out of context, cognitive research may not necessarily foster an embodied discourse in the way Hart supposes. WIRED’s Jonah Lehrer notes images of the brain are “that rare form of scientific data that gets splashed across the pages of newspapers and glossy magazines,” which bolsters the profile of cognitive and neurological sciences across popular culture at large. However, his interview with Davi Johnson Thornton regarding her book *Brain Culture* suggests that these prevalent images have inspired a cultural tendency to view the physical brain as being both a calculable entity that we can master and the vessel of our selfhood, generating the impression that “we are our brains.” Jan Slaby refers to this impression as a “neuralized subjectivity” (403), which is bittersweetly ironic vis-à-vis Hart’s call for cognition as an entry to embodied performance studies.

Ultimately, Slaby warns, “many of the experimental results and their theoretical articulations are unstable and provisional at the current stage of development in brain research” (398). Though neuroscientific data has been enthusiastically adopted by both popular culture and academic discourse, these adoptions may be premature at times, sacrificing accuracy for the promise of applicability (ibid.). Empirical research bears Slaby’s intuition out, as cognitive science is uniquely empowered to shuttle bad science into new disciplines. A 2008 MIT study (Weisberg et al.) of neuroscientists, neuroscience students, and naïve adults (lacking any formal neuroscientific education) asked its subjects to review a psychological experiment and evaluate its 4 possible explanations. Two explanations were intentionally flawed while the other two

---

5 Elsewhere, Lehrer suggests that “the human brain has become a pop culture icon. (If Warhol were around today, he’d have a series of silkscreens dedicated to the cortex; the amygdala would hang alongside Marilyn Monroe.)”
were accurate; one explanation in each pair also contained superfluous neuroscientific discussion, irrelevant to the logic of the experiment. Though all groups consistently judged “good” answers to be better than their counterparts, the two non-expert groups showed a striking tendency in their evaluation of bad answers to rank “neuroscientific” arguments favorably despite roundly condemning identical statements in simple prose. According to the authors, non-expert respondents seemed to have been seduced by its alluring, authoritative language (476). Their finding is echoed by Slaby: [a]s soon as such a discourse is dressed up as science—referring to robust facts about our neuronal organization and functional architecture—it is effectively removed from political discussion” (406).

These mightn’t be the first instances where jargon has been deployed to enhance the appearance of authority, but since scientific jargon is closely aligned with the appearance of objectivity, we must be especially vigilant against its use as a cloak to disguise logical inconsistencies, or as a cudgel to stifle debate. Slaby, Law and others therefore insist that scholars keep a firmer grasp upon the contexts, consequences, and conceptual baggage attendant to research in cognitive studies. As Banfield suggests, “moving on to the psychologist’s territory offers us the possibility of using a potentially powerful set of methodological tools” (245), but it is not a panacea for the explanatory gaps in our understanding, and must be applied with a critical eye to its implications and limitations. I am not implying that performance scholars are ‘non-experts’ who can’t be trusted to read data closely or represent it accurately, but we do have every reason to be mindful of our agency in this project. We must avoid the temptation to read abstracts and conclusions without interrogating the methods, and to grant authority on the basis of a finding’s convenience or ubiquity rather than its rigor.

Even where the authority of scientific data is convincingly supported, the blanket presumption of one sort of knowledge’s authority over another represents a dishonest comparison. Though we might be “mindful” that all our data is critically sound in its own right,
discrete disciplines have distinct practices and values and yield different sorts of data, and it makes little sense to rank one over the other. Comparing empirical study to performance scholarship is like a comparison of apples and oranges – apples will be better than oranges when making apple juice, just as science will more reliably produce falsifiable information. However, the whole point of bringing them together is to take full advantage of their heterogeneity. Significant discrepancies may arise from the fact that our objects of study are sufficiently different from one another, arise from unique contexts, or respond differently to particular methods of inquiry. Any synthesis of contextually specific information may thus find that its subjects are deeply misaligned at points, requiring a generous ability to entertain “simultaneous truths” in tension with one another. Consequentially, honest interdisciplinary scholarship might sometimes relegate us to a lichen-crawl of cautious equivalency, even as we hope it will afford imaginative leaps towards whole new concepts and structures. Paraphrasing Cook, although interdisciplinary work does not require that we be converts, it does require us to be bilingual (“Interplay” 580). It is necessary to rigorously interrogate those terminologies we seek to reapply across disciplines lest we compound misunderstanding.

Wherever we do find that closer correlations might justifiably be drawn between our objects of study, we need an especially clear understanding of the deeper implications of the vocabularies we’re applying. Again, this reflexivity isn’t entirely novel, as theoretical traditions within the humanities are certainly heterogeneous enough to warrant some internal debate over shared terminologies. However, a psychologist’s understanding of the term “performance” comes to him through a historically different set of specialist terminologies, indicating and encapsulating a unique set of interests for the purposes of a psychological discourse. These must be interrogated if new perspectives gleaned from scientific data are ultimately able to address performance on our terms.
The need for a marriage of terminologies is all the more striking when we consider how few empirical studies have been designed explicitly to address performance phenomena. Chris Banfield offers a scathing analysis of an especially egregious study by Noice and Noice, who proposed to examine “Expert Performance” in actors, yet demonstrated a complete misunderstanding of the subject by focusing on the actors’ ability to learn and recall scripted text (241). That the actors were marginally better at memorization is both unsurprising and unhelpful when considering the wealth of skills that fell outside their purview, “miscasting” acting as a straightforward execution of the playwright’s creation.

However, the difficulty non-theatre specialists have had in focusing empirical study is almost understandable as we recall how the role of the actor in the twentieth century has itself been a moving target, contesting the possibility that we could even agree upon a clear set of “actor-ly” skills. Whether the performer is developing a new performance from the ground up or attempting to more-or-less faithfully inhabit a preexisting track, the diversity of skills we might discuss is utterly staggering. How would we compare performers from the Strasberg school to performers from Grotowski’s laboratory, or students of Decroux’s gestural language, or Bunraku shadow puppeteers, and what could these comparisons tell us about actors in general, including those who have never attended a workshop, or who developed their own methods?

Many acting traditions will have their own specialized interests and vocabularies, making the basis for a crossover hard to pin down. In the interest of seeking common ground, it may

---

6 In all fairness to Noice and Noice, Banfield is citing an early study from 1991. Their recent work on performance has been more sophisticated, and increasingly understands acting as a form of embodied cognition. An article published by Noice and Noice in 2006 offers a tacit correction to their earlier emphases, and begins with the following preamble: “Actors report that the question they are asked most frequently is, ‘How do you learn all those lines?’ However, actors themselves rarely consider memorization a defining skill” (14).

7 The tide seems to be turning on this front as university research departments are increasingly addressing questions of performance through thoughtful empirical research. McMaster University’s new NeuroArts lab, led by Prof. Steven Brown, for instance, is currently constructing new stage facilities wired to track audiences and actors in situ.
therefore prove more helpful to look beyond the desire for semantic equivalencies. Even highly rigorous or codified systems place some working capital in the development of embodied, non-verbal knowledge, which enhances the ability of the actor to respond spontaneously yet skillfully in the creative execution of a performance, without the intervention of a controlling consciousness. The actors’ “skilled intuition” then becomes a rather precious phenomenon: being mysterious to consciousness, its constituent processes evade accurate empirical study and a complete encapsulation by its parent disciplines. As such, this is exactly the sort of mystery that a generous, interdisciplinary study of cognition might be able to reveal to us.

**Psychophysical training and skilled intuition**

Western theatre discourses in the 20th century have increasingly recognized performance as a *psychophysical* activity, wherein the actor’s body and mind are understood to be mutually and cooperatively affective. Phillip Zarrilli’s book on the subject notes that different theorists have conceived this relationship in their own ways: Stanislavski’s drew the image of a mind/body symbiosis from Ribot’s psychology, whereas Barba’s holistic vision for a psychophysical practice weaves energy and perceptual awareness into the selfsame mind-body cloth (*Psychophysical* 8). Whatever the terminological differences, a psychophysical paradigm recognizes that the intuitive impulse and its physical expression invariably implicate one another in the same individual.

Stanislavski borrowed heavily from a psychological understanding of consciousness that saw the subconscious as a repository for emotionally-charged memories (Auslander 55). In early

---

8 According to Zarrilli, Stanislavski’s use of the term “psychophysical” in relation to acting was “an innovative, if historically limited and not always successful, attempt to problem-solve the relationship between the ‘psycho’ and the ‘physical’ elements of acting” (*Psychophysical* 13). Despite its problematic reinscription of the mind and body as being distinct entities that require a deliberate unification project, I will use this term because it remains in conversation with the Cartesian dualisms that persist in discourses of embodied subjectivity while gesturing towards their deconstruction.
versions of his system, the actor was encouraged to explore, select, and retrieve emotional experiences in service of her role: it was by essentially ‘re-living’ a relevant emotion that the actor’s portrayal of a scripted emotion was rendered authentic, resembling a natural response rather than conscious affectation. However, Stanislavski believed that memories forged in genuine experience inevitably become altered and aestheticized by the natural turbulence of the actor’s subconscious mind, and that while functionally essential, this process of change is inaccessible to the actor’s consciousness. Consciousness may only lend a general sense of direction to a creative subconscious, and it is this hidden force that drives the actor’s creative engagement with the world (Actor’s Work 164).

The essence, the prime source of creative work, is hidden deep in the actor’s mind, at the very centre of our psyche, in the elusive super-conscious, the well-spring of life, the heart of our nature, our secret ‘self’, inspiration. That is where the most important creative material lies hidden.

This is unattainable and will not surrender to the conscious mind. It has to be approached with extreme caution. It is created out of an artist’s nature, his intuitive longings, creative premonitions, hopes, moods, visions, shadows, feelings, turbulent passions, moments of ecstasy, and inspiration. They can neither be defined in words, nor seen, nor heard, nor consciously understood. (164-5)

Recognizing the efficacy of our nonconscious faculties, Stanislavski’s system defers to them, and suggests that the actor “submit to [the unconscious’] creative initiative, try to help it, or, at least, not get in its way” (165), the result being that the physical actor impulsively generates genuine expressions of emotion onstage. Furthermore, when a primarily psychological approach proved inconsistent, Stanislavski increasingly emphasized the use of physical actions as a means for “stimulating the inner life” (Carlson 379), rejecting the primacy of any “mind” for an increasingly holistic vision.³

³ My intention above has been to highlight Stanislavski’s ingenious approach to framing the actor’s consciousness, but considering how his work has been historically misrepresented through a narrow emphasis on his early emotional memory work, I would like to further stress that Stanislavski’s approaches to actor training were neither purely nor primarily “internal”. By
Grotowski’s own psychophysical approach attempted to integrate “all of the actor’s psychic and bodily powers which emerge from the most intimate layers of his being and his instinct” (16), and proposed a rigid program of physical training to increase the range and flexibility of the actor’s expression. This was further intended to eliminate the actor’s self-conscious awareness of the physical execution of her task, which might otherwise divide an impulse from its expression; this removal of expressive blocks was advocated as the *via negativa*. Using Grotowski’s example of the actor’s voice, the vocal apparatus must be “infinitely more developed than that of that man in the street,” so that it is “able to produce sound reflexes so quickly that thought – which would remove all spontaneity – has no time to intervene” (35).

Clive Barker notes similar patterns in his own studies of theatre, noting that “without conscious interference, the body works more efficiently. If you concentrate on making the body work, you interfere with its working” (*Theatre Games* 18). Freed of any physical impediments to the execution of an impulse, the actor can be attentive to the external stimuli and provocations that enter her awareness and execute an impulsive response without hesitation. Tentatively reaching across disciplines, I will also note that contemporary empirical research supports Grotowski and Barker’s resistance to conscious “intervention,” demonstrating decreased efficacy when conscious awareness is brought to the execution of skilled, otherwise-innate actions. A professional baseball pitcher, for example, will perform with reduced efficiency and accuracy if asked to concentrate on the rotational mechanics of their forearm while throwing a curveball.10

---

1914, Stanislavski had already begun to shift his focus “from having the actor generate a feeling that would lead to action, to having the actor define an action as the way to a feeling” (Blair, *Actor* 31). His method of physical actions demanded especially extensive training and physical rigor, and would be a valid touchstone for my following discussion on spontaneity-through-practice. However, since the purpose of this section is to highlight a multiplicity of psychophysical approaches, I will move on to address other practitioners and theorists. 

10 For studies of expert performance in sport, see Beilock et al. and Beilock & Carr.
When considering this example of the baseball pitcher though, we are reminded that he was not born with the skill he demonstrates in a professional game: it had to be learned before it could be “liberated.” This highlights an apparent paradox, that unselfconscious spontaneity demands a foundation of technical, painstakingly disciplined practice. In Barba’s Odin Teatret, the first season of a performer’s training requires her to learn a series of acrobatic exercises by rote (*Physical Training*, Carreri). Each exercise requires strict attention to detail and constant self-evaluation, which “coincides with a painful sense of expropriation of the actor’s own spontaneity” (Barba, “Amulet” 101). Halting self-consciousness remains part and parcel of executing new motor skills and emulating unfamiliar forms, but with practice, subsequent execution no longer places a premium on the actor’s conscious attention and it can be performed with a degree of autonomy.

To be clear though, it is not as though some creative unconscious “possesses” the skilled subject, as she can still consciously affect the nature of her engagement without micromanaging its practices. Despite the struggles we have when learning to walk as toddlers, an autonomous process of decision-making tends to coordinate walking in most adults, anticipating potential obstacles and generally circumventing them without troubling our conscious awareness. To quote Lutterbie, “[w]hen we navigate a crowded street, we do not distinguish between thought and movement but think in movement” (“Neuroscience” 156).

Wacquant identifies this as a *semi-autonomous logic*, which he studied in sparring during his immersive study of boxing culture. The boxer’s rational thought is too slow to devise an effective reaction, but self-abandonment into a “fight-or-flight” instinct ignores the rules of the match (155). He proposes that through practice, the trained body becomes “the spontaneous strategist; it knows, understands, judges, and reacts all at once” (ibid.). Martial arts are another
excellent example of this principle in action, where self-evaluation and readjustment allow the pupil to emulate the required form, which can then be applied intuitively in combat.11

Similarly then, the actor may also find that an access to highly technical action enables new possibilities for creative expression and hence an even greater “freedom” – not just to execute an expression, but to respond to their environment and to the creative tasks at hand, inventing accordingly. In the case of the Odin’s acrobatics, the actor’s minute control of form begets an implicit understanding of the psychophysical logics underlying its execution, and the actor can thereby deconstruct and repurpose them in their own work (ibid. 103). Formal elements of the exercise can be readily accessed, selected, and adapted in response to the images, rhythms and associations of a novel creative context. Suzuki likens this to the development of a performative ‘grammar’: for one to “enjoy a lively conversation” (“Culture” 163), one must studiously assimilate a language’s rules and understand its constituent logics, thus opening the door to inventive communicative play. A psychophysical training regimen thereby broadens the range of the actor’s creative powers by revealing new creative possibilities, and by developing her capability to act upon them without a self-conscious analysis of how (or if) this may be done.

Case study: training the devising performer

Moving forward, we would not lack for examples of particular practices that facilitate creative intuition. However, I am unconvinced that pedagogically-specific examples like my earlier citations of Stanislavski, Grotowski or Barba are optimally positioned as launching pads for describing real-world practice. It actually seems quite rare that a contemporary actor would singularly ascribe to one of these specific pedagogies, or even have a clearly traceable lineage of training. By turning my attention to a single idealized “path,” I might inadvertently be sweeping a propensity for heterogeneous skill sets under the rug.

11 See Zarrilli, *Psychophysical* 53, and his book *When the Body Becomes All Eyes*. 
Margolis and Renauld’s recent collection of essays on American actor training offer some useful food for thought. They suggest that across a vast country like the United States, instructional specializations will be wildly diverse due to a host of local factors that cannot really be accounted for at a national level (“Introduction” 2).\textsuperscript{12} Renauld recognizes that one class teaching ‘voice’ or ‘movement’ might follow an entirely different path from another due to local factors including the background of the instructor or the sort of actors they want to produce (“Artists or Consumers?” 78), and that teachers may draw their own system of techniques from multiple disciplines and influences (83). Even where “Methods” have name recognition, such labels might be used to roughly indicate a teacher’s values rather than outline a programme (ibid.). Moreover, the preponderance of a close-community “guru mentality” in some acting schools “tends to mystify training and render it more cloistered and opaque” (Woods 65). Training methods evade entry into popular discourses, while fostering techniques that may become especially idiosyncratic.

The authors also note that in their experience, specialized acting education has itself becoming increasingly rare, where consistent training has been supplanted by a proclivity for short-term workshop sessions, which themselves may fall from favor. Renauld seems rather blasé about this trend:

> When I started giving those [workshop] sessions, an actor would typically tell me where or with whom he had studied. This is, of course, how many a professional actor introduces himself in most countries of the world. After some years, I found that the typical U.S. actor would instead tell me only what workshops he had taken. By the early 2000s, the typical American actor was telling me only what experience he had had. . . (“Artists or Consumers?” 83)

However, Victoria Lewis suggests that this eclecticism might not reflect a problem (i.e., according to some standard of ‘quality control’) so much as an advantageous strategy that can

\textsuperscript{12} I believe that many of these findings can be at least anecdotally applied to an understanding of the current Canadian scene, echoed by Barton in the introduction to his anthology, \textit{Collective Creation, Collaboration and Devising} (xx).
play to the strengths of the actor herself. Discussing her own training as a disabled actress, Lewis describes how in many forms of psychophysical training, she was “charting [her] own way through those disciplines given [her] faulty musculature” (179). She found that some forms of movement training, such as Laban, Alexander, and Viewpoints/Suzuki, tended not to ‘judge’ the formal structure of the body itself, but encouraged the practitioner to adapt (185); she eventually became quite skilled at adapting the forms and her body to the task at hand. Bearing all this in mind, an accurate account of creative intuition should be able to account for a heterogeneous history of psychophysical training, reflecting the realities of contemporary practice while inviting an inclusive view of actor identity.

An inclusive approach to the legacy of psychophysical pedagogy, a deep concern with intuitively-led creation, and an enthusiastic embrace of diverse modes of expression are most vibrantly invoked by devised theatre. In labeling devising as a form, I do not mean to imply that it arises from a single school of thought. Rather, this is a diverse assemblage of practitioners that might be academically moored by a judicious use of the term (as with the phrase “cognitive turn” in performance studies). According to Govan and colleagues:

Contemporary devised performance does not constitute a coherent movement or a distinct cultural ambition, and consequently there is no single or continuous history that can account for the richness of its influences and artistic practices. (13)

At best, devising describes a diverse nexus of practices. It tends to favor physically-led, ensemble-based improvisation as a method for theatrical composition, though any given process is just as likely to include “an eclectic and experimental mix of playing, editing, rehearsing, researching, designing, writing, scoring, choreographing, discussion and debate” (Govan et al. 7). According to Tuner and Behrndt, “in devising, the content, form and structure

13 According to John Lutterbie, “[o]ver the last half century, improvisation has become a standard tool in most rehearsal spaces and a source of material for the development of new performances. (Towards a General Theory 162)
are determined as the process unfolds. The performance text is, to put it simply, ‘written’ not before, but as a consequence of the process” (170, italics orig.), which in turn, requires an adaptive approach to dramaturgy: “the deviser searches for structural parameters while at the same time creating new material” (ibid.). Multiple creative strategies may be developed, applied or rejected throughout a single process.

Not all devising processes are characteristically ‘chaotic,’ as ensembles with a shared history may acquire a measure of consistency in their practices. In some cases, consistent methods or a shared psychophysical background are thought to engender a “common language” for the creative process. In Toronto for instance, the now-defunct One Reed Theatre featured graduates of the National Theatre School who continued martial arts training under director Daniel Mroz, and the venerable Theatre Gargantua has long followed a creative method established by director Jacquie Thomas. However, such accounts are rarely ironclad, and true to the definitions offered above, almost all devising companies proudly professes their willingness to alter their approach to a given project if inspired to do so by the subject at hand, or by the intuitions of its members.

Devised theatre is largely predicated on an understanding that the fruits of spontaneous physical creation are qualitatively different from those of textually-based playwriting, leading Barton to suggest that the devising performer requires a “heightened sensitivity to possibility and a rigorous ability to exploit its gifts” (“Navigating Turbulence” 105). Devisers therefore tend to embrace practices and techniques that facilitate spontaneity, vis-à-vis psychophysical training.

Training in discrete technical regimens allows the actor to employ particular styles, attitudes, or physical grammars in performance. Roberta Carreri’s working demonstration, *Traces in the Snow*, locates such training as crucial to practice in Barba’s Odin Teatret: new actors would first begin with a structured set of acrobatic exercises to enhance their self-control and access to impulse, while later seasons of training encouraged actors to seek personal
inspirations they might incorporate into their own work, and thereby expand their creative pallet. The breadth and probity of an individual’s devising practice thus tends to be sharpened by training and allows them to communicate more clearly what they wish to express. As divergent preparatory systems meet an inclusive dramaturgy, devising becomes “a way of working that supports intuition, spontaneity, and an accumulation of ideas” (Oddey 1).

Yet training does not limit the actors’ pallet to “dramatic” expression alone. Though Carreri believes the audience should not be consciously aware of the actors’ technique (which she likens to an ugly metal staircase that is made beautiful by a covering of snow in the act of performance), some forms of physical theatre intentionally disrupt theatrical readings of this sort through demonstrations of overt athleticism, highlighting a resistance to fictional tropes. “Performance created within this realm celebrates the physical ability of the body through displaying the agility, flexibility, power and stamina of the performer’s body,” foregrounding the tension between her capability and her physical limitations (Govan et al. 160).14 This fosters a productive “ambiguity” in the actor’s self-presentation, where she may not be present herself as playing a particular character, yet is not wholly “non-matrixed” (96).

Barton cites a vivid example of this in a performance by bluemouth inc., during which an actor was stuffed under a chair (“Razor’s Edge”). Though the act was “contained” within a broader theatrical narrative,15 Barton became strikingly aware of its materiality when he noticed errant strands of the performer’s hair that had been ripped out in the process (23). This inspired a visceral awareness of the immediacy and proximity of the event, with a near-Brechtian sense of theatrical alienation. Emphatically highlighting the tension of awareness experienced by both

---

14 Govan et al. also cites instances where performers even challenge more “natural” somatic coding by running roughshod over such perceptions, as where the “freakish” abilities of circus performers demonstrate strength, flexibility, or balance at the margins of human capability (162). I will raise this point again in chapter 5.

15 Barton defines bluemouth’s “narrative” as “abstract, non-linear, composite, and elusive, certainly, but also characterized by intention and an investment in conventions of accessibility” (23).
actor and audience lends devised performance its frisson, and explicitly locates the devising actor as an agent at the intersection of fictive and material realities.\textsuperscript{16}

In addition to the individuated forms and dramaturgies of devised work, as well as its characteristically physical ‘inhabitation’ by the performer, the content of devised work is also often highly specialized according to the deviser’s personal history. This is most obvious in the case of explicitly autobiographical works – staging past events with varying degrees of fidelity – but may also involve the expression of ideas that had otherwise escaped conscious awareness. Johnson notes that through spontaneity, a rehearsal process may lead creators towards surprising self-disclosures, such that they express and thereby come to recognize attitudes and values they didn’t know they carried (6). Bogart and Landau speak similarly about their Viewpoints method of composition. Although it tends to awaken the performer’s responsive awareness through an ever-broadening range of external, non-personal stimuli, these awakenings in the form of impulse-driven creation can become “a method for revealing to ourselves our hidden thoughts and feelings about the material” (12).

This ultimately foregrounds a common-sense argument about the performer’s subjectivity, namely, that the interpenetration of both daily and extra-daily practices shape the performer’s expression. After all, the body has been “trained” by the general having of experiences as much as through intentionally driven practice. The emotional intelligence a devising performer exercises with a lover remains with her when she explores a love scene, while the kinesthetic sensitivity developed through movement work remains accessible whether she is crossing the street or the stage. A creative process rooted in spontaneity thereby becomes an expression of its creator’s unique living perspective and vice versa, feeding the “insistent,

\textsuperscript{16} The following chapter will describe how phenomenology has been applied to performance studies as a part of efforts to anchor these very intersections.
animated individuality” (Barton, “Introduction” vii) at the heart of the devising process from both ends. To quote Barba at length:

Training does not teach how to act, how to be clever; it does not prepare one for creation. Training is a process of self-definition, a process of self-discipline which manifests itself indissolubly through physical actions. . .

. . . . .

This imperceptible daily transformation of one’s way of seeing, approaching and judging the problems of one’s own existence and that of others, this sifting of one’s own prejudices and doubts . . . is reflected in the work which finds new justifications, new reactions: thus one’s North is displaced. (Barba, “Words and Presence” 79)

Taking Barba on board, the proper field of inquiry for a study of creative spontaneity in performance is not simply the actor as she appears onstage, but the whole thinking, feeling subject.

Describing creativity

According to Smith and Ward (“Creation of Ideas”), creative thought involves many of the same processes as non-creative thought. Each draws upon our concepts, memories, problem-solving and decision-making skills. However, like the practitioner-theorists I’ve mentioned above, studies of creativity also note that intuitive processing can synthesize our conscious knowledge in unexpected ways, and thereby yield novel solutions. For example, in analytic problem solving, the subject consciously looks for a solution by first recognizing familiar patterns in the information at hand, then manipulating this information on the basis of knowledge and strategies that these patterns suggest as being relevant. With increased expertise, he more efficiently recognizes these patterns and is more likely to exclude seemingly irrelevant information (Bassok and Novick). Yet where the procedures or goals of a given problem are especially ill-defined, inadequate field-specific knowledge can get in the way (Steenburgh et al):
the subject may apply inappropriate constraints that limit their success and lead them to an impasse. Divergent thinking is required in such cases, so that the subject remains open to information they might have otherwise disregarded, and which might be applied in unexpected ways (Smith and Ward).  

Often, this restructuring of the problem seems to take place at a subconscious level during a period of apparent latency until one’s discovery of a novel solution is experienced as a sudden flash of awareness, or *insight*. An archetypical example of insight experience would be Archimedes’ “eureka” moment, when the Greek physicist famously discovered an innovative method for measuring the density of irregular objects while taking an idle bath. Wallace Graham’s *Art of Thought* (1926) imagined this as a process of incubation where conscious information percolates and recombines in the subconscious before being assembled into creative new ideas. But while Graham understood incubation as one step in a linear path towards creative inspiration, we might better understand intuitive creation as a dynamic process taking place concurrently across various orders of conscious and subconscious thought, influenced by task performance, affect, and unexpected perceptual cues (see Steenburgh et al). The individual’s creative process is a diffuse web of synthetic practices that span logical assembly and the seeming randomness of subconscious recombination, with a range of cognitive processes in between.

Just as creativity employs a wide breadth of cognitive strategies, creative thought may take place outside problem-solving rubrics and at various levels of cultural significance. Lev Vygotsky’s developmental studies suggest that children might be thought to “creatively” develop their own speech from the language that surrounds them (John-Steiner et al. 6-7), much like

---

17 A classic example here is the nine-dot problem, wherein a subject is presented with a square grid of nine dots and asked to connect them using 4 straight lines, never lifting their pencil from the paper (see Steenburgh et al.). Most people struggle with the problem until they recognize that they can (and must) extend their lines beyond the imagined confines of the grid itself, quite literally “thinking outside the box.”
adults appropriate the tools and signs of their cultural reality to imagine new expressive possibilities (7). Whether through language or artistic expression, the enactment of new creative possibilities becomes experiential fodder for future creation, effectively feeding the imagination through practice (8-9). In that sense, creativity is a commonplace phenomenon discoverable in all human invention and novelty (ibid. 14), neither always nor often expressed as a paradigm-shaking “eureka.”

Nonetheless, while everyday forms of creativity may tell us something about the mental processes underlying artistic creation, and while this expansive definition may be ontologically defensible, Hausman reminds us that an overly generous understanding of creation may not especially useful for analysis. If taken to its extreme, “[a] stone exemplifies creativity as much as a painting by Giotto. Except perhaps as a metaphysical category, this universal meaning of creativity does not advance our understanding” (Hausman 6). To distinguish “everyday” forms of creativity from those that gain recognition at a broader cultural level, Csikzentmihalyi proposes the novel creation must generate insights that are adopted within the originating system of cultural mediation. He thus contends that a cultural recognition of creativity requires 1) a culture that contains symbolic rules, 2) a person who brings novelty into the symbolic domain, and 3) a field of experts who recognize and validate the innovation (6). Elsewhere, Sawyer augments Csikzentmihalyi’s discussion of production and receivership, and further proposes that creativity is only discursively valid within these domains of “shared languages, symbols and notations” (Explaining Creativity 125). Creative acts become open to broader recognition where domains overlap with other fields, or with the broader cultural domain.

The benefit of this modeling is that it emphasizes how something is creative. Pinning our criteria to the validation of “experts” (here, those who are sufficiently literate that they can recognize innovation in a given field) allows us to use contextually specific standards as the basis for identifying the creative process or object; the creator herself becomes the locus around
which this system is anchored, and their shared domain of knowledge becomes so much informational clay. This requires the individual to “know” a field as a precondition of creative advancement within it (Sawyer, *Explaining Creativity* 59): a physicist, for instance, would require existing knowledge of physics in order to propose a novel equation. One might also take advantage of this overlapping by cross-fertilizing domain-specific information sets where the individual has at least some measure of access to a secondary field and can identify opportunities for information transfer (65): a physicist might know a little about meteorology, and apply their own in-depth knowledge of particle behavior to a new weather prediction system. A single creative insight can thus spiral out into hundreds of complex, related fields (67), which is promising in light of the associative byways a devising process might follow.

In cases of sustained creative action, Csikzentmihalyi identifies an especially fascinating phenomenon that he calls flow. Flow is an optimal quality of experience in the execution of an activity (110), and it can be experienced across a broad range of practices: from rock climbing and hockey to dance and jazz music. It typically occurs in instances where a subject’s skills are being challenged, and generally requires a significant degree of skilled mastery to begin with. For example, in Clive Barker’s analysis of jazz, he argues that a sufficient mastery of the kinesthetic principles underlying instrumental performance is essential for optimal jazz improvisation. Technique “enable[s] a performer to embark on wild adventures without preconceived intention and reflective considerations” (13). In Barker’s example, this “wild adventure” would be an experience of flow.

This may also be experienced as a collective phenomenon, as amongst jazz ensembles where members might riff off one another and share a creative ‘high’ (Sawyer, *Explaining Creativity* 254). As a member of an ensemble-in-flow, individual skills can also encompass

---

18 Csikzentmihalyi notes that this role leaves popular impressions of creation open to an oft-misconceived “cult of genius,” which can tend to downplay the influence other systemic factors.
forms of social mastery: a member of the ensemble must attend to subtle visual and auditory cues relayed between the group members, which inform each member’s understanding of the rhythmic and melodic trajectories they are cooperatively establishing.

Both independently and collectively, flow experience is characterized by a unique set of cognitive circumstances, including a heightened sense of awareness, unselfconsciousness, a merging sense of action and awareness, the successful exclusion of distractions, and a distorted sense of time (Csikzentmihalyi 111-3). Frederick Seddon adds that in group flow, the collective’s attunement to one another may constitute a “decentering” of self, such that the development of an ensemble’s mutual empathy grants the group a collaborative form of aesthetic judgment rather than a set of standards belonging to any one individual (49). When the individual is least self-absorbed, they are best equipped for creative “risk-taking and self-challenge” (ibid.).

Turning back towards theatre, the impulses, intuitions, and implicit skills of the improvising jazz musician are reminiscent of those endemic to a devising process. Sawyer’s description of improvised performance reflects much of the complex negotiation of consciousness that flow experiences entail:

> Improv performers minimize the role of the intellectual, conscious mind during performance. Yet they realize that some conscious awareness is always essential: they must create while aware of the other performers and the conventions, etiquette, and expectations of the genre . . . There’s a constant tension between the performer’s conscious and unconscious during performance, and each performer has to balance the tension from moment to moment. (Sawyer, Explaining Creativity 234)

Furthermore, Govan and colleagues explicitly extend the example of the jazz ensemble into an analogy for devising, explaining that its laboratory-like processes of experimentation and improvisation are often used to overcome personal inhibitions, develop ‘awareness,’ and create an atmosphere of creative trust. They conclude:
This way of working has become hugely influential on actor training and on devised theatre practice, with the codification of games and exercises in books and manuals . . . which aim to encourage actors to develop techniques of working collaboratively and creatively, with all the energy and spontaneity of a good jazz band. (49)

Consequently, Csikzentmihalyi’s concept of flow retains its interdisciplinary appeal, and serves as an excellent description for an optimal form of practice in devising, which understands skilled mastery and attentive collaboration as a path to the creative spontaneity it values.

**Critiquing domain-based theories**

Nonetheless, despite the resonance of Csikzentmihalyi and Sawyers’ vocabulary, their theories have been weathered by misapplication, and are hindered by their investment in solid domains of knowledge. There is also an explanatory gap within the theory itself that needs to be addressed before the phenomenon of flow can be reliably applied to my analysis of devised performance. I will flag these issues below.

On the first count of misapplication, Sawyer rightly notes that psychological studies of performance creativity are relatively rare because popular biases like those I mentioned above may unreasonably narrow researchers’ understandings of skill in performance (248), but Sawyer demonstrates a powerful bias of his own. He suggests that the actor’s primary expression of creativity is through her ability to make dialogue, be it scripted or improvised, sound “natural” through an attunement to the micro-timing of conversational rhythms (245, 247). He confuses the actor’s objective with a single, more-or-less relevant, possible effect. This misconception provides an inadequate account for the “realist” or pseudo-naturalist” styles of performance, and is wholly ill-suited to explicitly unrealistic expressive forms.

Even if we were to accept Sawyer’s own preposition for what constitutes expert performance, the delineation of theatrical skill from everyday ability is too messy to facilitate clear domain categorization according to his rubric. Audiences certainly rely upon a shared
knowledge of conventions to appreciate and understand performance (Explaining Creativity 127), but they are also drawing upon a wider breadth of cultural contexts and interpersonal experiences, especially where the performance is a realistic drama. One might recognize the actor’s ability to “sound natural” in relation to a familiar sense of what “natural” dialogue sounds like, yet have no knowledge of those skills that are necessary for the actor to re-create a “natural sound.”

Sawyer’s proposition is further unsettled by Vygotsky’s analysis of Stanislavski. Vygotsky suggests that even an acting system grounded in so-called “mental naturalism” (“Problem of the psychology” 242) cannot be properly understood as either the inhabitation or expression of a realistic psychology. For the actor, common human expressions reflect unique psychological processes by virtue of their exhibition on these cultural stages (238-40). In Vygotsky’s words, “The experience of the actor, his emotions, appear not as functions of his personal mental life, but as a phenomenon that has an objective, social sense and significance that serves as a transitional stage from psychology to ideology” (244). Despite any stylistic attempts to seem “natural,” theatrical performance reflects a unique form of cognition, informed but not encapsulated by everyday phenomena. The audience’s interpretation of these processes is not an identification of skills so much as an inference of their implications and an appreciation for their success, which may itself be recognized differently depending on the context of performance (241-2).

19 Revoking my conditional acceptance of Sawyer’s premise (eliding “performance” with a vague “realistic dramatic acting”), this question of expertise only becomes thornier if we expand our scope of genre. Boal’s forum theatre, for instance, subverts the proposed limits of both audience and actors domains by encouraging a sharing of expertise between them. The performance begins with an “expert” demonstration by performers acting out social problems of local concern, but then calls upon the members of the audience to apply their own “expertise” by stepping into the drama and changing its outcome. Here, expertise is developed and assessed collectively. I will return to the general possibility for individual and collective knowledge enhancement in chapter five in light of Vygotsky’s model of play.
Consequently, creativity in “theatrical skill” cannot be satisfactorily described according to a domain structure. The actor is relying upon a different domain of knowledge to perform than the audience is using to interpret the performance. The domain of shared knowledge required for an appreciation of theatre would include an almost excessively broad understanding of human psychology and behavior, and even then, the skills of performance are not entirely common to those of appreciation. If domain-specific categorization has outlived its usefulness, we must take a broader view of experience in general, and refine the terms used to describe expert performance in flow quite apart from the discipline that affords it.

We must also keep in mind that genuinely “optimal” flow is relatively rare, and even those ensembles that actively strive for harmonious and attentive creation may not achieve it. Instead, the marriage of the ensemble members’ visions produces a collage of sorts, where the dramaturgical processes reflect multiple individual visions that exist in tension with one another (Oddey 1). The eclecticism of images, approaches, styles, and dramaturgies that arise in the development process do not always find a “harmonious” resolution in performance, and may only fit together as instances of collision that invite diverse readings from the audience. ²⁰

Moreover, both performers and audience members may find that some collisions are less desirable than others, perhaps being more injurious or mundane than creatively provocative. As desirable as flow experience may (or may not) be, a thoughtful account of skilled devising should not understand skill exclusively as it affords performance in those terms.

Finally, despite the emphasis that both theorists place on the negotiation of consciousness in creative thought, a major gap in Csikzentmihalyi and Sawyer’s theories is that neither really accounts for the organization of consciousness in the first place. Both theorists believe that cultural influences feed back into the subconscious, which “still follows patterns that were established during conscious learning. We internalize the knowledge of the domain, the

²⁰ See Barton’s discussion of montage in “Navigating Turbulence.”
concerns of the field, and they become part of the way our minds are organized” (Csikzentmihalyi 102). Yet neither justifies this supposed patterning of the subconscious after the conscious, nor supplies any method for internalization and recombination. Csikzentmihalyi’s merely proposes that ideas combine through simple and sometimes random patterns of association during incubatory periods (Creativity 101). There is no account for how or why especially useful or creative insights are developed, let alone how they become subject to conscious attention.

They also suggest that an alternation of both conscious and “subconscious” processing is integral to creative problem solving, but do not propose any mechanism by which these might relate over time. For example, a lynchpin of Csikzentmihalyi’s work is a self-run study finding that when test subjects reported higher ratings of personal creativity throughout the day, it generally coincided with semiautomatic activity, or tasks that were physically involving but left the subject “free to make connections among ideas below the threshold of conscious intentionality” (Creativity 138). However, he does not introduce any evidence suggesting that this correlation is causal in one way or another, let alone provide a stable explanation for why this form of conscious processing would be preferable to others. Similarly, Sawyer suggests that individuals are capable of actively negotiating their conscious state – describing jazz musicians as improv performers who must negotiate their conscious awareness of conventions, etiquette and genre in a real-time flow state – but he fails to explain how an agent might “negotiate” his own consciousness from within. Sawyer paradoxically implicates consciousness as a pliant object of its own control while kicking his own problem-of-consciousness just slightly down the road.

21 According to Csikzentmihalyi, “The insight presumably occurs when a subconscious connection between ideas fits so well that it is forced to pop out into awareness, like a cork held underwater breaking out into the air after it is released” (Creativity 104).
Reframing creativity

To recuperate Csikzentmihalyi’s concept of creative flow and retain its applicability to devising practice, it must be refurnished with more robust accounts for the relationships between cultural knowledge, skill, and consciousness. Below, I will briefly consider an account for skill and creation that does not hinge upon a domain-specificity. In later chapters, I will demonstrate how the concept of flow may be recuperated through cognitive frameworks.

In his own study of ideational change, Martin Carstensen proposes a toolkit-based approach founded on the bricolage theories of anthropologist Claude Levi-Strauss. Carstensen contends that social agents do not assimilate or internalize entire cultural systems, and indeed, may lack the cognitive capacity to do so. Instead, social agents are opportunistic, and use the limited and varied “tools” (i.e., skills and knowledge) at hand to accomplish a given project. He thus defines bricolage as “an innovative recombination of elements” into novel forms of social activity (154). Rather than relying upon abstract or dogmatic systems, the agent focuses on the application of these heterogeneous resources (ibid.). Discrete cultural sets of information guide practice in a knowledge of past practice, but alterations and seemingly unrelated skills may be diffused into or grafted onto existing systems in the interests of efficacy (160). Bricolage is thus a helpful analogy for the performance practices of Carreri and the Odin Teatret: one adopts and employs a network of related practices, but remains open to inventive change and redeployment in each instance of performance.

Pina e Cunha and colleagues supplement the pragmatism of a toolkit-based approach with their account of serendipity. In instances of bricolage, someone may be searching for the solution to a given problem, but serendipity starts accidentally. In a serendipitous creation, the “relevancies” of the data at hand “are constituted in new and surprising ways” (321), and through an intuitive leap, previously disparate skills and information become bisociatively related. In other words, in the process of solving one problem, a person may notice the solution to an
entirely different problem (323); the new problem is “solved” as it is itself “found.” This process is what Turner and Behrndt mentioned above in their discussion of devised creation: “the deviser searches for structural parameters while at the same time creating new material” (170, italics orig.).

Admitting serendipitous forms of insight also addresses the deviser’s concern with immediacy and presence, taking the onus of discovery off problem-directed subconscious labor in a mysterious incubation process. Rather, without rejecting skilled mastery and disciplinary knowledge, serendipitous insights value “the relational ability to see anew” (Pine e Cunha 321) at a moment of insight that one experiences as being spontaneous. Consequently, the performer’s apprehension of the world and her powers within it is what allows her to create new meaning. This in turn frames creative insight in devising as an experience akin to the attentive consciousness of flow, where one’s negotiation of present material circumstances of creation may be considered alongside one’s negotiation of an abstract cultural field.

Of course, this does not obviate the usefulness of a domain-based vocabulary for considering how a performative creation may be broadly acknowledged as being creative as such. Jacques Lecoq draws an explicit distinction between the mere expression of performing for oneself and creation as a form of action intended beyond oneself. He claims that, “[i]n any

While considering how individuals may tend towards particular problem solving strategies in different contexts, some readers may be interested to note that I have declined to explore the relevance of cognitive style. However, while literature around cognitive style is based on an interesting premise of describing a semi-stable yet creatively responsive subjectivity (see Dew, 2009; Sagiv et al., 2010), I believe performance-based literature provides a sufficiently robust account for who my creative subjects are and what constitutes optimal performance. KAI measurements of cognitive style are generally taken along a spectrum from conservative adaptation to risk-taking innovation, which sits uneasily alongside performance discourses that see both adaptation and innovation as complimentary strategies. Furthermore, even as von Wittich and Antonakis (2011) find that cognitive style is often tightly correlated with the “big five” measures of personality, I lack the sociological proof to decide exactly where devisers would land on either scale. For example, though it may be easy to assume that all devised practitioners share “artistic” predispositions towards Openness to Experience (Furnham and Bachtiar 614), I fear any such assumption might divert me from considering a wider breadth of heterogeneous strategies and ensembles.
processes of creation the object made no longer belongs to the creator. The aim of this act of creation is to bear fruit when then separates from the tree” (18). Yet, just as we might move away from a domain-based vocabulary by foregrounding one’s “having” of an experience in the act of creation, so too might we complicate what it means for that creation to “belong” to the experience of another.

At this juncture, I find Hausman’s understanding of creativity does away with a gatekeeper model of expert testimony and localizes the question of discernment. Firstly, he emphasizes the integration of a creative outcome and the creative activity that yields it, noting the former as a more-or-less terminal articulation of the latter. The fruits of creation are not “products” per se, but rather discernable facets of the creation as a whole, “discriminable in the form in which the act reaches completion” (5). The identity of a creation is not conferred except in one’s awareness of the thing itself as “an integration of elements, an ordered cluster or matrix whose identity is discernible in a complex of coherent, mutually relevant features” (8). This foregrounds intelligibility as a primary feature of creative “objecthood;” the uniqueness of an identity is recognized on the basis of contrasts from the experience of an observer’s immediate material and cultural context (9). Intelligibility is an especially apt term for recognizing creative instantiation in devising because it encompasses a broader range of perceptions apart from a symbolic cultural order, including one’s awareness affective or sensorial qualia.

Berys Gaut provides a complimentarily domain-flexible understanding of skill in creative processes, echoing Barton’s proposal that skill bestows a “heightened sensitivity to possibility and a rigorous ability to exploit its gifts” (“Navigating Turbulence” 105). To Barton’s latter point on exploitation, Gaut understands serendipity to be “the skillful exploitation of chance, rather than chance alone producing something” (86). To his former point on sensitivity, she recalls Leonardo da Vinci’s exercises for enhancing visual imagination, where he advised young
painters to look at a stained wall in order to see the images in it.\textsuperscript{23} She thereby links the creator’s propensity for ‘spontaneous recognition’ to the creator’s acquisition of skill: skills may allow a creator to operate within a given domain and enhances the creator’s ability to find things intelligible, but the interpretive imagination required to apply those insights must also be trained, especially to avoid the misapplication of old constraints to new situations (Steenburgh et al). In this sense, perception must also be trained for creators to recognize the “big picture” that novel organizations may disclose (Gaut 101).

A qualitative judgment on the novelty of a creation might thus be based on the structure of those recognizable, domain-specific facets of its identity. If the structure is distinctive, unique, unfamiliar, and irreducible while retaining its intelligibility, then it may be said to exhibit what Hausman calls novelty proper. These elements must be organized in a way that is without precedent, and is not immediately foreseeable as a deterministic consequence of existing generative structures (Hausman 8).

The relationship Hausman draws between creation and its structures is thus highly complimentary to a devising vocabulary. While letting us discuss the domain-specific content of a given psychophysical approach, it foregrounds how those are used without getting hung up on a logically deterministic why. It recognizes that existing psychophysical grammars may be enervated and restructured in new sets of given circumstances. Therefore, both preparation and spontaneity are necessary conditions for the creative process; while a company may acquire a coherent system of practices, these can be redeployed in new ways according to serendipitous insights. According to Hausman:

\begin{quote}
[Creation] proceeds in accord with constraints that are given not only by the personality and environment of the creator and by the medium in which he works, but also in the spontaneity of the act itself. The requirements of the developing
\end{quote}

\textsuperscript{23} Da Vinci described this act as being “of great utility in arousing the mind to various inventions.” (Leonardo on Painting. Trans. Martin Kemp & Margaret Walker. Yale UP: 1989, p222).
structure are themselves developed . . . The creative act, then, is a transforming act. (12)

Gaut makes this case for spontaneity with a bit more poetry by quoting from Plato’s *Phaedrus*. She recognizes that processes embracing intuitive creation are (for better and for worse) facilitated by the mess, illogic, and inefficiency of both material circumstance and individual consciousness:

[I]f any man come to the gates of poetry without the madness of the Muses, persuaded that skill alone will make him a good poet, then shall he and his works of sanity with him be brought to naught by the poetry of madness, and behold, their place is nowhere to be found. (83)

The “madness” of the poet - or in our case, the deviser – again points to all that which eludes our study of skill. It demands a model of devising that can entertain the pursuit of illusions, passions, straining effort and crushing failure alongside ‘optimal’ patterns of behavior. If we are limited to describing transcendently fluidic “best-case” scenarios, or even just those that suit a rational explication, I suspect we’d never accurately describe devising as it is genuinely being practiced, in all its “messy” reality.

Consequently, whatever preparation girds the creative act, creation can truly be said to happen in real time. This empowers both the devising performer and the audience member to respond to creative experiences immediately, without epistemologically suspending present truths for the expert judgment of a hypothetical cultural arbiter or for an exhaustively logical domain assessment. This point about spontaneity also rescues creativity discourse from functional determinism: creation happens as the structure coalesces (be it practically or imaginatively) and the thing becomes intelligible. The opportunistic new dramaturgies of a devising process therefore facilitate “creation in the radical sense,” exhibiting novel structures that yields novel fruits (Hausman 10), which makes my assessment of creativity in devising a highly localized study of both exceptionalism and surprise.
The following chapter will introduce two complimentary frameworks that are ideally suited to my discussion of the material and psychological dimensions of devised creation: phenomenology and enactive cognition. I will highlight their major theoretical preoccupations, and ultimately demonstrate how they might guide the thoughtful application of scientific data to a study of devised practice.
CHAPTER 2

Early in my previous chapter, I established that while an understanding of mind is essential to creating a satisfactory account of the actor in a devising process, cognitive studies itself is not a unidirectionally progressive field with a clear set of finite objectives: we cannot reasonably expect capital-S “Science” to unspool the requisite information *en route* to an accurate and comprehensive set of cognitive principles for physically-led creation. Law reminds us that the information we might glean from contemporary research is itself interpreted through a number of frameworks that preemptively skew their applicability; data produced within a stringent set of controls is made present through the interpretive frameworks of its creative team, who communicate via a shared currency of preexisting knowledge. As a result, terms that pique our shared interest (including “performance,” “intuition,” or “awareness”) must be interrogated, unpacked, and reconsidered according to the others’ lexicon before we begin even the most basic exercises in cross-analysis. Moreover, looking back to Law, we recall that a devising lexicon includes many of the unique, subjective and otherwise messy objects that are often rendered invisible via experimental controls in some veins of empirically led research. As such, we need to find a firm yet generous basis for compatibility.

The goal of this chapter is to select and describe a framework for inquiry that will be used to amass data compatible with creative phenomena at the heart of my study. My model will recognize phenomenology as a philosophically- and scientifically-“minded” approach that can describe the creative devising process as being fundamentally embodied, but does not universalize what it means to *be* a body. Rather, the embodied self is an experienced\(^\text{24}\) subject

---

\(^{24}\) The double-ness of this term is intentional: that is, one may be “experienced” in the sense that they *have* experience of past events that informs present actions, and one may be “experienced” in that they are aware of *being* a sentient self in relation to the actions and events they perceive.
capable of engaging with a cultural world in a manner that is educated, idiosyncratic, and spontaneous.

Recognizing that some phenomenological inquiries still fail to capture the rich and messy subtleties of intuitive experience, I argue for applying more robust analytic tools, specifically linking phenomenology into cognitive science through an enactivist cognitive paradigm. Enactivism recognizes that cognition is both possible and meaningful because of organisms’ dynamic engagement with the world around them, and that such engagement is fundamental to our experience and expression of embodied subjectivity. Finally, I will introduce Keith Stanovich’s dual-processing model of cognition, which will ultimately allow me to distinguish between the performer’s conceptual thought and those actions I’ve previously described as being intuitive and spontaneous.

Readers should note that in this chapter and in those that follow, it will not always be possible, or even necessarily desirable, to draw immediate connections back to performance studies. The relevance of the data I produce may be unfolded across this thesis rather than explicitly front-loaded. I am mindful that this may be a basis for critique, but I believe that this is a prudent omission for the time being. Firstly, the basis for my work depends on understanding interconnections across my source material. A proposal-then-explanation structure would be unwieldy unless I first establish this foundation, and likewise, any proposals would make little sense in its absence. Furthermore, the frameworks I am engaging here are concerned with fundamental questions of cognition: what is happening when we think, act, and perceive. Performance itself is a complex macro-level phenomenon with sophisticated emergent properties.\(^\text{25}\) Any attempt to “scale-up” the information I am drawing from cognitive

\(^{25}\) Recognizing this sophistication, John Lutterbie applies Dynamic Systems Theory to his study of acting in *Towards a General Theory*, and proposes that acting is a complex system where elements function together to create a complex whole (25).
frameworks must be methodically and cautiously justified, rewarding my inquiry with a stronger basis for future extensions.

Consequently, this chapter props up a tent pole rather than establish a far-reaching, exhaustive latticework. Its finer implications will be explored with reference to specific examples of devising phenomena in later chapters. This demands a high degree of patience (and perhaps even faith) from a performance studies readership, but again, I am confident this best reflects a degree of rigor that is crucial to the enterprise.

**Reembodying the discourse**

Phenomenology has become a well-trodden topic in theatre studies, especially where scholars have set out to re-embbody the discourse itself. Garner explains that this was necessary to account for the emergence of increasingly “physical” theatres in the 20th century, the analysis of which resisted straightforward textual or semantic readings (26). Thus, while phenomenology became a preeminent field on the backs of philosophers like Husserl and Heidegger, Merleau-Ponty’s corporeally-oriented take on the lived body has been fervently embraced for its ability to account for the corporeal and subjective subtleties at play in the dynamic flow of a physical theatre performance.

As stated in chapter one, devised performance and other post-dramatic performance genres often exploit the possibility that their images will lead to multiple interpretations, which relies in large part upon the expressive and interpretive vantage points assumed by each performer and audience member at that particular showing. Insofar as we could isolate some meaning that arose within that interaction, it would be the unique offspring of distinct subjectivities. Therefore, remembering that these meanings may not be cleanly conceptual so much as emotionally or biophysically affective, recalling my earlier account of psychophysical
training, and supposing that an artistic collaborator may assume and exchange the proffered “audience” position, our concerns explicitly lie in the embodiment of these subjectivities.

When Garner assures us that “the phenomenological tradition offers a way of reembodying the discourse of theatre, as it has done in the other disciplines where it has found a place” (26), he is not simply proposing that we give lip service to a vocabulary around sensual bodies – he is promoting a complete reorientation of our view on what it means to be a body. Yes, the corporeal subjectivity of phenomenological embodiment resists textual description (ibid.), but not simply because it is complex or difficult to describe. Rather, the body as an object of study is a protean entity that seems to shift in response to our inquiries, thereby defying an essentialist reduction to any singular definition:

[E]mbodiedness is subject to modification and transformation, multiple and varying forms of disclosure, and . . . the forms of ambiguity that characterize the phenomenal realm represent experience in flux, oscillating within and between modes of perceptual orientation. (51)

This sense of oscillation also encourages a high degree of self-reflexivity in phenomenological scholarship, problematizing the phenomenological orientation of the analyst as much as that of her subject. According to Carman:

To understand perception as bodily being in the world is to pose a radical challenge to traditional distinctions between subject and object, inner and outer, mental and physical, mind and world. To say that our bodies, in at once seeing and being seen, must be of the same flesh as the world, is to cast doubt on the primacy of consciousness and the distinction between first- and third-person points of view . . . (631, responding to Visible and the Invisible; italics orig.)

An embodied model of consciousness suggests that neither reason nor perception can be relied upon to supply an unvarnished truth; there is no inherent basis for privileging a logical creation of meaning apart from associative or intuitive channels. We must account for performance discourse accordingly, without the artificial mind-body divisions of a Cartesian philosophy.

Phenomenologists Diego Cosmelli and Evan Thompson redress Descartes’ famous thought experiment about the brain in the bell jar, asserting that prohibitive criteria would need
to be met to successfully sustain even a theoretical consciousness. The envatted brain would certainly require oxygenation, nutrition and hormonal regulation for basic sustenance, but in order to “fool” our consciousness into believing in the world at hand, it would also require a complex, interactive network of stimuli and response. Moreover, these interactions would need to adhere to a clear, consistent set of self-organizing principles, much like the body provides. For all intents and purposes, for an envatted brain to develop even an illusory sense of conscious agency, we’d simply have to build the brain a new body, not to mention furnish it with an entire world that allows for these conditions.

Indeed, phenomenology insists that we were never properly disembodied in the first place. It refutes the rationalist supposition that the world can be rightly understood as a brain-bound neural construct, and claims instead that the world is itself “the natural setting of, and field for, all [of one’s] thoughts and all [of one’s] explicit perceptions” (Merleau-Ponty xi). In the same breath, it proposes that body enables all forms of experience, and is “our general medium for having a world” (146). By supposing that the mind is even conceptually tenable apart from the body proper, the Cartesian division between mind and body is founded on a false premise.

Phenomenology thereby changes the order of the conversation, taking it out of the introspective mind-body duality by asking us to consider how consciousness exists through an interrelationship of subjects and the world. Merleau-Ponty recognizes the centrality of this subject-world dynamic in his own description of conscious, which he defines as “being-towards-the-thing through the intermediality of the body” (139). Here, he recognizes that like all our mindful, embodied activities, our mindful, embodied selves are fundamentally ‘intended’ towards the external world. When we raise a hand towards an object, we are not referring to an imagined representation of that object (as though the brain were the organ of middle-management), but to a specific three-dimensional thing that we might seize. By insisting that the world is quite literally at hand and orienting us towards his baseline of general intentionality,
Merleau-Ponty changes the order of discussion from a speculative “I think” to an embodied “I can” (Zarrilli, “Phenomenological Model” 655).

Perception is itself an active, *I can* form of engagement with the phenomenal horizon, demonstrating that the embodied subject apprehends the world according to his own terms. When confronted with a present object, the sensual body discloses its features via a finite biophysical structure capable of engaging with those very features. Objects are thus taken to possess those particular sensual features that have come to our awareness (Thompson, *Mind in Life* 15). For instance, the body isn’t inherently capable of reading the magnetic field or radioactivity of an object – technology is required to translate those features into perceptible ones. As such, we might say that the body alone demonstrates a selectivity of features.

It follows from this selectivity that we “value” the world according to the terms of our embodiment. The physical body itself recedes from awareness because it is a nigh-ubiquitous “zero-point” of experience (Thompson & Zahavi 68), but its embeddedness in the world’s social or cultural spheres is also disclosed via these perceptual objects. I will address the psychophysical basis of such affects at length elsewhere in terms of Vervaeke’s *relevance realization*, but suffice it to say for now that the body gives meaning to both the “natural” and “cultural” objects it perceives (Merleau-Ponty 235). For instance, we may intend our actions towards objects with a particular sense of desire, with a sense of surprise, or through the lens of a given mood, to say nothing of more sophisticated or idiosyncratic associations. This radical emphasis on subjectivity does not imply a Cartesian doubt of all things material - we perceive a material and social environment beyond us - but it does suggest that our knowledge of the world can never be truly, ontologically objective. The embodied subject is a continually active participant in the synthesis of these experiences into a perceptible reality-as-we-know-it. We are bodily “geared into” a world that is the tacit referent for our experiences, and provides a milieu we share with others (Carman 633), but our perception of that world is itself “a process of
integration in which the text of the external world is not so much copied as composed” (Merleau-Ponty 9).

Merleau-Ponty illustrates this compositional principle through an analogy to our experience of a piano sonata. Each note in the piece is a part of the larger whole; we may attend to specific notes according to our own volition, but our straightforward experience is of an unfolding sonata rather than of a series of consecutive notes. The listener has a sophisticated, embodied relationship to the music, which is disclosed according to its particular temporal and spatial continuity. Consequently, each note is perceived as a sign disclosing the greater whole, and its unique qualities of tone, timbre and duration recede from awareness except in relation to the piece; “[t]he meaning swallows up the signs” (ibid. 182). Similarly, if we imagine a dancer, each gesture, extension, and suspension contributes to the audience’s apprehension of the dance itself. Such examples highlight the complicated temporality of intention, where a subject in the experiential milieu is anticipating and oriented towards future actions. Here, the sonata or the dance is an emergent phenomenon, imposing an organizational principle from the top-down: it gives further meaning to its constituent parts as they constitute the thing itself. An A-flat following a G, or a pause after a leap, is neither inherently right nor wrong, yet it may be perceived as infelicitous depending upon a recursive relation to the sonata or the dance we’ve intended.

I will discuss intentionality at greater length in following chapters. In the meantime, I will continue to expand upon further considerations for phenomenology in performance studies.

Phenomenology by way of performance

In his Phenomenology of Perception, Merleau-Ponty proposes the example of an actress performing Phaedra alongside his example of the sonata, but that particular case study is less compelling for its logic than for the complexities it foregrounds. Firstly, the parallel of character
to music is false: a set of spoken words may collectively be apprehended as Phaedra’s text in the same way that a particular set of notes sung in a high tessitura are apprehended as Mozart’s aria for the Queen of the Night, but whether or not Phaedra or the Night Queen themselves are evoked depends greatly on the material context of their aural presentation. A reading or a concert is not the same as the performance of a character.

Secondly, while Merleau-Ponty suggests that in performance the actress “becomes invisible” in favor of the character, this demonstrates a misunderstanding of the actor’s objective on par with Sawyer’s in chapter 1. “Invisibility” or “natural-ness” may only be an optimal outcome within a particular genre of conventions that trade heavily on an audience’s “willing suspension of disbelief,” and is rendered moot or undesirable within much of the contemporary theatre canon, including such plays as Caryl Churchill’s *Cloud 9*, which demands cross-gender and cross-race casting.

Even within seemingly “conventional” genres, I am unconvinced that any conventionalization could fully rob the audience of their contemporaneous awareness of the actress-as-present. It makes phenomenological sense that the learned, perceiving subject in the audience will rightly recognize the material permanence of the performing body before them, not to mention recognize their own condition of embeddedness as one of being seated within a theatre. Whether or not these awarenesses recede from conscious attention, they remain a part of the horizon of perception, integral yet subliminal as the body itself. According to Joseph Roach, the co-eminence of both actress and character partly lends performance its attractive frisson in the first place:26

Performers are none other than themselves doing a job in which they are always someone else, filling our field of vision with the flesh-and-blood matter of what can only be imagined to exist. . . . in the service of a representation to which their personalities are supposedly excrescent. Such a precarious center, at once self-

26 The tensions Roach describes here are most strongly featured when the actress in question posses a charismatic expression of selfhood he calls “It,” detailed in his book of the same name.
expression and self-erasure, cannot hold; but for the two hour-traffic of our stage, the contending forces remain in play, while their contingent interaction generates an intense, charismatic radiance that emanates from their fissionable source. (9)

Though attention may sometimes recede from one identity in favor of another, this attention remains in flux, and these “contingent interactions” are themselves disclosed through time.27

Taking the actress’s perspective, Lutterbie’s own account of theatrical phenomenology suggests that her experience is entirely different from that of the audience, perceiving not a fictional setting so much as a physical stage, which will enable them to create a given illusion through the execution of a physical score rather than perceiving the illusion themselves (“Phenomenology Space & Place” 129). With the caveat that actors should at least be “interested” in their director’s intentions (as these are at the heart of the meaningful space evoked by the production as a whole), Lutterbie emphasizes that “in the moment of performance, [actors] need to focus on being in place, engaging subjectively with the environment in which they find themselves” (ibid, my italics). The actress might experience the recession of “an everyday self,” but not to a point of invisibility. Rather, she seems acutely aware of her own embeddedness. Whether or not the actress must adhere to a precise physical score, the character of Phaedra seems to function as a guiding principle for determining the actress’ path of physical engagement, informing pre-chosen relationships to the place of the stage. This character of Phaedra (as an entity within the fictional space of the play) appears to recede from the actor’s conscious consideration just as her actions in place evoke a spatial awareness for the audience.

Nonetheless, without entirely discounting Lutterbie, it seems that a phenomenological disinterest in place is unsatisfactory when we consider a performer in an improvised, actor-
directed, physically-led devising context.\textsuperscript{28} She may require the same technical awareness of a physical score as Lutterbie’s actress, yet she may also have need to be aware of the symbolic and/or affective implications that arise from this score as she explores the dramaturgy of a given work.\textsuperscript{29} So, yes, she will engage subjectively with the same physical set, but that same set could easily become an object of further projected meanings, conflating \textit{place} with an evolving disclosure of \textit{space} according to her shifting perceptions and intentions. Much like the audience, the actress’ experience of theatre and theatrical narratives may be inseparable from and continuous with the phenomenal space in which they are enacted (Hart 32).

Zarrilli reframes the actress’s experience as a skillful negotiation of phenomenal space, and suggests that, “[a]cting should not be viewed as embodying a representation of a role or character, but rather as a dynamic, lived experience in which the actor is responsive to the demands of the particular moment within a specific (theatrical) environment” (“Enactive Approach” 638). The horizon of subjective experience might hereby be imagined as a negotiable framework, dynamically inflected by the subject’s perceptions and intentions. That horizon of experience can also be seen to operate as an emergent level of organization that exerts a top-down influence on its constituents: the play itself may not pre-exist its enactment by way of the embodied actress (most obviously if it is being improvised), yet in the act of its disclosure, it provides those temporal and spatial demands against which she responsively acts as the play progresses.

\textsuperscript{28} This is not to say that actors within a narrative-driven performance are even so rigidly tied to a particular class of perceptions as this. Rather, I am using devising here to most clearly illustrate a suppler relationship between actor and environment that may be valid across a range of styles.

\textsuperscript{29} In this context, I am referring to “awareness” on any number of conscious or pre-reflective levels. In other words, the actress need not be able to verbally articulate the impetus of an intuitive choice to have been affected by it or to have acted upon it.
As a result, even amidst the natural horizon of one’s phenomenological embeddedness, the subject may volitionally posit ulterior horizons (or *worlds*) by performing a connotative set of actions. According to Merleau-Ponty:

Sometimes [the body] is restricted to the actions necessary for the conservation of life, and accordingly it posits around us a biological world; at other times, elaborating upon these primary actions and moving from their literal to a figurative meaning, it manifests through them a core of new significance . . .

Sometimes, finally, the meaning aimed at it cannot be achieved by the body’s natural means; it must then build itself an instrument, and it projects thereby around itself a cultural world. (146)

These worlds are irrevocably integrated with one another, and granted relational meanings via their shared embodied subject, yet they also reciprocally posit a “worlded” identity for said subjectivity, such as a biological self, a sociocultural self, and so forth. As a more common example-by-contrast, we might also imagine the diverse worlds and identities affiliated with one’s “inner” self versus one’s “outer” self,\(^{30}\) either being a presentation of the selfsame subject, yet implicating a diverse set of preoccupations owned by that body in part. For this reason, Garner reminds us that while “embodiedness is subject to modification and transformation, multiple and varying modes of disclosure,” the forms of its experience are themselves “oscillating within and between modes of perceptual orientation” (51).

In each case, it’s fair to say that Merleau-Ponty’s worlds are posited for their utility. We may consider these as being strategic vantage points that privilege certain styles of engagement, or which act as an organizing principle wherein we can imbue spontaneous acts with meanings that aren’t exclusively personal (Merleau-Ponty 146). As these connotative actions become repeatable and ultimately habitual, our body is practically enacting a new core of significance, where the subject’s ability to posit a new frame of reference is best understood here as being

---

\(^{30}\) Stuart describes this embodied distinction as the juxtaposition of an inner “egocentric” space with an affective, depictive sense of being “out there.” One’s sense of having either (in a phenomenological sense) “is formed through the rich interplay of the body’s sensory channels . . . , its actuating system . . . , and its proprioceptive mechanisms . . .” (41-2).
fundamentally an “I can” potential for action (rather than as a representational proposition of “I think,” or even, “I think I can”). Therefore, while phenomenological subjects are embedded in the world, pre-reflexively and dynamically engaged with the whole world about them, they can still re-shape the world of their experiences through engagement of-a-kind.

**Phenomenology of skill**

Recalling the previous chapter’s analysis of psychophysical learning and the spontaneity it affords, we can understand the instantiation and inhabitation of delimited worlds as an acquirable skill. By learning a particular set of commensurate actions, the subject posits the “world” of those actions and can successfully work within them. The skilled spontaneous performance of those actions in dynamic response to the world they delimit suggests that this class of actions have successfully learned in relation to the behavioral system they imply.

Not coincidentally, this further advances our reclaimed understanding of Csikzentmihalyi’s concept of domain, which was originally proposed as a collection of like-contents. Through Hausman we recognized the importance of the structural organization of said contents in the development of intelligible novelty, and by adopting Merleau-Ponty’s understanding of domains as engageable worlds, we further emphasize the subject’s multi-dimensional agency in relation to the domain’s contents and structures. Consider the case of an elite hockey player. When he is optimally engaging with his task (that is, in flow), possibilities for future action are perceived to be at hand. He doesn’t logically think about where the puck is going, and instead, he acts upon a present opportunity to meet it at a future location, enacting a plan that is shaped by his awareness of the game’s rules just as it is by the movements of his opponents. Domain-specific actions, such as skating or puck-handling, are not intentionally selected as possibilities so much as simply performed in service of his intention, and this
intention is itself particular to this domain / world. Mastery allows this subject to propose, perform, and respond to a particular experiential milieu.

Studio-based psychophysical practices are paths to habituation of this sort, providing a mode of embodiment that imbibes both conscious and pre-reflective significance to repeatable classes of activity (Zarrilli, “Enactive Approach” 636). This is most obvious in formal disciplines like boxing\(^{31}\) where expertise explicitly draws the subject towards a pattern of specialist behaviors that inform his prereflective perceptual awareness accordingly. During combat, the fighter perceives an opening in his opponent’s defenses in terms of their own potential to exploit it. Opportunities for attack will loom large on his phenomenal horizon, and be perceived in an anticipatory relationship to those combative techniques that might work to his advantage. Through practice, he prepares a mode of engagement that will ultimately operate with an educated sense of spontaneity.

But equally remarkable is the subject’s mobility between modes of engagement, which may be mediated through an immanent interrelationship with one’s milieu rather than through conscious volition alone. Disciplined training doesn’t wholly subsume one’s natural attitude towards the world to remain both accomplished and accessible, for although a combative class of perceptions remains accessible to his consciousness should the fighter posit a combative scenario, that class of perceptions will likely recede from conscious disclosure in a non-combative context, for example, at the fighter’s family reunion. Meanwhile, if a fight breaks out at the reunion, the fighter will not need to “remind himself” of his skill: that class of perceptions will come rushing to the fore. The trained subject is not only capable of switching gears in short order, but is demonstrably able to judge the suitability of switching gears according to an educated recognition of circumstance.

\(^{31}\) See Wacquant in chapter 1.
Contemporary psychophysical training doesn’t tend to equip the actor for such a clearly defined “gear track,” but instead seems to privilege the acquisition of tools that will serve for multiple theatrical milieus. Barba’s early work with the Odin Teatret, for example, may have emphasized gymnastic training (and may have even produced some fine gymnasts), but they adopted this because they believed the qualities attendant to mastery within a gymnastic sphere of engagement were useful beyond itself (Physical Training). The actor might apply this extra-daily way-of-being to their inhabitation of a theatrical milieu while excising the gymnastic movement vocabulary itself, applying its enhanced perceptual acuity, physical prowess, flexibility, and responsivity to a broader range of expressive forms.

Such examples also highlight the subject’s ability to skillfully negotiate a variety of behavioral modes. This isn’t a matter of the subject sorting through a list of possible engagements or a “bag of tricks” in order to assess their applicability, but suggests an embodied understanding that the habitual sets of behavior enact selfsame worlds, and a remarkable ability for the subject to prereflectively anticipate the suitability of the world that may be (at least partially) invoked to the one that is being contemporaneously disclosed. In this selectivity, the subject is capable of discerning an optimal mode of engagement through an intuitive assessment of what constitutes ‘optimization’ at that point in time.

Not incidentally, this model of skilled performance is highly useful for describing the creative devising performer. As compared to accounts of performance that presuppose linear trajectories of objective signification and subjective interpretation, a phenomenological model is better-equipped to describe the complex web of subjective psychophysical associations at play in a devising context, where the subject actively negotiates the evolving realms of significance imparted to both self and an inferred milieu. The subject is physically embedded in a world that discloses an abundance of possible actions, meanings, and perspectives, which emerge in relation
to an orientation that is itself dynamically at hand, depending upon the perceptions and intentions of the subject.

**Limits of phenomenological analysis**

In the previous chapter, I suggested that Csikzentmihalyi and Sawyer’s work would benefit from a better understanding of how spontaneous acts differ from conscious logic. The above model similarly suggests that the prereflective mind is not merely a quicker-thinking version of our rational consciousness. If the subject immediately perceives his world as being “actionable,” then the subject simultaneously perceives these possibilities to be at hand. In other words, the performer doesn’t need to contemplate or envision an action prior to its execution, since this physical process of execution is already bound up in the recognition of its possibility.

To validate this interpretation of contemporary devising practice, the next step might be to account for particular subjects and particular experiences in the terms phenomenology gives us. Unfortunately, here we are at the mercy of our analytic toolkits, which in the past have often failed to capture the rich and messy subtleties of experience, especially with regards to intuitive behavior.

In his own attempt to reflect the complex processes underlying performance, Zarrilli offers a first-person phenomenological account of his performance in Beckett’s *Ohio Impromptu* (“Enactive Approach”). His account is akin to the transcription of a running internal monologue, and it provides a vivid description of diverse thoughts and perceptions as his attention shifts between multiple objects: from preshow preparation, to an observation about the size and color of the on-set table, to the physical sensations and reflective thoughts accompanying his delivery of text, as well as imaginative associations and memories that arise through that process.

Considering the dearth of stage direction provided by Beckett himself, Zarrilli successfully demonstrates that there is a beguiling depth of experience underlying his execution
of deceptively straightforward performance track. Here, he describes the first moments of his performance:

We are “ready.” Patricia gives the house manager the all clear. The doors are opened, and the audience, chatting as they enter, are like a wall of energy and sound moving into the space. Their sound passes through me. I am aware of it, but not distracted by it. My sensory awareness and attention are not singular, but multiple—taking in my breathing as it begins to synchronize with Andy’s. Now, we are breathing together . . . in . . . and out . . . as one. Our awareness is open to each other. My awareness simultaneously takes in the audience . . . reaching toward the back row of the space and the rustling presences there. They begin to sit, and settle. I sense the heat of the lengthy lighting cue as its warmth begins to touch my hands and as the brightness of the light hits the table and illuminates the text before me. The audience further settles.

I am perched on the edge of speech, sensing the potential words in my mouth, sensing the touch of the page of the book on the table with my left hand, and the touch of the weight of my forehead against my thumb and first two fingers. Following my breath, when I sense the lighting cue is at its full warmth and intensity, and that the audience has indeed fully settled and the last cough has been coughed, the first line of the text unexpectedly comes out of my mouth “riding” a breath on a pitch with little color but that nevertheless resonates in my sternum: “Little is left to tell . . . In a last attempt . . .” The sharp, resonant sound of knuckles hitting the surface of the table stops my reading. I follow my breath, sensing its synchronization with Andy’s, inhabiting with that breath this space-time between us. (640, italics orig.)

Nevertheless, as Zarrilli himself recognizes, this type of account “can never completely describe or represent acting in all its complexities” (641). This is not an account of a living embodiment so much as an account of a memory of a past embodiment. Acting in this production does not permit Zarrilli to write or record his thoughts as they emerge; without further explanation about his accounting techniques, we may be assuaged that these impressions are salient by virtue of their remembrance, but can be given no further assurance that the account is truly comprehensive.

Furthermore, we cannot be certain that he is remembering his experience accurately during the writing process, and that he can distinguish the impressions developed during that experience from those he is currently having about it as he attempts to recall a specific pattern of mental activity. If, on the other hand, he has imaginatively projected himself back into the
circumstances of his performance in *Ohio Impromptu*, and is writing about that projection as he experiences it, then the environment of his new experience remains a product of remembered rather than actively disclosed perceptions, and the subject engaging with these is unquestionably participating in a different mode of engagement: one of self-conscious imagination rather than immanent inhabitation.

Whatever our suspicions on these fronts, we can say for certain that this account doesn’t represent the dynamic negotiation of an opportunistic “I can,” but is a written, thematized “I did.” For example, above, he characterizes the audience’s entrance as being “like a wall of energy and sound.” This may be an evocative and potentially accurate description, but his account of sound and energy being “like a wall” appears as an allegory to describe the experience rather than an accurate account of his experience as perceived. Despite its wall-like characteristics, I think it safe to assume that the audience’s entrance was neither exclusively nor exhaustively wall-like: this is a linguistic affectation adopted for descriptive utility, which obfuscates some facets of experience in favor of others.

My greatest reservation with this analytic mode, however, is that as a first-person written account, it is still limited to describing the objects of consciousness. It may give its reader a sense of how Zarrilli’s consciousness moves along any number of perceptual trajectories, but it is incapable of speaking to that which precedes or underlies the movements of said consciousness. It therefore threatens to transform our analysis of intuitive phenomena back into a linguistic discourse, wherein it eludes us as before.

Phenomenology asserts that our experiences involve nothing less than our whole embodied presence, so our semantic containment of any analysis should automatically be considered a poor synecdoche for the actual ‘being’ or ‘having been.” Zarrilli’s writing remains a courageous attempt to catch experience in the act, and such accounts remain valuable in that their meta-analysis highlights the visible characteristics of a creative, intuitive consciousness.
Nevertheless, by only accounting for the actor’s experience of creative performance through first-person description, we would be remanded to discussing instinct and intuition after the fact, peering through the lens of contemplative hindsight. Treating the intuitive expression of “embodied knowledge” as typographically indescribable (or worse yet, as a sacred experience beyond the realm of understanding) erects a barrier between the accessible cognitive consciousness and the spontaneity of our lived experience by reducing the latter to a fetishistic object. This would segregate higher-level cognitive activities from our primary lived engagement with the world, which would remain mysteriously hypothetical.

Fortunately, introspective first-person prose is by no means the given form of phenomenological analysis to which we must always aspire, nor is it the apex of those toolkits by which we can extend our experiential reach. Rather, acknowledging that many phenomena resist being pinned down through conventional language, we can refine the terms of our inquiry by adopting novel frameworks and technologies that offer supplementary perspectives on relevant phenomena. These too will be necessarily selective and undoubtedly exhibit their own limits in purview, but they facilitate a view of their objects that can augment experiential accounts. Adopting such frameworks may help us to reconcile our phenomenological understanding of the body-as-subject with an objective view of the body as a part of the wider perceptible world.

**Compatible cognitive sciences**

As mentioned in chapter one, studying mind through the physical sciences seems like a tempting trump to the typical messiness of humanities discourse. Here, the scientists have all the “cool toys,” which include scanning technologies like EEGs and fMRIs that can actually give us a picture of the brain in the process of experience. When Blair refers to psychophysical training and performance as “‘brain modification’ working on biological and cultural fronts” (“Image”
173), then it seems self-evident that a look into the “modified” brain would advance our understanding of the actor’s experience.

Nonetheless, as we edge towards application, we must address a recurrent problem faced by physical cognitive science in its explanation of mind, for despite its ability to “catch experience in the act” as firing neurons, science has yet to make a consistent account for how and why particular patterns of neural activity relate to particular conscious processes. Cognitive activity is so neurologically complex that neurological “mind-reading” seems wholly impossible. Indeed, “specific cognitive acts require the transient integration of numerous, widely distributed, constantly interacting areas of the brain” (Thompson & Varela 418). Though some centers of the brain are especially active during particular perceptual activities (i.e., sight or hearing), no neural regions or processes reliably activate in response to particular classes of perception (i.e., a particular neural cluster is not responsible for the human perception of daisies).

A larger problem arises when we read these technologically derived artifacts since we may lack a clear basis for interpretation. According to Vicari, “we lack a logically necessary connection between physical and mental concepts such that we could derive the second from the first” (9). This persistent, idiosyncratic difference between subjective experience and neurological activity is sometimes referred to as the explanatory gap in cognitive sciences. It is unlikely that we can arrive at an explanatory model that truly facilitates “mind reading.” Even if this “explanatory gap” was somehow bridged by a mind-reading technology, even if we could take a scan of neural activity and translate it into an accurate reading of conscious sensations or thoughts, it remains to be seen whether such a discovery could explain how this series of images helps us understand the processes underlying their manifestation.

[E]ven if one particular mechanism – for example, coherent oscillations in a particular brain area – were proven to correlate perfectly with behavioral measures of consciousness . . . the question would now become, why and how should coherent oscillations ever generate consciousness? (O’Regan & Noë 940).
Such problems mark a necessary departure from computationalist approaches to cognitive study. Traditionally, computationalism imagines that brain functions analogously to a computer. Cognition would have clear start and end points: sensation would lead to perception, which leads to thought and then action (Froese & Di Paolo 454; Thompson, *Mind in Life* 43). However, memory and behavior are not simply software on neurological hardware. First of all, the hardware of the brain is a plastic mainframe, which physically changes in response to the actions and experiences of the subject. For example, without eyes, one will not develop a visual cortex (Donald 209-211). Moreover, skilled human behavior exceeds the stimulus-response “speed limits” of the neurological hardware we do have. Lashley’s study of skilled pianists (qtd. in Jeannerod 9; Rosenbaum et al. 508) demonstrates that skilled pianists perform responsive movements that are executed too rapidly for the sort of nervous intervention computationalism implies. Thought-in-movement must be more holistically oriented across time than computational cognition allows.

The software metaphor also falls flat since, as Thompson suggests above, thought is not itself brain-bound, but emerges as a part of our experiences with the world. Thompson makes a complimentary case in a 2001 paper co-authored with Varela, linking this premise into an overview of neurological processing:

> [C]onsciousness depends crucially on the manner in which brain dynamics are embedded in the somatic and environmental context of the animal’s life, and therefore that there may be no such thing as a minimal internal neural correlate whose intrinsic properties are sufficient to produce conscious experience (425).

Rather than begin and end in discrete, volitional processes, it continuously emerges through our experiences.

---

32 See also Dartnall 15.
33 Thompson and Varela concluded this piece admitting the need for further empirical study in this field, proposing that experimentation might support their premise of radical embodiment. Below and in the chapters to follow, I amass a significant core of recent scholarship that both directly and indirectly supports this hypothesis. See also Stuart’s 2010 paper, “Conscious machines.”
Computational understandings of mind traditionally presume that our relationship to the world is sorted out within the brain itself, and that we hold in our minds representations of the world as we experience it. Alva Noë rejects that presumption that experience is actually a readable, brain-bound ‘echo’ of the sensible world, deeming it logically ridiculous. He asks, if our subject is already present in the world,

then why does [she] need to go to the trouble of producing internal representations good enough to enable [her], so to speak, to act as if the world were not immediately present? . . . It makes good evolutionary and engineering sense to off-load the representations. We are built in such a way that we can get the information about the world that we need, when we need it. (ibid. 22)

That is not to say that the subject lacks the ability to imagine aspects of the world around him, but working memory and conceptual representation are “computationally” expensive. A great deal of research into decision-making suggests that our brains tend to work as cognitive misers, expending as little effort as possible in order to conserve our energetic and cognitive resources. Perception-as-representation demands that our brain is running “hot and fast” at all times, but this simply isn’t the case: a great deal of day-to-day activity and decision-making is conducted with minimal reflective awareness.34 Except in cases of mental illness, conceptual and perceptual knowledge are disclosed to us as being markedly distinct; it seems bad science and worse philosophy to assume they exist in identical neurological forms with neither neurological nor experiential proof.

Small wonder, then, that Ellis and Newton believe phenomenology and physical cognitive sciences “have been on a collision course for at least the past century” (217). Phenomenology rejects computationalist models of mind and brain, and proposes to addresses the burning question of consciousness by folding it into its concern with lived experience. It emphasizes that the subject does not experience its world through brain-bound representations,

34 I expand on the implications of this theory below and in the following chapter. See also Böckenholt (2012); Evans (2012); Stanovich, West & Toplak (2011).
but turns our attention to a growing bank of research that understands the brain as simply one part of an embodied, embedded cognitive system. According to Hart:

Merleau-Ponty’s embodied consciousness is a cannily accurate description of what the scientists now see as the material grounding of knowledge, of the brain’s dependence on the body’s concrete situatedness within the physical and social worlds that encompass it ("Performance, Phenomenology" 32).

**Enactive phenomenology**

Within cognitive science as a whole, Zarrilli suggests that an enactive paradigm best suits phenomenology’s orientation towards embodiment. Enactivism was first articulated as such by Varela et al. in their seminal text, *The Embodied Mind*:

We propose as a name the term *enactive* to emphasize the growing conviction that cognition is not the representation of a pregiven world by a pregiven mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs. The enactive approach takes seriously, then, the philosophical critique of the idea that the mind is a mirror of nature. (19, italics orig.; qtd in Zarrilli, “Enactive” 642)

Here, Zarrilli is largely concerned with how one might describe processes of performance where the actor is ideally acting spontaneously and “in the moment” rather than consciously thinking about that which is required (646) by the role. Because enactivism is oriented towards the immediacy of embodied experience, it adopts a phenomenological account of mental life “as a temporally extended and dynamic process of flowing intentional acts . . . animated by precognitive habits and sensibilities of the lived body” (*Mind in Life* 24). Moreover, because it also accounts for the psychological and biological realities of subjectivity using data culled from cognitive, neurological, and life sciences, it accesses new and robust tools to disclose an increasingly precise phenomenology of experiences preceding our full conscious awareness.

Enactivism builds its account for subjectivity on the basis of those features by which an organism can even be said to be a living, cognitive subject in the first place. According to Thompson and Stapleton, “the enactive approach starts from the question of how a system must
be organized in order to be an autonomous system – one that generates and sustains its own activity and thereby enacts or brings forth its own cognitive domain” (23-4). As embodied beings, a living organism must be capable of carrying out self-regulating processes that enable its own continuance. Indeed, in all organisms, there are multiple processes at work (i.e., biological, chemical) that are simultaneously predicated and enabled by one another. It is a nexus of mutually implicated processes that don’t so much sustain one another indefinitely as constitute an operational closure of the system in relation to the world; working together, these systems constitute a bound unity of self that we conceive of as a body. In order for the body to generate and sustain activity, it must remain “open” to the outside, especially for molecular and energetic change. Therefore, we can only be said to have a body insofar as these processes bring the autonomous organism into relation with its environment.35

The regulation of this exchange requires the organism to make sense of its environment, even if only on a rudimentary level, so understanding self-regulation represents our first, best steps towards understanding basic cognition. Even something so primitive as motile bacteria demonstrates basic self-regulation: if a bacterium suspended in fluid recognizes that a particular orientation increases their exposure to sugar, they reorient to swim upstream to where the concentration is highest.36 The bacterium is regulating its interaction with the world in order to best promote its own survival, and in doing so, demonstrates its ability to make sense of and adapt to this environment, an activity that Thompson calls sense-making. In an enactive paradigm, we may even say that the bacteria is enacting a rich world of significance around itself, recognizing qualities in the environment with subjective relational value.

35 In Mind in Life, Thompson takes the living cell as the paradigm of the autonomous system. It is a self-producing network of metabolically active, biochemical systems whose identity is enacted in relation to its environment via its semi-permeable membrane. This membrane defines a particular set of interactions with the world, and the cell relies upon these for its continuance.
36 See again Thompson’s Mind in Life, as well as Thompson and Stapleton.
Although we might not refer to this bacteria as being phenomenologically self-aware, functionally conscious, or capable of thought, we can still classify the bacterium’s behavior as a primitive form of cognitive activity. In the enactive model, cognition is an emergent process. It corresponds to the collective behavior of the self-organizing, non-linear systems from which it arises by virtue of their connectivity, and it represents a global state of change that exists in a dynamic tension with its constituent processes.

Cognition is adaptive (or otherwise successful) when the emergent process corresponds to a specific cognitive capacity and proposes a solution to a given “task” (Varela et al. 99). In the case of a bacterium, feedback via the connectivity of metabolic and motoric systems contributes to a global state for the bacterium that is akin to exploratory food-seeking. The complex dynamism between the emergent process and the constituent parts of its network also illustrates an enactivist ‘sensibility’ as each simultaneously and mutually constitute one another: we see a bottom-up affect on the organism’s cognitive engagement with the world through the access and processing of resources, and that engagement has top-down implications for the continued function of those lower systems by facilitating their joint nutrition (Thompson & Varela 420).

Human cognition elaborates upon similar principles, but is not narrowly limited by a drive towards nutritional optimization. Rather, we are cognitively complex beings who are simultaneously enacting a broad range of sensuous and value-laden biochemical, cultural, social, and physical milieus. For this reason, Knyazeva chooses the apt metaphor of a nonlinear cognitive cobweb (168), describing the innumerable nonlinear-yet-circuitous feedback loops between the cognitive subject and the world he enacts.\(^37\)

\(^{37}\) I recognize that by tying behaviour to a set of recognizable factors I might be leaving myself open to charges of biological determinism, or at least, the suspicion that one might attempt to predict human behaviour by anticipating it on the basis of identifiable “drives.” However, this point is moot, as the possibility for any such attempt remains wildly speculative. The
Enactivists like Alva Noë and colleagues offer a provocative but thoughtful account of human sense-making via vision, which in turn facilitates more complex cognitive tasks. Much like sugar is not inherently a nutritionally valuable food except in relation to a bacterium capable of metabolizing it, the energetic frequency of radiation we sense as light does not carry any inherently perceptual quality. Similarly, the impulses one’s brain receives from the optic nerve is not any more inherently “visual” in content than the impulses it receives from auditory, haptic, or proprioceptive systems, to name a few. The difference between these lies instead in the unique interaction between our light-sensitive sensory structures and the light itself. Both light and light-receptive structures have materially consistent properties, but they disclose sight when these acquire relevance through embodied experience.

Like the interaction between a bacterium and sugar, the visual perception of a content-rich world requires that interactions between the body and visible radiation be understood as differential and meaningful. Ultimately, our skilled ability to practically engage with these principles is primary to any normal visual function. Visual sensations change in characteristic ways in response to motoric acts: an image hitting the retina will predictably curve and distort when we shift our gaze away from it and disappear entirely when we face the opposite direction; patterns on the retina move in an expanding or contracting flow as we respectively move towards or away from the object. The principles mediating our perception are contingent upon the consistency of our physiological makeup, and are thus themselves rather consistent over time. Because the subject experiences a foreseeable pattern of sensory change in response to motor activity, he hones a practical, implicit set of sensorimotor contingencies that governs his psychophysical complexity of the performing subject and the richness of possibility embedded in her environment may be grounded in observable realities and experiences, but the technological capacity needed to record and model every texture of this web would require a massively complex simulacrum on the scale of Baudrillard’s map. It’s a curious thought experiment, but I see little support for it, and I doubt it would be a tenable prospect.

38 Alva Noë’s Action in Perception gives a far more detailed analysis of our experience of vision, which I am only touching on below.
experience of vision; this embodied, masterful knowledge is acquired and exercised in the having of perceptual experience. According to De Jaegher & Di Paolo, “Traditional distinctions between action and perception arise only as the specialization of phases in an act of sense-making” as it unfolds (489). Being currently and continuously exercised through our embodied phenomenological experience, perceptual skills recede from the horizon of experience in favor of the world they disclose (Noë 20-2). Enactivism holds that these skills directly and simultaneously enable the having of experience itself. Perceptual skills give form to the world such that we might conceptualize it, but disclosure itself remains phenomenologically direct.

Perceptive subjects develop an implicit mastery of relevant contingencies for each of the senses. Auditory information, for instance, is governed by an entirely different set of sensorimotor relationships corresponding to the position of the head and body, which in turn influences the way sound waves affect those sensory structures that are uniquely and consistently affected by them, and so on. The unique contingencies governing this class of perceptual information even allows us to experience sound as being a discreet sense (O’Regan & Noë 940). Consequently, distinctions between the senses emerge despite the phenomenological unity of the world they collectively disclose. The senses themselves are properties of the body’s sensual embeddedness in the world, the means of our outward-facing intentionality, and the foundation from which our cognitive consciousness emerges.

In this case, perception lives “no more in the sensory centres than in the motor centres” (Ansell-Pearson 156), but is the skilled negotiation of their complex relations by an embodied subject. This is the crux of an enactive perspective on cognition: all cognitive activities become meaningful because the subject behaves as a discreet agent within the environment through self-regulated sensorimotor processes. According to Varela, “[t]he world that surrounds me and what I do to reveal myself in this world are inseparable. Cognition is an active participation, a deep co-determination of what seems to be external and what seems to be internal” (qtd. in Knyazeva
As Noë concludes, “[b]lind creatures may be capable of thought, but thoughtless creatures could never be capable of sight, or of any genuine content-bearing perceptual experience” (*Action in Perception* 3).

Rather than obviate subjective differences in the face of a monolithic developmental process, an enactive paradigm of perceptual and cognitive development supports a greater understanding of subjectivity across experiential and biological differences. If a framework for cognition is not given *a priori*, but emerges from the subject’s lifelong mastery of her body’s own sensorimotor contingencies, and is developed in relation to her engagement with the outside world, then these processes are individually specialized. Enactivism insists that we recognize physiological uniqueness and a lifetime of singular experiences as being integral to how cognition is done.

This radical take on subjectivity still permits some critical access to common issues of cognition across individuals. Sensorimotor contingencies may be reliably similar across most members of the species (for instance, the bio- and psycho-mechanics of my vision are much like those of the next nearsighted 20-something), and as I will discuss in chapter 4, reliable similarities can be jointly perceived in many social and cultural objects at hand. Yet in this study, we can deepen our concern beyond what unique associations, experiences, or skills an actor may bring to the table, and now begin to account for the singularity of that individual’s *way of having or expressing* a mnemonic association, of relating to an experience, or of inhabiting a skill they have developed over a particular time (and in relation to a network of other skillful activities).

Enactivism thus gives us strong foundations for our study of devised creation, anchoring an instinctually-open, culturally-respondent model of creativity into a robust strata of contemporary research and practice-turned-theory, all converging on our performer’s skillfully embodied consciousness.
Modeling higher consciousness in enactivism

When applying an enactive model of cognition to such sophisticated phenomena as devised performance, one inevitably runs into a common critique of enactive frameworks, which is its supposed struggle to describe “higher” cognitive processes. Enactive scholars have significantly broadened our understanding of embodied cognition, but their accounts of tasks like thinking, imagining, and engaging in complex interactions with others remain relatively underdeveloped as compared to preexisting accounts. Di Paolo et al. frame these objections as such:

[E]mbodied and situated engagement with the environment may well be sufficient to describe insect navigation, but it will not tell us how we can plan a trip from Brighton to La Rochelle. Or enactive theories could well account for complex skills such as mastering sensorimotor contingencies in visual perception (O’Regan & Noë, 2001), or becoming an expert car driver (Dreyfus, 2002) but, important though these skills are, they . . . fall short of explaining performances such as preparing for a maths final or designing a house. (5)

In other words, while we might gain new insights into the substrata of our experience, more advanced processes already have robust explanatory frameworks in existing paradigms that have different orientations with regards to embodiment, and which may be more open to a computational understanding of mind.

While enactivism does not seek to banish or invalidate knowledge of higher cognition we have gleaned from other premises, it proposes that these processes emerge in concert with those fundamental embodied processes that enable cognition in the first place. This will yield new hypotheses and suggest new explanations as compared to computationalist frameworks that may yet be validated by further experimentation. It may also be used as an explanatory framework, illuminating formerly mysterious presumptions underlying contemporary research on higher cognition. For example:
Many influential theories in cognitive science make use of the idea that value or meaning is some information appraised by an internal module within an agent’s cognitive architecture. Whereas in an enactive perspective, meaning is inseparable from the whole of context-dependent, life-motivated, embodied activity, without being at all a hazy concept beyond the reach of scientific understanding. (Di Paolo et al. 6)

Our ability to make meaning may be taken as a given in some other theories of perceptual cognition, but here, it is supported by an embodied premise about how and why meaningful sense may be ascribed to anything at all. Enactivism recognizes these so-called higher processes as both related to and distinct from the everyday sense-making that discloses our world. By embracing the assertion that all cognition is embodied, it highlights embodiment even in conversation with discourses that don’t hold it as an overt concern. 39

This understanding motivates my own catholicity of sources in the following chapters. While drawing from a relatively wide breadth of cognitive literature, I will consider how the ideas and data in question speak to an enactive model of cognition. Rather than polarizing my analytic purview, I believe this approach honors the rigor of its authors’ methods and the integrity of their findings while offering fresh (if occasionally unforeseen) extensions of the work itself.

One set of theories I will apply is Keith Stanovich’s model of conscious processing. It accurately describes higher cognitive abilities but procedurally links these to the lower-level processes that enactivism already describes quite well. He does not overtly ally himself with any wider enactivist project, but his theories suggest how we might bridge this other gap between implicit sensorimotor activity and complex conscious thought without neglecting either their dynamic interrelatedness or their phenomenological difference.

At its core, this is a dual process model, where so-called “lower-level” cognition is classified as type 1 processing, whereas “higher” cognition is called type 2 processing.

39 See also Ezequiel Di Paolo’s 2009 editorial, “The social and enactive mind.”
According to Stanovich and Stanovich, type 1 processes are largely defined by their autonomy: their execution is rapid, and multiple type 1 processes can be operating simultaneously (202). This accurately describes the enactive perceptual processing I have outlined as examples above, but it also extends to processes like emotional behavioral regulation, and to overlearned, “automatic” actions within a wider sphere of engagement. Crucially, they also do not require our conscious, “type 2” attention: they demand very few cognitive resources to perform, which allows the subject to expend cognitive resources on those issues that require advanced thought.

Meanwhile, “[t]ype 2 processing contrasts with type 1 processing on each of the critical properties that define the latter” (ibid.): it is slower, demands the full cognitive resources of our conscious awareness, and operates serially, meaning that just a single type two process can be executed at a time. It is also closely linked to conceptual thought. Unlike type 1 processing, type two processes can operate upon or in the medium of language and is the “natural” home of rationality, though neither language nor reason are essential to its successful operation. It may also incite the performance of type 1 processes. For example, a trained member of Odin Teatret may make a decision to leap across the floor by applying type 2 processing, but the subtle mechanics of that leap are regulated as a matter of type 1 processing.

In the following chapter, I will differentiate between algorithmic and analytic forms of type 2 processes, and will flesh out the interrelationships Stanovich and his colleagues propose between type 1 and type 2 processing, including how type 2 processes may emerge in relation to type 1, and how type 2 processing can restrict and/or educate type 1 processes. I will also discuss how this model supports an embodied understanding of “offline” simulation. These distinctions will be woven into a broader account of object- and self-directed intentionality, which are integral to disciplined psychophysical practice. Ultimately, I will return to Zarrilli’s concern with how an actor might be thought to inhabit a practice by entering into a particular
relationship to it, using this model of embodied consciousness to describe both “mindful” practice and the flow-like performance its facilitates.
CHAPTER 3

In the last chapter, I established my reasons for studying devising within the framework of enactive phenomenology as framed by Varela, Thompson, and Noë. I also noted that while the enactive account is exceptionally well suited to describing the immediate embodied experiences at the core of my inquiry, it can more easily account for conceptual consciousness when it is applied in concert with a dual-processing account of cognition, as proposed by Stanovich. This allows me to apply an existing body of literature to an analysis of higher cognition (that is, type 2 processing) in devised creation while maintaining a functional and qualitative distinction between that and the intuitive behavior (that is, type 1 processing) that enactivism illuminates so well.

This chapter will begin to demonstrate the explanatory and instrumental appeal of my framework, ultimately justifying the correlation between disciplined psychophysical practice and creative spontaneity that I described in chapter 1. To this end, I will delve deeper into the enactive model of cognition I have established, first describing how subjects can form stable sensorimotor understandings of objects in the world, then expanding upon how perceptible phenomena may become increasingly relevant to the subject in response to either type 1 or type 2 processing. This leads into an explanation of how one might acquire intuitive skills through both implicit learning and disciplined practice. I will also describe how subjects use offline embodied simulation to assess the success of present or planned actions, and assess the relative success of these operations in relation to sensorimotor skill and cognitive capacity.

I will conclude by revisiting Zarrilli’s account of how the trained actor’s skillful inhabitation of a practice differs from its straightforward execution, especially as a result of mindful psychophysical training. I ultimately suggest a link between the experience of creative
flow and mindful training, which helps the performer recognize and exploit an expanding field of expressive possibilities in real time.

**Intentionality and the perceptual field**

Our most basic experiences of being in the world depend on our ability to apply embodied skills. Recalling Noë’s account of vision (Noë; O’Regan and Noë), I’ve already asserted that we apply an implicit knowledge of our body’s sensorimotor contingencies in the act of perception. Yet the senses are themselves remarkably adaptive, and can learn new contingent patterns of sensorimotor feedback to adapt to novel conditions of perception. In their 2001 paper, O’Regan and Noë note a number of experiments with vision where subjects wore tinted lenses or prisms that respectively colored and distorted their visual field (952). After several days of consistent wear, subjects no longer noticed any changes in their visual field and everything appears “normal” as ever. Things appeared strange again when the lenses are removed, but once again, the subject quickly adjusted.⁴⁰ Through experience, subjects can even be entrained to switch their visual mode when they don or doff lenses with distortions, acquiring a bistable adaptation (953).⁴¹

We can also interpret new sensory patterns and incorporate them into our perceptual horizon, just so long as the contingencies governing our experience of them in the world remain stable. Bach-y-Rita, for example, conducted an experiment as early as 1967 where a video camera was connected to a matrix of vibrators that provided tactile stimulation as a result of what the camera saw. Over time, blind subjects wearing the apparatus learned to “see” through their skin, interpreting real-time changes in the vibrating matrix as a result of their changing

---

⁴⁰ See Kohler (1951) cited in O’Regan et al. 60.
⁴¹ See Taylor (1962), Gauthier and Robinson (1975), and Gauthier (1976), cited in O’Regan and Noë 952.
orientation (Mossio and Taraborelli 1335). Through experience, the subjects acquired an implicit understanding of the sensorimotor logics underwriting these novel sensations, skillfully operating and interpreting the apparatus in a manner that augmented their preexisting perception of the world. Whether our sensory modalities are artificial or innate, their continuity and reciprocity allow us to engage with a rich, holistic field of experience (Mind in Life 256).

Moreover, through the masterful exercise of these contingencies, our experiences of the world assume reliable sensual qualities. When we touch a sponge, we feel it as being soft by implicitly recognizing patterns of sensorimotor interaction that become possible through our movement in relation to the object. According to O’Regan, Myin and Noë,

the softness of the sponge is not communicated by any particular softness detectors in the fingertips, nor is it characterized by some intrinsic quality provided by the neural processes involved, but rather it derives from implicit, practical knowledge about how sensory input from the sponge currently might change as a function of manipulation with the fingers. (56)

This example reiterates the enactivist claim that we are sentient agents, enacting a dynamic exchange between our own sensate flesh and the sensuous environment. It also suggests that our practical know-how is at least minimally predictive across a short timescale. Sensual experience arises from the intuition that, in response to future actions, our sensory input might change in a manner that’s consistent with our experience up to now. Over time, the relative consistency of these insights even alters our neurological makeup, most vividly in the entrainment of canonical neurons, which according to Grezes and colleagues, respond consistently to object-specific actions and perceptions (“Activations” 928).

Numerous devices for other sensory substitutions have also been successfully tested (O’Regan et al. 61). O’Regan and colleagues cite studies of visual-to-tongue (Sampaio et al. 2001); visual-to-auditory (Veraart et al. 1992); auditory-to-visual (Meijer 1992); and auditory-to-tactile perception (Richardson and Frost 1997).

I address the perceptual makeup of object-directed intentions at greater length in the following chapter.
In keeping with our phenomenological understanding of perception, we are aware of the tactile experience as being our own, disclosed to us through our own actions. Thompson claims that this awareness is based on our prereflective bodily self-consciousness, afforded to us by our mastery of embodied practices in relation to our biological self (Mind in Life 260). This establishes the means by which we ascribe sentience to our own actions (316). In that sense, the “I” who enacts experience through an exercise of perceptual skills is neither self-aware nor the accessible object of conscious control, but is an organizing principle for our phenomenal flow, anchoring autonomous processing in a horizon of agency and selfhood.

Prereflective bodily self-consciousness directs our phenomenological intentionality, whether that intentionality is specifically object-directed or is broadly open to the world (ibid. 22). Unlike the bacterium mentioned in chapter 2 (which exhibits rudimentary ‘sense-making’ by swimming towards a high sugar gradient), sentient agents have far more sophisticated perceptual systems and access to a richer perceptual backdrop, and thus have a much broader range of actionable possibilities available to them. However, human agents’ goals for environmental exploration are multiple, being far more complicated than either the qualitative assessment of texture, or the singular pursuit of a metabolic drive. By scaling-up our view from the experience of a sponge to the experience of a broader horizon, the possibilities for an “I can” engagement become exponentially greater. We’re far more likely to experience these affordances altogether against a broader flow of experience, just as with our senses.

The feeling that there is a perceptually rich world all around us derives from our affordances, much like our senses do. We don’t attend to every sensible detail about the world at all times; the whole scene seems sufficiently accessible to warrant continued inference (Mind in Life 64). This also explains why we don’t experience our blind spots during monocular vision: perceptions are disclosed and drawn to our phenomenological attention according to the dynamic values of general intentionality. Correspondingly, the objects of our perception are privileged by
their “fit” to our intentions. As a quick thought experiment, think back to the last time you ate a really good hamburger, especially those first few bites: were you really thinking about the texture of your socks, or the sound of your own pulse? Chances are that they neither vanished nor were imagined to have done so, but being interested in other things at the time, your experience of the world was changed.

The question then becomes not whether we editorialize our phenomenal experience of the perceptual field, but why and how. Stanovich begins to address the why, noting that generations of evolution has indeed “installed” a number of broad or general goals related to sustenance and reproduction that privilege particular classes of perception. However, because we are complicated organisms, survival would be impeded by the single-minded pursuit of either goal at the exclusion of all others. Even at the most basic level, a need for sleep must be balanced against needs for food, shelter, etc. We require:

a hierarchical goal analyzer with the ability to coordinate a complex set of (possibly conflicting) goals and calculate a maximizing strategy in the midst of an environment where the contingencies are in constant flux. (Robot’s Rebellion 67)

Vervaeke, Lillicrap and Richards work from this premise to develop a model for how myriad goals are coordinated. They propose that heuristically selective perception should account for our evolutionary fitness, or, our ability to realize the relevance of particular sensorimotor events in a survival situation.

Vervaeke and colleagues recognize that human agents are exceptionally skilled at zeroing in on information and information structures that are most relevant to our goals (81). This is essential in an economy of information and action: to sustain basic functions, biological measures of cost and reward should inform our commitment to any class of perceptions (89). But of course, few things are consistently relevant to us, as the helpfulness of any action depends on a broad range of competing internal and environmental factors (e.g., finding food may “matter less” than finding water if we are full but thirsty). We should also remember, as I mentioned in
the previous chapter, that cognitive resources are similarly scarce. In keeping with a survivalist evolutionary economy, the complexity of these heuristic calculations must itself be managed in a way that minimizes their cognitive expense.

Consequently, Vervaeke and colleagues’ model imagines relevance realization as a higher-level process that emerges out of our autonomic ability to balance discrete sets of competing requirements. Constraints are established by the degree to which we prioritize certain tasks based on our needs and their prospective yield (cognitive prioritization, 93), by our flexibility to either explore new possibilities or to stick with what we know (cognitive tempering, 92) and by the perceived benefits of applying specialized cognitive strategies versus general ones in the performance of these projects (cognitive scope, 91). A global balance of efficiency against resilience provides a further constraint to each (95), while the agent, who is sensing a vast array of internal and external metrics, negotiates each of these processes in the course of phenomenal experience. Water, for instance, may not always be especially relevant: it’s entirely possible to walk past a drinking fountain in the park and never notice it. Then again, perhaps we’ll notice the fountain after all and stop for a drink, or perhaps we’ll even seek one out with more or less urgency. This behavior depends in part on our sensations of thirst, but the actual relevance of that affordance also relies upon our willingness to “risk” seeking it out and our having of skills we can apply to its acquisition. Thus, even before conscious attention is drawn to their environment, agents experience a perceptual field to which they are uniquely attuned.44

Enacting implicit skills

In the same way that our heuristic intentions influence our prereflective experience of the world, the implicit skills we acquire change the terms of our intuitive engagement. We can

44 It also follows that particular activities and objects can become especially relevant by seizing upon conscious attention (see Kagan; O’Regan, Myin and Noë). I’ll return to this below.
employ motor skills much like the sensorimotor contingencies we learn thanks to our implicit understanding of their function in the world. Yet this too requires a consistent integration of intended action and perceived sensation, such that our motor intentions are linked to perceptible changes in the environment we wish to engage. When we act to extend our arm, for instance, we receive extensive feedback (kinesthetic, haptic, proprioceptive, and perhaps visual) that the hand is indeed extended.\(^{45}\) Over time, actions are deeply entrained, so we reliably know that when we intend to effect the environment in a given way, this action will accomplish it. These skills are supported latently (i.e., in our “knowing”), but also by physiological changes that arise from frequent use and support our requirements: we build muscles, neural connections are made, and parts of our brain enlarge. The whole embodied subject learns a skill for facilitating an intended effect.

A great deal of procedural know-how is also acquired implicitly thanks to our continuous engagement with the world. For example, infants very quickly develop an implicit understanding of how to manipulate gravity. By 3 months of age, they predict that unsupported objects will fall; by 6.5 months, they predict that a teetering object will tip off a table if less than half of its bottom surface area makes contact with the tabletop (Hogarth 106-7). Even without the benefit of declarative knowledge, they come to know how the environment works in relation to us.

Similarly, adults have little need for declarative knowledge when applying their own implicit understandings of the world. When catching a falling object, for instance, we can anticipate a changing rate of descent without ever having learned the gravitational constant. Our skill relies little on any actual math, nor upon the piecemeal control of various muscle groups. Rather, we have a sophisticated implicit sense of how the ball’s velocity will change, quickly and accurately understanding how to catch it through the complex coordination of our whole musculature. We understand it as a holistic phenomenon.

\(^{45}\) This example assumes that the subject is neurologically healthy.
It follows that our motor actions should themselves be conceived of as goal-directed plans, anticipating a process that is oriented towards end-state. Indeed, this happens quite rapidly. If the ball unexpectedly falls off my table, I may intend to catch it (and therein intend actions that I believe will accomplish this task) before I even consciously recognize my intention, much less formulate a conscious plan to do so. My hand immediately preshapes to facilitate an accurate and stable grasp, and coordinated muscle groups move the arm, rotate the torso, etc., to bring my hand towards the object, demonstrating an intelligent sense of where the hand and the ball might meet in space. Further evidence for goal-directed action-intentions can be found in previous studies by Cohen and Rosenbaum: when subjects are asked to rotate an object, for instance, their initial grasp position will be uncomfortable or awkward if that enables a more comfortable ending grip. Thus the action is bi-modally modeled, according to both the environmental changes and physiognomic changes it intends.

Jeannerod refers to this anticipatory plan as an action representation, though his use of the word “representation” is somewhat misleading. Instead of pictures in the brain, he suggests that our actions manifest as patterns of neural activation across every part of the nervous system involved in the action’s execution or simulation.

---

46 This phenomenon is Maximum Grip Aperture (MGA): finger grip moves to an orientation that is proportional to the object shape, but slightly larger to maximize the accuracy and efficiency of grasping (Jeannerod 5).

47 The subject may also incorporate different elements of the environment into intermediary relationships with himself and it. This allows us to effectively use tools as both objects in our environment and as extensions of our motoric will (Menary 574). An extension of this principle also applies to advanced weapons training in martial arts practice, although I don’t dwell on this in my discussion below. Please see Massen and Prinz’s “Programming Tool-Use Actions” for a deeper engagement with the theoretical implications of tool use in bodily schema, and Zarrilli’s When the Body Becomes All Eyes for an applied account of how training affords the weapon to the fighter as a means of self-extension.
Skill acquisition

While our implicit understanding of sensorimotor contingencies and our ability to form enactive intentions is quite sophisticated, we aren’t automatically adept at applying knowledge to those ends. A lot of objects hit the floor before we can reliably catch them. In order to learn, we have to recognize the differences between our intended goals and the effects our current actions are genuinely producing. Being able to make more accurate predictions implies the acquisition of new skills (Rosenbaum et al. 512). Action representations therefore work according to forward models: we perceive the real world consequences of our actions, but compare that to our anticipation of events to see if errors were made while the motoric intention was formed (Jeannerod 20).

To learn comparatively, agents must be able to run internal simulations, imagining the embodied processes that will follow the original intention so it can be compared to agent’s perception of what actually happened. Gallese and Lakoff hint at how such a simulation might work when they announce that, “Imagining and doing use a shared neural substrate” (456, italics orig.), noting that the brain is similarly activated when either observing or imaging a thing. This has been echoed by Pezzulo, who suggests, “anticipatory and simulative mechanisms . . . permit the prediction of the effect of one’s own actions as well as that of external events, by re-enacting the sensorimotor brain mechanisms originally serving for situated (inter)action” (79, italics orig.).

As I’ve been at pains to suggest, cognition isn’t a brain-bound event. Any mechanism for simulation or efference would need to employ the same distributed cognitive architecture that enables embodied activity in the first place (Thompson, *Mind in Life* 59), and indeed, ample evidence suggests that simulation shares the embodied substrate of performance itself. In visualization exercises where the subject is asked to imagine performing an action, the tasks are imagined to incorporate the subject’s own biomechanical constraints (Rosenbaum and
Jorgensen) and take almost exactly as much time to imagine as they would to execute (Jeannerod 25-9).\(^{48}\) Simulation even recognizes the proportional difficulty of a given task, and will take longer if the subjects are “loaded” with imaginary weights (ibid.).\(^{49}\) Moreover, a simulated task will provoke a proportionate autonomic response, such as heavier breathing or an accelerated heart rate (Decety et al. 1991; Wuyam et al. 1995). Corresponding nervous and motor pathways also become more excited during visualization (Bonnet et al. 1997; Jeannerod 31), albeit below the threshold of actually activating.

Grush suggests that merely preparing for the initiation of an action doesn’t really allow us to intend a specific end state, since these also correspond to our expectation of particular kinesthetic and proprioceptive changes. Therefore, there should be some form of purposeful emulative system recruiting motor systems and structures of the brain (426) to “[yield] faux proprioception and kinesthesia” (385) appropriate to a given activity. Learning becomes possible through the use of this mechanism: the subject models the ideal state at the same time that the subject enacts a change in the external environment, and relevance is assigned to the residual difference between them (381). The subject’s experience of that difference informs implicit knowledge of future actions, allowing the subject to hone his mastery of a goal-directed action.

Because we learn by becoming accustomed to expecting particular integrations of self and environment, and because our integration of self and environment is multi-modal, we associate a broad range of sensible data with particular action representations. According to Thompson,

> For enactive theorists, information is context-dependant and agent-relative; it belongs to the coupling of a system and its environment. What counts as information is determined by the history, structure, and needs of the system acting on its environment. (*Mind in Life* 51-2)

---

\(^{48}\) See also Decety et al. (1989).

\(^{49}\) See also Decety et al. (1989); Cerritelli et al. (2000).
Thompson is quick to note that this is not a matter of individual neurons being themselves “linked to” or “associated with” objectively defined features. “Rather, assemblies of neurons make sense of stimulation by constructing meaning, and this meaning arises as a function of how the brain’s endogenous and nonlinear activity compensates for sensory perturbations” (ibid. 53).

Elsner and Hommel’s work on bidirectional association touches on the formation of these anticipatory links.\(^{50}\) When our actions in the world produce a meaningful secondary effect, such as a specific musical tone (see Elsner and Hommel, “Effect Anticipation”), we readily integrate our experience of the two. If we are subsequently asked to respond to the tone itself, we’ll perform better if we’re responding with the action that brought it about in the first place (229). The robustness of anticipation depends upon the temporal continuity and the probabilistic contingency of the effect – whether or not it coincides immediately to our actions, and consistently with our actions (Elsner and Hommel, “Contiguity” 148).\(^{51}\) It is thanks to a close integration of these that we can successfully adapt to our environment, responding quickly, actively, and intuitively on the basis of a wide range of perceptual signs (Hogarth 82).

Consequently, when we see an object that can be manipulated, the action plans for manipulating that object are immediately afforded to us (Pezzulo 87; Thompson, \textit{Mind in Life} 247). When we see the sponge, we anticipate the experience of softness our tactile senses would yield.

These linkages do not engender a mindlessly reflexive response in healthy subjects (e.g., a compulsive need to touch the sponge), for as Cohen and Rosenbaum’s grasping experiments suggest, these object relations are themselves subject to goal directed intent. According to Jeannerod:

\(^{50}\) I prefer a vocabulary based around “anticipation” rather than a static-representational concept of “association,” but I again don’t think this difference in vocabulary precludes a deeper reading of my framework into these results.

\(^{51}\) Elsner and Hommel’s premise has also been studied as a result of environmental (or non-laboratory) training phases. Drost et al. (2005) and Trimarchi and Luzzatti (2011) found similar tonal privilege in their comparisons of expert and novice pianists.
Motor representations are automatically assembled in response to immediate task requirements and do not rely on memorized actions. . . . The motor rules are assumed to be embodied in the wiring of the motor system; they are better defined as dynamic procedures than as preorganized structures. (134)

Our anticipations are always being verified and refined through new experiences, and consequently, our skills are honed by and for new contexts. Even implicitly, this reflects true functional learning (Rosenbaum et al. “Perceptual-motor”).

Of course, we are not perfect learners, and do not always get it right, either because we implicitly misunderstand the repeated appearance of environmental phenomena for genuine contingency, or for reasons of our own misinterpretation. I discuss those below, and identify type 2 processing strategies that can help to mitigate learning errors, directing type 1 learning for optimal accuracy and efficiency.

Consciousness and the limits of intuition

In chapter 1, I recalled an oft-repeated dictum from Grotowski, Barba, and Barker (among others) suggesting that declarative consciousness divides us from our impulses to act. This still holds true: Wulf and Prinz (2001, cited in Rosenbaum et. al “Perceptual Motor Expertise”) found that “attending to the elements of a skill causes overregulation of muscular degrees of freedom, which in turn limit one’s ability to flexibly implement motor plans” (513). The finely tuned enactment of an intuitive skill demands the quick multi-modal responses of type 1 processing. Since conscious type 2 processing is both slow and serial, it’s no wonder that micromanaging this process would hamper performance.

---

52 This contrasts with Gallese and Lakoff’s description of a fixed set of parameters whose values change to reflect the present situation (465). An enactive model of skill proposes that our responses are explicitly grounded in a real-time bimodal engagement, goal-directed and holistic rather than mathematically piecemeal.

53 Similar conclusions can be found in Beilock et al. and Beilock and Carr.
In fact, consciousness has a pretty light touch when it comes to daily practice. It is computationally expensive (Stanovich, 2009), and it generally serves minimally controlling self-monitoring functions rather than interfering too much in general operations (Hogarth 200). When we compare this reticence to the rapidity and immediacy of type 1 processing, it’s apparent that most of our engagement with the world happens intuitively rather than consciously. Our autonomous systems generally lead us through the day by “responding to stimuli, entering processing products in the working memory for further consideration, [and] triggering actions on its own, or at least priming certain responses, thereby increasing their readiness” (Robot’s Rebellion 49). Because consciousness was never engaged in these activities from their inception, “intuitions can essentially be considered faits accompli, things that must be dealt with after the fact” (Hogarth 1994, italics orig.).

Evans echoes this assessment, stating that, “although much of our behavior is unconsciously controlled, ‘we’ (conscious beings) are not aware of this fact and may live with an illusion that we are much more in control of our behavior than we actually are” (“Dual-processing” 270). EMG scans suggest a subject becomes aware of an impulse to move 206ms before the onset of muscular activation, but an EEG of this subject suggests that neural preparation for this voluntary muscle action preceded the subject’s awareness by roughly 345ms.\(^\text{54}\)

This striking result . . . shows that the intention (in the sense of ‘wanting to move’ or ‘feeling the urge to move’) can be perceived as distinct from execution itself; it also shows that the subject’s declarative awareness of this phenomenon does not correspond to the actual onset of movement preparation (Jeannerod 60-1).

Thus, despite a long-held pedagogical custom of declaiming our nosy self-consciousness, it mostly stays out of the way of our relevance-directed type 1 processing. Instead, the analytic

\(^{54}\) These numbers are drawn from an experiment conducted by Libet et al., 1983. It was replicated by Keller & Heckhausen, 1990; Haggard & Eimer, 1999; Sirgiu et al., 2004. (cited in Jeannerod 61).
system “is responsible for building a narratively coherent description of the behaviour engaged in by the individual,” justifying our behavior as being a cohesive set of self-motivated intentions “even though it did not initiate much of it” (Robot’s Rebellion 49; see also ibid. 52).

Although we can draw declarative knowledge from our attention to intuitive practices (Pezzulo), the accuracy of these assessments is inherently limited by the “directness” of our conscious assessments. Action representations are finely textured, and are qualitatively “known” according to the perceptual systems we employ, not as data that is inherently suitable to a rational examination. For example, proprioceptive and tactile systems alone are able to judge gravity and inertial mass. By simply holding a ball for a moment, you acquire a great deal of implicit knowledge that you can intuitively apply to any manipulation of the ball (throwing, catching, etc.). However, closely examining a ball will not tell you its weight, and unless you have some experiential frame of reference relating measurement to sensation, a numerical weight will not tell you how the ball would feel in your hands. In our day-to-day experience, “motor competence of gravity might then [be] cognitively impenetrable” (Zago and Lacquanti 186; qtd in Jeannerod 66). Thus, even where our analytic skills are especially refined, we struggle to account for that qualitative sense of what it means to ‘have’ an experience. According to Thompson,

Making aspects of experience explicit in this way unavoidably involves interpretation and the creation of meaning . . . It also presupposes a pregiven background of tacit and unreflective experience that can never be made fully explicit. In these respects, accounts of prereflective experience are interpretive and not merely descriptive. (Mind in Life 316-7)

---

55 Our consciously crafted self-narratives are not inherently “rational” themselves. Rather, rationality is a meta-analytic skill that we can acquire through practice. See below, as well as Toplak and Stanovich for a more thorough discussion.

56 Metaphor may be considered a strategic attempt to report the quality of one’s experience through analogy, for example, as in Zarrilli’s description of his incoming audience as “wall-like” in the previous chapter. Lakoff and Johnson even suggest that the cognitive construction of metaphor arises as a reflection of our embodied experience, though as I discuss in chapter five, this is itself a problematic theory that still relies heavily upon a linguistic analogy of perceived likeness rather than a genuine awareness of sensory data.
Yet consciousness is not an alien, analytic force that exists entirely outside our sensual devices, nor is it “an interior state of mind or brain that stands in a linear causal relation to sensory input and motor output” (ibid. 80). Rather, consciousness “is a form or structure of comportment, a perceptual and motor attunement to the world” (ibid.), which we require in order to establish complex motor skills or to override maladaptive heuristic responses (Donald 57). The conscious integration of new implicit knowledge allows us to tie our shoe, but also to second-guess our reproductive urges and refrain from flirting with the boss’ wife (Stanovich, *Robot’s Rebellion* 67). According to Stanovich the default orientation of our autonomic type 1 processing “is to accept propositions” (ibid. 99), but “[u]ndoing acceptance (representing propositions as potentially false) appears to be a key function of the computationally costly decoupling operations of the analytic system” (ibid., italics orig.).

Consciously directed performance

While an incredible advantage of our implicit processing is the ability to learn from our perceptions, “the critical disadvantage is that it is not possible to learn from what is not seen” (Hogarth 82, italics original). As Kahneman and Klein suggest, “Skilled intuitions will only develop in an environment of sufficient regularity, which provides valid cues to the situation” (520), which as I mentioned above, means that we perceive sufficient continuity and contingency between our intentions and their environmental effects. But if the environment provides irrelevant or unfavorable feedback with sufficient continuity and contingency, we may yet learn a practice that is neither optimal nor accurate. Hogarth refers to these environments as wicked spaces (89).

As an example of a particularly wicked space, Hogarth discusses the case of a physician who was working in New York during the early 20th century (85). He became famous for his ability to diagnose the early stages of typhoid fever by palpitating patient’s tongues and “feeling”
for telltale signs, and soon after declaring a diagnosis, his patients usually became symptomatic. Unfortunately, this physician was unknowingly passing typhus between the hospital wards, directly infecting the patients through his diagnostic method. His intuition was quite robust, but it was a bad one, suggesting that intuitive responses can thrive in the absence of a “genuine” skill (Kahnemen and Klein 522). Unless people become aware that an intuition is wrong, “they will continue to rely on it. The lack of direct disconfirmation (‘no news is good news’) is sufficient validation” (Hogarth 206). Stanovich, West and Toplak refer to these faulty intuitions as errors in comprehension, or, a mindware gap (“Individual differences” 366).

Conversely, if an individual is forming intuitions in an environment that offers “honestly” responsive feedback, then these intuitions tend to be highly valid (Kahnemen and Klein 521). This is a huge advantage of consciously directed training: the subject attends to feedback that has been especially selected by them, or by others who have constructed a given pedagogy, for its validity in a given environment. Physicians today, for example, rely upon a wide range of instruments and empirically validated diagnostics, and also demonstrate a keen practical understanding of microbiology in performance of hygienic practices. This, in turn, establishes a high-validity domain of information and practice in which the physician can develop a reliable level of expertise.

Consequently, analytic processing makes it possible to attend to detail and to direct self-evaluation, as in the rote technical exercises that mark novice training for Odin Teatret. In the early stages of any psychophysical training (and especially in form training, where the performer is attempting to learn a set of technical physical movements), declarative information guides the novice’s behavior (Hodges et al. 479). Type 2 reflective processing establishes declarative

---

57 I recognize that the term “mindware” is itself derived from a computationalist vocabulary, implying that knowledge lives in the brain as a set of data or subroutines, but I apply the term here with a more generous understanding of “mind.” I hold that intuitive knowledge is embodied across the subject’s dynamic nervous architecture.
guidelines on the basis of the individual’s opinions, beliefs, and goal structures (Stanovich and Stanovich 215), or in other words, on the basis of knowledge-based intelligence (217). This self-analysis is what imbues early training with “a painful sense of expropriation of the actor’s own spontaneity” (Barba, “Amulet” 101), so actions are slow and cognitively effortful. Type 2 processing is thus often characterized by deliberate shifts in our volitional attention. It may steer our attention us towards instructions being provided by a teacher, or to our memory of those instructions, or perhaps towards the body itself, as when a pupil checks to see if his heels are in proscribed alignment for the lion pose in kalarippayattu (Zarrilli Psychophysical Acting 54).

Psychophysical training also employs subtypes of type 2 processing: semi-autonomous algorithmic processing and explicit analytic processing. Type 2 algorithmic processing is tasked with executing directives from the analytic mind (Stanovich et al., “Complexity” 106), often deploying autonomous type 1 behavior to accomplish a consciously held objective. Since it draws upon and applies our type 1 knowledge base (Stanovich and Stanovich 217), algorithmic processing is generally the subject of fluid intelligence testing (Stanovich et al, “Individual Differences” 378). It is also responsible for sustaining tasks to completion, especially when explicit goals demand multiple phases of activity (Stanovich et al., “Complexity” 112). For our purposes, it may be most useful to recognize algorithmic processing as the flow of consciousness that characterizes our execution of technical forms, including yogic poses, a dance, or a karate kata.

Both analytic and algorithmic processing come into play during a warm-up I like to play with young actors called “the triangle game.” The declarative rules are as follows:

1. Silently take note of two other people in this room.
2. When I say “go,” move around until you form an imaginary equilateral triangle with the three of you standing at its points.
Once I say, “go,” everybody rushes to complete their triangles, repositioning themselves in relationship to the other two people they’ve selected (who are also moving to complete their own triangles). In order to algorithmically regulate the “triangularity” of his or her positioning, each actor intuitively negotiates a host of other equally complex factors: they are constantly moving through the room, avoiding collisions with others, reevaluating the size and proportions of their triangle, and strategizing the suddenness of his or her movements so the group can collectively discover a stable formation and thereby ensure his or her own triangle is stable. Each actor is undoubtedly conscious of his or her task, and the task itself is relatively straightforward, but through sophisticated algorithmic processing, he or she draws upon a host of implicit perceptions and enactive skills in the service of this task.58

**Optimizing performance**

Type 2 processing is also especially useful when our intended activities require accuracy, especially because type 1 processing is conservative in its distribution of cognitive resources: if a sub-optimal action is less “expensive” than the correct one and the consequences aren’t highly relevant to our survival, we will tend to sacrifice accuracy and performance whenever possible. For instance, when I discussed Cohen and Rosenbaum’s 2011 study of grasp planning, I highlighted their finding that grasp planning is ideally prospective and goal-oriented (i.e., when a subject intends to rotate or manipulate an object, he will initially grasp it awkwardly if that ensures his end position will be optimally comfortable). However, they also noted retrospective effects: their subjects sacrificed prospective comfort if they could simply repeat a recently applied grasping strategy and thereby avoid the cognitive effort of planning for rotation and translation (347).

58 My account of this exercise could be readily related to a great deal of Bogart and Landau’s introductory Viewpoints work, especially their improvisations based on topography.
This “miserly” heuristic behavior is generally none too harmful – there were no reports of the aforementioned subjects suffering significant wrist strain following the experiment – but it can lead to “thoughtless” errors. For instance, while walking down a familiar sidewalk on a clear day, our attention is likely not on the act of walking itself – we readily adapt to slight environmental changes that might otherwise perturb our stride59 – but we may still trip over an uneven flagstone. We wouldn’t trip because we lacked the ability to compensate, but simply because we were “careless” and inattentive to the task. As Stanovich, West and Toplak remind us, “the presence of an ability does not ensure its use” (“Complexity” 111, italics orig.). Alternatively, if we begin our walk knowing that the sidewalk is uncommonly icy and uneven, we’re likely to be a good deal more attentive to the task at hand, since each step needs to be both accurate and efficient to ensure optimal performance in our locomotive task. Here, we have analytically recognized a new performance directive (broadly, to avoid slipping), and have overridden the suboptimal heuristic response in order to execute the directive at an algorithmic level. This applies type 2 algorithmic processing as an intermediary form of attention that optimizes practical and cognitive efficiency (Hodges et al. 477).

Apart from an explicit directive to assume conscious responsibility for a task, we may also become aware of this need when we’re alerted to the failure of a heuristic response. In other words, we start paying attention when we perceive a mismatch between the intended effect and what actually happened. This awareness is called override detection (Stanovich et al., “Individual differences” 366), and it is generally activated when algorithmic processing notes that an intended action has been delayed, incomplete, or blocked (Jeannerod 55). The magnitude of a noticeable mismatch is itself task dependant because the parameters of error may be established by the task itself, so consequently, the need for override is determined both by

59 See Knoblich and Kircher, 2004. Also see Fournet and Jeannerod, and Slachewsky et al., cited in Jeannerod 53.
implicit efferential mechanism I mentioned above and by our goal-directed conscious processing. Both assign relevance to those autonomous actions, letting us know when they require our full attention.

Override detection is an essential tool for the early-to-intermediate stages of form training because it flags errors relative to one’s explicit knowledge of an expert domain. For example, as I acquire some expertise in assuming the lion pose in kalarippayattu, I no longer need to explicitly “tell myself” that the heels should be aligned, but have begun to integrate that knowledge into my embodied understanding of the pose itself, until “[w]hat was extrinsic becomes intrinsic and intuitive” (Zarrilli, *Psychophysical Acting* 54). Thereafter, if my heels are significantly off-kilter, then the mismatch between my embodied intentions and my present situation triggers an override, and I become consciously aware of the error.

Once we detect the need to override autonomic processing, we employ an embodied efferential mechanism, which initiates and runs learning simulations at the behest of type 2 cognitive processes. This is the same process of embodied simulation we deploy when we imagine performing a task; Stanovich and colleagues refer to this process as *cognitive decoupling*. Decoupling (which can also be initiated by the analytic mind, especially in visualization) is a holistic simulation-based process that involves “inhibiting the heuristic response and simulating alternative responses” (“Individual differences” 366). As a simulation, it lets the subject exercise skills through mentally directed training without overt performance: having detected a misplaced foot, decoupling covertly simulates the action as I had learned it to this point. As a result, I can consciously “know” where the foot ought to been place, I can correct my positioning, and being aware of the error, I can learn to do better in the future.

However, a fascinating trick of decoupling is that I wouldn’t necessarily need to move my foot to the correct location in order to learn from the error. Because decoupling begins an *embodied* simulation, even covert simulations facilitate learning, and can produce robust
psychophysical changes in the subject. Jeannerod (41) points to two studies demonstrating that both physical training and mental (i.e., “decoupled”) training for simple motor tasks will cause similar changes in cortical enlargement (Pascual-Leone et al., 1995)\textsuperscript{60} and in cortical activation (Lafleur et al., 2002). In these cases, mentally simulated training is effective because “the changes occurring at all levels of the motor system during motor imagery affect subsequent motor performance,” effectively “rehearsing the motor pathways” in much the same way that repeated execution would (Jeannerod 41).

Jackson and colleagues’ rehabilitation of a stroke patient further suggest that decoupling may confer further benefits for learning and performance. Their patient was asked to perform a stimulus-based foot movement sequence after his stroke. He demonstrated significant improvement in the first five days of physical therapy, but his performance plateaued through the second week. When mental practice was combined with physical practice in week three, his performance on the foot sequence test improved an additional 10.3%, and got a slight bump by 2.2% in week 4’s mental-only training phase. The authors note that “mental practice helped the patient be more consistent in his performance and suggests that timing between the cues and the corresponding movements were improved” (109). In this case, the patient’s decoupled, “offline” processing facilitated learning that the patient’s online processes were too damaged to support.\textsuperscript{61} This marks a reciprocal relationship between overt performance and covert decoupling, as each becomes more sophisticated according to the subject’s expertise.

An emulation study by Reed and colleagues supports this reciprocity. They noted that intermediate springboard divers took the longest to complete visualization exercises but got the most benefit from them, as opposed to novices (who lacked the motor programs to conduct fine adjustments) and experts (whose intuitive motor programs are already quite accurate) (412).

---
\textsuperscript{60} See also Elbert et al, 1995.
\textsuperscript{61} Thompson suggests that decoupled processing may be responsible for affording similar benefits to phantom limb patients during mirror-box exercises. See Mind in Life 255.
Harkening back to the terms of Stanovich and Hogarth, intermediate and advanced trainees have the requisite mindware to attend to an appropriate class of perceptions, which lends higher validity to their self-directed learning environments. Therefore, as performers become more skilled, their simulations become correspondingly more advanced. This in turn informs the nature and frequency of corrective decoupling operations.

By continuing to practice my lion stance, I refine my intuitive understanding of the correct position. My movements are increasingly correct, and this reduces my need to override. Meanwhile, this expertise simultaneously refines the parameters of my override detection so that my attention may yet be drawn to subtler mismatches. Not only am I becoming better at entering into the proper form, but I am becoming better at self-correcting according to those principles of the form that I either explicitly or intuitively know.

For the same reasons our autonomic skills may not always be optimally deployed, cognitive decoupling may not occur if our cognitive resources are limited. It is possible to continue acting intuitively while sustaining a simulative decoupling operation, for instance, covertly simulating a dance sequence while walking down the street. However, cognitive decoupling is a type 2 cognitive process, and override detection typically requires that we have sufficient algorithmic-level cognitive capacity to sustain the decoupling it inspires. Since type 2 processes are so demanding that they can only run in serial, we might not detect the need for an override situation if we’re tightly focused on an existing simulation (Stanovich et al., “Individual differences” 381; “Complexity” 112). I am therefore more likely to notice that my foot has landed on an uneven flagstone if I am not mentally rehearsing an elaborate dance sequence since I will have the cognitive resources to spare.

A similar principle applies to form training: I am less likely to realize the error of my heel alignment if my mind is focused elsewhere, or if my attention is drifting to other activities that
occupy my cognitive resources. I am more likely to realize my error, and thus correct my form and learn from this mistake if my overriding intention is to execute the form properly.

This constructive relationship between attention and intention suggests the subject’s ability to maintain a constructive degree of corrective focus is itself advantageous for skill acquisition. Such focus would be especially advantageous to the performer by improving the accuracy and efficiency of disciplined training. In the remainder of the chapter, I will address the control and optimization of that process. Then, looking beyond the learning phase, I will also consider its implications for the creative enactment of psychophysical skills, especially insofar as forms of psychophysical attenuation can facilitate one’s experience of creative flow.

Implicit enactment of analytic principles

I have already argued that our psychophysical conditions, sensorimotor skills and our awareness of a given performative context shapes the class of perceptions that appear most relevant to us. However, besides domain-specific cue-validity and skills (Stanovich et al., “Complexity” 108), implicit knowledge bases can also come to reflect high-level analytic practices. These principles may be integrated into our perceptual schema as a consequence of their continued enactment through broad spectra of behavior, and altogether, they may influence intuitive processing and thereby inform (or bias) future experiences. I provided an example above describing doctors’ acquisition of a hygienic sensibility through hygienic practices, but through similar means, this may extend to the integration of rather more abstract principles, as in the case of a graduate student who comes to view almost all new research through the lens of his collected theories (Hogarth, 222).62 The normative rules of rational thought may even fall under

62 I hereby note the irony.
this rubric, implicitly acquired through the practice of our own discursive culture (Stanovich and Stanovich 197). 

When it comes to refining our intuitive learning faculties, both Hogarth and Zarrilli suggest that one should acquire yet-broader, meta-analytic mindware protocols in order to optimize future entrainment. For his part, Hogarth advises that we optimize the kind of intuitions we learn by developing general observational critical practices, which in turn encourage us to interrogate both personal and novel theories for their continued validity (229). To that end, he proposes adopting the scientific method as an implicit cognitive practice because it promotes an “experimental attitude” towards experiential learning (212), and would shape our intuitive perception accordingly.

I allow that the scientific method is invaluable for the development of logical critiques, but appealing back to my own critique of empiricism in chapter 1, such an attitude demarks a rather discrete class of “valid” phenomenon that are measurable and repeatable. Hogarth further suggests that we attend to our emotions and employ metaphorically rich means of narrative reconstruction (210), perhaps to recapture those experiential qualia he excludes, but fails to identify a meta-analytic framework that might establish thoughtful grounds for those engagements and thus supply a “blooded” counterbalance to the “experimental attitude.” Despite Hogarth’s expansive intentions, the type 1 enactment of scientific method threatens to narrow our critical purview.

Zarrilli gestures towards an analogous principle in performance, where the actor ideally acquires an intuitive sensibility compatible with a given project. In his words, “the preparation of the actor’s perceptual awareness specific to a particular performance environment is shaped by each specific dramaturgy and the need of each specific performance score” (Psychophysical Acting 49). In other words, he suggests that an abstract dramaturgical aesthetic may be adopted by the actor as a holistic perceptual attitude. The ability to “assimilate” such abstract frames of reference has fascinating implications for the creation and exploration of novel dramaturgies, and I expand upon this in the following chapters (especially chapter 5). For the time being, I will more deeply consider how recognizing the possibility for these integrations can inform an optimal approach to psychophysical learning processes in general.
I believe Zarrilli provides a better solution for optimizing our analytic mindware by proposing that we develop a meta-analytic protocol to optimize *how* we adopt and adapt intuitive expertise, whatever the environment. He suggests that this can be done through the practiced control of one’s attention (*Psychophysical Acting* 49), cultivating a *mindful* attitude towards learning and performance that optimally facilitates both.

**Training mindfulness / mindful training**

Mindfulness is a widely shared capability (Dane 998) whereby our consciousness “operates upon rather than *within* thought, feeling, and other contents of consciousness” (Levesque and Brown 285, italics orig.). We may be thought mindful when we are actively attending to the task at hand as we are doing it, de-automating instinctive performance in order to “prolong that initial contact with the world” (Brown et al. 212). When mindfulness is intentionally practiced, it optimizes intuitive learning, and when it is cultivated as a skill, it affords the practitioner greater control over the terms of their phenomenological experience.

Recall that type 2 conscious processing is serial and cannot attend to diverse tasks at once: I may remain focused on the icy sidewalk, or upon the simulation of a dance sequence, but a conscious attempt to do both would typically be experienced as an alternation of focus between tasks. Meanwhile, type 1 processing is multimodal and affords the simultaneity of my experience. If I am intentionally mindful, I attend to my having of these perceptions. I notice

---

64 I recognize that it seems unusual to now position mind as being a discreet entity from the body after having spent so much ink on enactivism, or to imply that mind might ephemerally inhabit (“-ful”) or disappear from (“-less”) action intention. Let me be clear: the embodied mind is never actually absent from the present moment. Rather, just as the word “embodiment” indicates a body that was already there to highlight the function of processes we generally associate with that side of the Cartesian coin, the “mindful / mindless” dichotomy usefully emphasizes the continued function of cognitive modalities we associate with type 2 processing, using a handy suffix to identify diverse styles of engagement. Even where we see qualities of mindful practice ingrained in type 1 activities, we can recall this as an orientation towards the world that values perceptual acuity and keen attentiveness, and which can influence intuitive processes by enacting higher-order principles.
my action of my feet upon the sidewalk as I notice my intention to simulate the dance sequence. By attending to my having of perceptions rather than to any perceptions individually, I do not draw any of them under conscious control, but experience their multiplicity. Mindfulness does not intervene in intuitive processing, and thus can recognize the broader world of perceptions while it recognizes my intentions towards particular perceptual acts.

Therefore, while optimizing the breadth and the quality of perception, mindfulness is “a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally” (Dane 1000). For instance, either mindless performance or hypervigilance within a task can severely limit the number of phenomena that somebody perceives externally, even if the missed phenomena would be relevant to the task at hand (Langer 44), but individuals practicing mindfulness recognize more stimuli in their environment, even when those stimuli are especially subtle (Dane 1001). The same goes for internal sensations: mindful subjects demonstrate enhanced cognitive flexibility (Horan 211), and can successfully attend to emotions and physical sensations without coldly removing themselves from the experience (Brown et al. 214; Langer & Moldoveanu 2).

By attending to perceptions as they happen, type 2 consciousness is also occupied with something other than the post-hoc organization or narration of experience, which “permits an immediacy of direct contact with events as they occur, without the overlay of discriminative, categorical, and habitual thought” (Brown et al. 212). This allows me to recognize the cues for validity being offered by my environment at the same time as I act within it. Brown and colleagues thus suggest that mindfulness optimizes action “through the provision of choice that is informed by abiding needs, values, and feelings and their fit with situational options and demands” (223). In this way, mindfulness can facilitate the increasingly sophisticated self-
correction that expertise allows, increasing one’s sensitivity to mismatch and initiating thoughtful decoupling operations accordingly.65

Mindfulness may also be an adaptive cognitive strategy when it is desirable to continue intuitive practice rather than pause to collect one’s thoughts via decoupled simulation. Dane cites the example of trial lawyers, who draw upon a great deal of personal and available knowledge in the midst of an argument while mindfully assessing and adjusting their argumentative strategies (1005), but for the purposes of my own study though, we might instead consider improvisation in performance. In chapter 1, I noted the following description from Keith Sawyer:

Improv performers minimize the role of the intellectual, conscious mind during performance. Yet they realize that some conscious awareness is always essential: they must create while aware of the other performers and the conventions, etiquette, and expectations of the genre. . . . There’s a constant tension between the performer’s conscious and unconscious during performance, and each performer has to balance the tension from moment to moment. (Explaining Creativity 234)

In Sawyers’ vocabulary, this negotiation of tensions seems to describe an alternation of type 2 conscious attention rather than a cohesive flow of experience; the process of balancing one’s attention is central to the activity, but appears utterly mysterious. Alternatively, in the model I am developing here, we may recognize the performer’s openness to a wealth of stimuli as a form of mindfulness. Rather than entering into a type 2 analytic thought process or decoupling to evaluate alternative pathways through the scene, the performer remains attuned to “temporally proximate stimuli” and is “attentive and alert to what’s happening in the now” (Dane 1006, italics original).

Stepping beyond the stage again, continued mindfulness is also crucial in effective meditative practice. According to Horan, meditation seeks a deeper integration of thought and presence that is not itself contingent on domain-specific information. It is mindfulness attending

65 Hogarth calls this process “circuit breaking” (212).
to itself in “the psycho-physiological integration of pure consciousness, the transcendent state, with empirical consciousness” (200). He defines *transcendence* as:

a state of synchronized neural activity in which existing informational set(s) is attenuated and surpassed; where psychological / cognitive closure is not yet in effect; and where attention is broad and sustained on explicit, or implicit, phenomena in a defocused, yet alert, witnessing mode. (202)

He proposes that meditative strategies based primarily on mindfulness (such as Zen and Vipassana) are especially oriented towards transcendence since they involve “the detached, non-judgmental witnessing of thoughts, feelings, and sensations over the entire phenomenal field” (200), coinciding with a “surrender of the limited sense of self” (202).

As a counterpoint to purely mindful practice, Horan defines concentrative meditation strategies as those that apply an intense focus to objects of thought (including mantra, imagery, or physical sensations) to afford a deeper sense of integrative experience (ibid). Horan defines *integration* as,

a state of synchronized neural activity in which informational sets, both across and within explicit and implicit domains, are matched, bound, and encoded; where psychological / cognitive closure is in effect; and where attention is focused, sometimes over multiple modalities. (ibid.)

Both sets of intentions are combined in meditative strategies like *sanyama*. It applies mantra-like practices but stresses an absence of concentrative effort, and encourages a broadening of awareness besides. *Sanyama* and other combinative practices thereby capture the attentional benefits of both transcendental and integrative forms. In the interplay of transcendence and integration,

surrender of the limited sense of self (transcendence), through heightened awareness, inhibits attachment to personal constructs of reality opening perception to a myriad of unforeseen possibilities and connections (integration) on a moment-by-moment basis. (202)

Importantly, the non-specialist sense of generative mindfulness I described above has much more in common with the phenomena arising from combined meditative practice rather
than a purely mindful approach. Without neglecting Horan’s attention to discipline-specific specialization, it correlates to my own colloquial understanding of the transcendence / integration interplay. My understanding of mindfulness is also shared by Langer, who defines mindfulness as “the process of drawing novel distinctions” (Langer & Moldovenau 1). Langer claims that a mindful approach is open to information and aware of new perspectives, but also continuously creates new categories within these ever-broadening fields (Langer 4). Mindfulness may therefore be understood as a form of cognition that performs these dual gestures of transcendence and integration.

The mindful expansion and integration of our perceptual field is also marked by the formation of insight. For example, Langer cites an experiment by Whitmore and DeMay (Langer 26-7), where novice pianists learned a basic C-scale either by rote, or while mindfully attending to their perceptions, thoughts and feelings as they played. The latter group was judged to be both more competent and more expressive. Memmert’s experiment with youth team sports echoes that result, finding that an attention-broadening training program, where children were given no specific tactical advice during drills, dramatically improved player performance as compared to a group whose drills were meticulously coached. The successful group learned “to have a wide breadth of attention in complex situations” which “made it possible for the children to associate different stimuli, which may initially appear to be irrelevant, to generate creative solutions” (285). Unlike Horan and Zarrilli, neither of those studies outlined explicit strategies for mindful engagement, but each demonstrated clear benefits to even a “generically mindful” orientation towards learning. Subjects in the “mindful” conditions of both studies demonstrated a greater enjoyment of the task and stronger sense of intrinsic motivation, which is an integral

---

66 It’s worth noting that Perez-Fabello and Campos found a positive correlation between dissociative experience and excellence in visual art. Their study did not offer clear grounds for making linking dissociative experiences with dispositional mindfulness, but this would be a worthy avenue for further study.
quality of flow experience. Similarly, these approaches foster self-challenge among learners alongside the accomplishment of external goals, and as Vygotsky suggests, we do our best learning when the problem optimally exceeds our personal skill set. Consequently, even broadly mindful strategies could be inclined towards superior learning results.

Psychophysical disciplines with an emphasis on form training (including martial disciplines like karate, kalarippayattu, or taiqiquan) provide an especially rich framework for analyzing practice of mindfulness. Early phases of training may still be halting, as the novice learns the appropriate frameworks and the intermediate consciously self-corrects with increasing sophistication so that each part of the body is in proper alignment. Yet if tasks are performed mindfully, one’s awareness optimally touches on a full-body recognition of the form; learning can emerge from a holistic awareness of the moving body rather than from the micro-correction of discrete units. According to Zarrilli, “[d]aily repetition allows the actor time to explore ever-subtler dimensions of the body, the mind, and their relationship in action” (Psychophysical Acting 29).

A mindful psychophysical practice optimizes learning experience because it affords the perception and the incorporation of these subtleties in each repetition of form. For example, if I perform the elephant pose in kalarippayattu by rote, I may self-consciously assess the positioning of my feet, then the path of my fists down the length of my spine and so forth, until these are each engrained and can be performed simultaneously at will. Alternatively, if I am learning mindfully, I attend to their holistic relationship throughout my training and attend to the implicit principles that organize their deployment in the elephant. I come to know the feet and

---

67 Vygotsky’s conclusions are further emphasized in Vervaeke and Herrera-Bennett’s article. For my part, I will return to Vygotsky in chapter 5 when discussing collaborative play.
68 Here, I refer to my experiences training with Zarrilli in the summer of 2008 and in fall 2011. My experiences are consonant with those described in his writings, and with video documentation of Zarrilli’s kalarippayattu work archived at the Centre for Performance Research in Aberystwyth, Wales.
the hands (along with the spine, the abdomen, etc.) in terms of a repeatable intention that unfolds uninterrupted over time, which is ultimately what I want it to be. The practice of this form also demands that I extend my awareness into the external space, changing focus through its progression but optimally keeping my awareness open in three hundred sixty degrees. I attend to the hands and beyond as they extend upwards, but also down through the soles of my feet; as I follow them down and between my legs, I awaken my latent awareness of the space behind me while I carry that intention into the space ahead, where I will ultimately sustain the pose. Thus my awareness is not limited to kinesthetic input, but is being exercised flexibly while encompassing a wider sphere of engagement in relation to the body.

Transcendental and integrative forms of mindful learning make a great deal of sense when read through an enactive lens. The intuitions or sensorimotor inclinations we possess reflect a mutually constitutive relationship between the self and the world. Directing mindful attention towards the formation of these relationships affords bimodal learning in a continuous enactment of implicit knowledge, uninterrupted by decoupling processes, across multiple modes of action and perception. This simultaneously affords an implicit knowledge of the complex matrix of psychophysical contingencies underlying intuitive processing. Through mindful practice, we transcendentially attend to an optimal breadth of stimuli about the world and ourselves, and integrate this knowledge by optimally learning novel patterns of action and intention, thereby becoming mindful of the whole prereflexive self. We gain insight into our own embodied subjectivity.

Mindful practice and flow experience

In both devising and contemporary martial arts, forms are generally not practiced just to acquire a “movement vocabulary,” but to afford the practitioner an awareness of and control over the subtler psychophysical dynamics underlying the practice (Psychophysical Acting 81).
Sparring rarely employs the advanced ornamental forms the fighter learns in training, but their practice fosters an attenuated sensitivity to his place in a combative environment, not to mention an implicit awareness of how to apply the strength, alignment, and efficiency that his technique affords. Even as the form is implicitly refined, the elephant pose may be used as a form of embodied mantra. Rather than simply enacting (and intending to enact) its implicit and explicit technical requirements, I can come to know it more deeply in relation to my own experience of enactment. I can reflexively attend to the quality of my inhabitation and intend my performance towards that end, even as my experience affords an increasingly sophisticated sense of what that end might be.

Zarrilli aligns this subtle, holistic sense of affordance with the terms qi (from the Chinese) and prana (from the Sanskrit). He defines it as “a material actuality that can be awakened and raised through specific types of training . . . [then] modulated and shaped for use within specific practices” (ibid. 19). It “enlivens and quickens one’s awareness, heightens one’s sensory acuity and perception, and thereby animates and activates the entire bodymind” (ibid.).

Zarrilli’s relates this quality of awareness to enhanced performance practice, and by tracing similar concepts into the work of Stanislavski, Chekhov, and Grotowski, it seems he is not alone.69 Where the acting score is set, an attitude of affordance consonant with qi phenomena allows the actor to enter into a dynamic relationship with the dramaturgy, made present to her in a perceptible structure of words, actions and environments with which she might engage. In devising, where the acting score is not set, the actor can engage with both her

---

69 I would also add that the “pre-expressive” level of performance proposed by Barba clearly alludes to a cultivation of qi-style affordances, describing pre-expressivity as an energetic liveness that underlies expressive performance, which can best be cultivated in heavily codified genres. According to Barba, the pre-expressive level is itself “a pragmatic category, a praxis, the aim of which, during the process, is to strengthen the performer’s scenic bios” (Theatre Anthropology 188).
experience and her environment as they implicate an expanding field of expressive possibilities in real time, thereby enacting a sustained pattern of creative discoveries.

Indeed, the recognition of novelty in mindful perception fosters outward-intended expressions that are especially creative.\textsuperscript{70} According to Horan, the intention to “transcend informational boundaries” and “integrate the transcendent experience, valuably, within empirical reality” is common to both creativity and meditation (199). Limb and Braun’s fMRI study of solo jazz pianists supports this link between skillful creation and mindful cognition, demonstrating that during improvisation, jazz pianists demonstrated a synchronization of neural processes (3) along with signs of dissociative, transcendent thought (4). These signs are characteristic of a broadly mindful attunement to new musical inspirations, and not coincidentally, to creative flow experience as well.

Vervaeke and Herrera-Bennett link these mindful experiences to Csikzentmihalyi’s model of flow, critically identifying the continuous interplay of transcendence and integration as an insight cascade. Insight cascade takes place when we are operating outside our day-to-day skill-set, and become capable of restructuring the problem before us in order to discover a novel solution, or insight. We get additional positive feedback to the enactment of the insightful solution in the form of a neurochemical high, and by virtue of integration, are afforded new knowledge that reconfigures the information sets we perceive. Each insight therefore propels us towards perceiving new problems and insightful solutions in a positive feedback loop, which Vervaeke and Herrera-Bennet propose would be evolutionarily advantageous as a counter to the uncertain dangers of otherwise low-validity environments. They thus propose that insight cascade is a cognitive basis for the phenomenological experience of the flow state, as both

\textsuperscript{70} Here, I presume that we may assess creativity according to the strictures I established previously, building upon Hausman’s understanding of novel intelligibility, though admittedly, my own later accounts for subjectivity and domain-specificity will tacitly lend further sophistication to that model.
exhibit an optimal demand upon personal skill and are characterized by a great deal of validity in environmental engagement. Flow would thus be “an evolutionary marker that tells us we are developing good implicit learning, good intuition.”

Furthermore, Vervaeke offers a direct justification for linking qi and flow (“Chi explained”), suggesting that the practitioner’s energetic cultivation of qi affords the conditions for insight cascade. Yet where flow is typically domain specific, qi is a style of engagement that is highly adaptable. The mindful practitioner’s problem-finding and insight formation is directed towards a mode of inhabiting the task rather than towards the task itself, but performance retains all the broader cognitive benefits of flow, including enhanced foresight, self-projection, holistic functioning, and of course, the optimal perception and integration of new knowledge. Highly relevant or otherwise major discrepancies in performance may certainly trigger type 2 override detection, constituting a break in flow, but otherwise, the emergent conditions of the flow state facilitate its own continuance.

Readers should bear in mind that such forms of mindfulness emerge through deep and consistent training, but in this highly disciplined form of inhabitation, the performer’s experience is that of an insightful, creative flow. Insofar as flow is a desirable condition in performance work and development, and insofar as an actor wishes to optimize her practice of a given discipline, mindfulness is an indispensable element of successful performance training and creation.

Before elaborating upon the implications of flow-as-insight-cascade in devised performance, the next chapter will extend my inquiry to discuss social perception and coordination. It will ultimately develop a coherent account for spectatorship and coordinated

---

71 We might more thoroughly assess ancillary benefits by looking at how the attributes of flow state influence various elements of task performance, including intrinsic motivation (Vansteenkiste et al.) or self-consciousness (von Suchodoletz and Achtzinger). For the time being though, such a detailed assessment is beyond the scope of this project.
group flow in performance, and through my enactive paradigm, will consider the influence of other factors in learning and performance creation, including affect, gesture and physical style.
CHAPTER 4

While the previous chapter described the embodied, active cognition of individual subjects, this chapter will consider how the cognitive and neurological processes involved in social interaction contribute to specialized forms of sense making activity, culminating in an enactivist account for domain-specific interactions.

Many of the phenomena discussed in this chapter will be considered with reference to Pictures at an Exhibition, an immersive dance piece I directed with Open Corps Theatre in June 2011. However, this chapter is not intended as an exhaustive analysis of the production. I will use Pictures as a touchstone to coherently illustrate and exemplify a breadth of practices that are relatively common in movement-based devising processes. This includes the learning and development of expressive movement, mimetic action, affective expression between performers and with audience, and nonverbal coordination between performers, especially considering the presence (or absence) of a common disciplinary background.

Pictures at an Exhibition was based on Modest Mussorgsky’s piano suite of the same name, the suite depicting a journey through an exhibition of works by Mussorgsky’s friend, Victor Haussman. In Mussorgsky’s suite, each movement illustrates a different painting or sketch, and these suites are linked by a memorable promenade theme that represents the composer walking from painting to painting. Our own production adopted the gallery setting alluded to in the original piece, and was performed in the large, single-roomed space of Toronto’s KUMF Gallery. We also displayed reproductions of Victor Haussman’s inspirational prints throughout the space, lit and featured on music stands. Pianist Shari Porter played the suite on a large grand piano in the centre of the room. Choreographer Sarah Williamson and dancer Molly Keczan wore close-fitting dresses that (intentionally) may have been mistaken for
street clothes, and throughout Ms. Porter’s performance, “retraced” Mussorgsky’s footsteps in a flow of dance that led them between prints. Seating was limited to a few benches scattered throughout the gallery: the audience was encouraged by our front-of-house staff to move around throughout the show for different views of the dancers and the paintings.

The first half of this chapter is also structured as a gallery tour of sorts, traveling between various phenomena relevant to my study of intuitive group behavior and describing them in light of my enactivist paradigm. Like Mussorgsky’s pictures, each stop along the way informs our understanding of more-or-less discrete phenomena, building upon the foundations of my previous chapters, but not necessarily causally linked to what preceded it. First I elaborate upon how sensorimotor skills inform our perception and understanding of others’ actions. Next, I explain that affect is empathetically understood according to similar perceptual processes, and consider how affect alters one’s own perception of environmental relevance. I then turn my attention to gestures that are neither action-directed nor specifically affective, considering how gestures can facilitate cognitive processes even as they express them.

The remainder of the chapter reflects upon these phenomena as a whole and considers their applications, shared preoccupations and points of connection with collaborative devising. Here, I establish an enactivist account for how skilled performance is coordinated among groups, both in the immediate present and in the deferred coincidence of domain-specific training. I ultimately hearken back to my previous chapter’s description of flow, and propose group flow to be the coordinated optimization of collective sense-making, especially within the strictures of a common disciplinary form.

**Skillful perception of others**

I noted in the previous chapter that when we perceive objects, we do so in terms of the actions they afford to us. This is accomplished through a distributed process of embodied
cognition. Perceiving the actions of other agents also employs embodied skill, and these perceptions are likewise structured by our own capacity for engagement (Thompson, *Mind in Life* 317). However, unlike object-directed intentionality, we do not recognize other agents’ actions as things to be acted upon. Rather, we recognize the activities of other agents empathetically, as actions that we might ourselves perform, and this is what allows us to apply our embodied expertise as we perceive and learn from others.\(^{72}\)

Jeannerod finds that the same rule-based emulative mechanism involved in motor simulation is employed when we perceive the motor actions of others (135). When we see another’s arm lift or hand tighten, it automatically engages the same covert motor simulations that we use in self-visualization, priming neurological and muscular activity below the threshold of activation. The motoric activities we perceive at any portion of a gesture are made relevant in relation to the motoric processes we would anticipate in our own execution of that gesture.

Such a system is also incredibly useful for observational motor learning:

By way of motor simulation, an observed action becomes immediately transferable into a potentially executed one, which makes the observer able, among other things, to replicate and learn actions of the other agent. (Jeannerod 135).

An innate tendency towards empathetic mirroring would thus be a great evolutionary advantage, and indeed, a great deal of evidence suggests that imitative mirroring is an inborn instinct. Meltzoff and Moore found that newborn infants, less than 1 hour old, are able to mimic adults performing oral gestures like mouth opening and tongue protrusion. Of course, adults tend to

---

\(^{72}\) Please note that empathetic action understanding is neither neurologically nor phenomenologically equivalent to what Coplan calls “empathy proper,” wherein the subject recognizes his dynamic, intersubjective situatedness through affected perspective-taking. Coplan establishes this distinction to emphasize the needs for narrower definitions of empathy to be more surgically deployed across these discussions. I generally support her project to foster a greater distinction of kind, but her limited sub-categories of implicit emotional contagion and conscious self-oriented pseudo-empathy neither explain nor contain the sensorimotor phenomena I see at the core of these processes.
suppress their instinct to overtly mirror the actions of others,\textsuperscript{73} but disorders of weakened volition (especially involving frontal lobe lesions) can incite compulsive imitative behaviour (Jeannerod 68).

This skillful form of action observation is complemented by structures called mirror neurons, which activate both when we observe and when we execute particular actions (Grezes et al., “Activations” 928).\textsuperscript{74} Experimental evidence of the mirror neuron system (MNS) suggests that by covertly mirroring actions, we can tacitly understand what that action is and what it is intended to do, relating perceived actions to our own embodied strategic repertoire. Indeed, the MNS activates most strongly when observing personally actionable skills. According to Gallese, Keysers, and Rizzolatti:

The observer understands the action because he knows its outcomes when he does it. Action understanding does not depend, according to this view, on the activation of visual representations (an activation obviously present) followed by their interpretation by the central conceptual system, but by the ‘penetration’ of visual information into the experiential (‘first person’) motor knowledge of the observer. (396)

This emulative mechanism is based upon our own biomechanical contingencies, so perceived actions can be readily recognized as conforming to human patterns of biological motion (Jeannerod 103).

Because it takes into account our familiarity with a perceived action, the MNS allows us to make very subtle distinctions between known and unknown actions. Calvo-Merino and colleagues conducted a study with ballet and capoeira dancers in 2005 (“Action observation”),

\textsuperscript{73} According to Stanovich’s model of consciousness, this suppression may be accomplished either through the “installation” of type 2 mindware, whereby the subject is aware of their need to interrupt and ultimately prevent overt mirroring in social situations, or through type 1 tacit learning, where the social practices of others are themselves mirrored and adopted at an intuitive level.

\textsuperscript{74} The macaque studies found that mirror neurons activated both when the monkey grasped the object or when it saw another agent grasping. Human homologues have been identified in the dorsal premotor cortex, the intraparietal cortex, the parietal operculum (SII), and the superior temporal sulcus.
showing expert subjects videos of mechanically similar moves from either discipline while monitoring mirror activity. Despite the moves’ mechanical similarities, their MRI scans suggested they immediately (and accurately) distinguished particular moves as being from their own discipline. Proving that these results arose from experience rather than visual familiarity, a follow-up fMRI study compared male and female classical ballet dancers (“Seeing or doing?”). Both male and female ballet dancers typically perform a number of gender-specific actions, but are trained together in mirrored studios, so each dancer would be visually familiar with the other-gendered movements. Here too, the dancer’s motoric systems activated most strongly when presented with video of their own movement vocabularies, demonstrating that the performers see one another in terms of an experiential history rather than referring back to a conceptualized memory bank of skills.

A more recent study by Cross and colleagues (“Building”) suggests an even greater degree of nuance in how embodied experience can influence both observation and simulation. Unlike the Calvo-Merino studies, Cross’s subjects were modern dancers who learned “novel, highly irregular, and complex movement sequences,” where the movements did not conform to any standardized training practice (1259). The dancers practiced this sequence 5 hours a week over a 6 week rehearsal process, were regularly scanned and tested during video observation and guided simulation, and self-rated for how well they felt they could perform it. Novel movement sequences were displayed as a control throughout. Cross et al. found that neurological activity under both conditions was positively correlated with a rise in self-rated competence, demonstrating that mirror activity is “related to the degree to which an action is embodied” (1264).75

75 I believe I have emphasized my departure from a computationalist or representationalist understanding of neurology, but would like to emphasize that point here. The patterns of mirror activity taken from fMRI scans suggest a contingent quality of response from learned perceivers that demonstrate a difference of awareness owed to prior expertise, not recalled, imagistic
Taken together, these studies shed considerable light on how the adaptive MNS facilitates ongoing rehearsal processes that both employ and elaborate upon a base of existing embodied knowledge. In *Pictures at an Exhibition*, Sarah choreographed one sequence based on the frenetic “Dance of the Chicks in their Shells” as a mishmash of ballet and comedic pratfalls, to be performed by both Molly and herself. From its first rehearsal, Molly easily picked up all the technically familiar movements within the sequence: Sarah only needed to briefly illustrate the moves in relation to one another, and once Molly had a sense of their sequence and direction, she could perform each one expertly, whether or not Sarah was demonstrating them simultaneously. Yet the novel movements, which included various arrangements of splayed legs and sharp arms set to the music, could not be so easily repeated, and had to be rehearsed far more often before they could be performed with comparable assurance. In much the same way that I described learning the lion stance in the previous chapter, Molly slowly and repeatedly mirrored Sarah’s actions, moving her body into positions that Sarah demonstrated, and mindfully attended to her own posture to check her positioning relative to the prescribed form. Through continued practice, Molly’s apprehension and replication of the novel movements was as effortless and intuitive as her initial apprehension of the balletic choreography.

This finding undoubtedly reads as common sense: the new actions were harder to perform than the familiar ones, requiring further repetition and greater effort, until they themselves became familiar. However, my point here is that these embodied processes involving the MNS suggest how and why these “common-sense” behaviors are common in the first place. These phenomena are ubiquitous in devising, rehearsal, and audience perception, and

---

memories. According to De Jaegher and Di Paolo, “Explanations based on mirror neurons provide no more than a snapshot view of how recognition of intentional action could work,” and must be considered in light of subjective context (495).

76 I will elaborate upon musical and interpersonal coordination through time below.
recognizing the perceptual processes at their core affords fresh insight into related phenomena like empathetic mindsight, affect, and coordination of movement through time.

**Understanding intentions through multimodal skilled perception**

Though I have emphasized the visuomotor aspects of MNS activity above, embodied action is always multi-modal and treats perceived action as such. Grezes and colleagues’ study emphasized grasping, but as noted by Pitti and colleagues, this isn’t a purely visuomotor operation: “the network has learnt to categorize the saliency from the visual and the tactile inputs and to distinguish the events between grasping and not-grasping” (149). Due to functional integration, “new cognitive skills emerge at the body scale such as multi-modal integration, anticipation, and simulation of one missing modality (i.e., perceiving virtually its stimulation not from a physical stimulus)” (153).

Kohler and colleagues demonstrated this “integration, anticipation, and simulation” in auditory primate tests. They found robust patterns of mirror activity Corresponding to the action of breaking open a peanut, which was strongest when the sight and sound were presented together. However, “[t]he sound alone of breaking a peanut produced significant but smaller response” (847): a contingent response from a single modality anticipated the action in total, and incited a system-wide recognition. Curiously, the sight of breaking a peanut produced no response when the sound was taken away, likely because “the sound of a peanut breaking is an important signal that the operation is successful” (ibid.). Humans also demonstrate similar task-dependant multi-sensory mirror activity (Aglioti and Pazzaglia): both healthy and congenitally

---

77 Here, “mirror activity” refers to both the “action-directed” mirror neurons I discuss above and the “object-directed” canonical neurons I mentioned in the previous chapter. The object directed tasks discussed by this study certainly require the cooperation of both sets of structures, and conflates their cooperation under the general banner of “mirror activity.” However, unless I am addressing action-directed processes reliably linked to the particular activation of mirror neurons, readers may note that for the sake of clarity I avoid referring to an encompassing “mirror system,” preferring Jeannerod’s description of an action observation network instead.
blind demonstrate nearly identical patterns of activity as they listen to hand-executed actions (Ricciardi et al.).

This sensory preference is a sign of how relevance-driven sense-making educates our understanding of the world beyond us. While actions and our anticipation of consequences may be enacted within a broad phenomenal horizon, new anticipations often pertain to the most salient aspects of an enactment. The primate subject may not watch each peanut as it breaks, but the sound of breaking is relatively unhindered by head position or the performance of a concurrent task. A robust relationship between the action and the sound is possible because there is a strong contingency between the action and its sound. And moreover, as I discussed at the beginning of the previous chapter, skilled learning is a response to contingent patterns of sensorimotor activity. Pitti and colleagues believe this demonstrates small-scale neuroplasticity, since “[n]eurons that fire contingently, wire together” (Pitti et al. 153). Unlike the sight of the peanut breaking, the sound of the peanut breaking is a salient aspect of their understanding of the action, and this informs how the subject acquires embodied knowledge of that action.

This process is of special interest to discourses of theatrical signification since it suggests how and why one part of an experience might tacitly “stand in for” or “cue” the subject’s embodied knowledge of a multi-modal sensorimotor action. The action observation network can incite us to anticipate actions that aren’t being immanently performed, even where salient percepts (here, the sound of the peanut breaking) are mediated and presented apart from their original lived context. According to Gallese and colleagues (“Unifying view” 397), the cooperation of action-directed mirror neurons and object-directed canonical neurons may very well be responsible for our skillful interpretation of mimed performance: covertly mirroring the
performer’s actions evokes processes salient to our own experiences of multi-modal, object-directed action, and thus we gain insight into the allusive significance of the mime.\textsuperscript{78}

Rather than demanding that we consciously piece together the biomechanics of an action, these embodied processes allow us to perceive the performer’s actions in immediate relation to our own experiences of action planning. Therefore, if the mime performer successfully cues our motor plans, our insightful perception of the implied action is immanent and intuitive rather than consciously reassembled. To illustrate that principle, I propose the reader conducts an experiment as follows:

\begin{quote}
Curve your left hand around an upright, invisible column, leaving just under 2 inches of space between your thumb and index finger; hold your left hand just over a foot away from your chest. Next, hold your right fist over the left, but at about two inches to the right of it. Point your slightly-bent right index finger towards the top of that cylinder, holding your left thumb below the first knuckle of the right index finger. Now, keeping your thumb in place, quickly crook your left index finger towards the first knuckle of your thumb while slightly dropping the right wrist. Practice it a few times until you can perform it quickly.
\end{quote}

Do you know what action this represents? If you still haven’t figured it out, try it again, but this time, \textit{push out a short hissing pulse from the space between your tongue and front teeth, timed to the start of your finger movement}. Now, perform this action for somebody who has not read the description to see if they can tell you what it implies.

If the answer still eludes you (or if you have been sufficiently tempted to skip past this experiment entirely), then you know that serially interpreting the discrete biomechanical and sensorial elements of this action requires some imaginative gymnastics and a nearly obsessive attention to detail. However, chances are that by actually performing this action, or by watching somebody else perform it, you would rather quickly recognize the action as opening a can of pop. Conversely, if I gave the simpler instruction, \textit{mime opening a can of pop}, you likely could have performed a similar and equally precise sequence of small movements with minimal effort.

\textsuperscript{78} For further discussions of gestural mime, see also Jeannerod (116), and Vervaeke’s “Chi without magic”
or awareness. Whether performing or observing this mime, the complex action and the intention to perform it are bound up in one another through their mutual embodiment and immanence.

Consequently, where it overlaps with the expertise of the perceiver, understanding is intuitive and does not require deductive reasoning. Even if actions are phenomenally "incomplete" and contingent profiles of a sensorimotor experience are not perceptually disclosed (e.g., the sight of a peanut, or the sight of a pop can), one may still evoke the perceiver’s multimodal embodied knowledge of that action-intention.79

Similarly, as multiple actions are perceived in relation to one another, they may simultaneously disclose a whole horizon of experience. In Pictures, during the song “Tuileries,”80 which described children at play, Molly evoked a game of hopscotch by tossing an imaginary stone, then performing a rhythmic, evenly spaced series of skips and leaps. Again, the salience of the activity is not deduced by serially piecing together its component parts, but by recognizing each in terms of the significance they afford one another. Molly’s skips are significant as a game of hopscotch because they are performed in a contingent relationship with the action of tossing and watching a stone, and no actual stone or chalk grid is required.

I more thoroughly elaborate upon the implications of this immanent signification as it relates to performance in my final chapter, especially in connection with Seitz’s theory of basic metaphor. For the time being, I will consider how this ability facilitates social interactions and affective understanding.

79 Arbib suggests that our ability to generalize action-specific pantomimes in this way, along with correlated phonological expressions, enabled the development of proto-language in early hominid culture. Besides activating any action-directed plans contingent upon a particular sound, basic phonemes also covertly activate our own mechanisms of vocal production (“Mirror Neurons” 242-3), quite reliably allying complex expressions with a clear referent. Arbib’s is hardly the first argument for an embodied basis of language, and he finds himself in such diverse company as Barsalou, Glenberg, Lakoff, and Johnson, not to mention performance and cognition scholar Amy Cook. I will continue to emphasize on non-verbal expression in this project, but will address Lakoff’s work in the following chapter.

80 This song is named after the famous gardens in Paris.
Affect in experience

Our action observation network does not provide a direct window into the others’ complex intentions of others, nor does it moderate the dynamics of social exchange (De Jaegher and Di Paolo 495). However, it does relate information about others’ embodiment that can be instrumental to our account of these practices, and can be applied to facilitate insight into the minds of others, commonly known as mindsight. Daniel Siegel, among others, has popularized the term mindsight to describe the insightful comprehension of minds, generally referring to an empathetic understanding of others (138) (though the term may also suggest a self-reflective, mindful understanding of one’s own cognitive life (148)).

An understanding of emotional states is especially relevant to social interactions because, while emotions may be elicited by any number of environmental or self-generated stimuli (see Stanovich, Robot’s 39), they underpin all intuitive processing and sense-making activities, influencing the salience of perceptible phenomena.

Like the MNS itself, emotion has become a hot topic in neuroscience, championed by researchers like Antonio Damasio as an integral part of embodied experience and core consciousness. As Thompson suggests in a peer response co-authored with Colombetti, Damasio’s view is generally quite compatible with a phenomenological account: “emotion is a constitutive element of any cognitive process, so that there is no theoretical room for non-emotional appraisals” (“Enacting emotional” 200). Hogarth draws upon Izard, Isen, and Forgas to make a complimentary point, proposing that while “affect alone does not determine what

---

81 Siegel proposes that mindsight can be trained through mindful practices, much as described in the previous chapter, which enables a broader attunement to others and a cohesive integration of this knowledge into real-time social perception. Although mindsight does not automatically incite compassion, Siegel relates an anecdotal conversation with His Holiness the Dalai Lama, who asserts that such forms of “mind training” are essential in order to develop one’s extended, empathetic compassion (qtd. in Siegel 156).

decisions people will make,” “affect can influence what people think about, and this clearly reflects the context in which they find themselves” (63).

Vervaeke and Herrera-Bennett’s account of flow from the previous chapter is one example of affect reflecting and responding to behavior in context, as the sustained positive affect arising from an insight cascade encourages the subject to continue the intuitively-led activity in question. Conversely, negative affects may accompany the self-consciousness of an override detection, perhaps as confusion, frustration or embarrassment.

Nevertheless, while there may be some evidence to suggest that positive affects generally sustain intuitive type 1 processing and negative affects encourage consciously directed type 2 processing (Hogarth 65), “positivity” or “negativity” would offer a limited, binary understanding of complex phenomena with diverse manifestations and behavioral implications. Davis’ research on mood and creativity suggests that there is a huge range of conditions we might deem to be either positive or negative: “discrete emotions carry different motives and action tendencies” (35), above and beyond a tacit “keep going” or an abrupt “stop and think.”

In chapter 2, for instance, I described a fighter whose combative skills recede from the phenomenal horizon when he attends a family reunion, but come rushing to the fore when a fight breaks out. However, the way he intends to apply this skilled logic (and thus, likely how he assigns relevance to these possibilities) differs significantly depending on his emotional, affective state. If his fighting is a relatively dispassionate choice born of mild irritation, with the intent to end someone else’s fight, we could expect a different response than if the fighter is himself enraged, blood pounding in his ears, heart racing. But really, the complexity of human affect beyond a positive-negative dichotomy should be self-evident to anybody involved in the performing arts, not the least practitioners familiar with Stanislavski or Strasberg’s work with emotional memory, where emotions are recognized as nuanced states of being arising from
significant personal experiences. A binary model would be ill-suited to describing the diverse implications of affect in performance.

For our purposes, we would do well to understand emotion as operating within broader processes of relevance realization: it is an emergent process that arises through and dynamically informs our embodiment with the world, and which adaptively changes the terms of our engagement. Hogarth suggests that both strong emotion and subtler moods are “physical, visceral phenomenon with strong behavioral correlates” (60). The qualities of this phenomenon are further distinguished by Thompson and Colombetti, including both “visceral-interoceptive embodiment, in the form of complex autonomic-physiological changes (to cardiopulmonary parameters, skin conductance, muscle tone, and endocrine and immune system activities)” (201) and “motor embodiment, in the form of facial and posture changes, and differential action tendencies or global intentions for acting on the world” (ibid.). These modes of embodiment do not simply express a brain-bound emotion, but genuinely constitute both the subjective experience and the overt expression of that emotion. The fighter, for instance, may experience the blood pounding in his ears as part of his rage; his emotion does not exist apart from that sensation. Moreover, these psychophysical changes are themselves functional, as (for instance) increased blood flow prepares the subject to track and attack the perceived cause of his distress. Affect thus prepares the subject to respond appropriately to a given environment by altering his terms of embodied engagement.

**Empathy and affect**

Jeannerod notes that while affective and instrumental gestures incite different neural activities (117), they are still linked into the same action observation network. Just as we interpret others’ actions through mirror activity and motoric simulation, so too do we tacitly relate our perception of others’ embodied states back to our own experiences of affect, thereby
practicing social, affective mindsight. Consider Neal and Chartrand’s recent two-phase experiment on automatic facial mirroring: when subjects’ facial muscles were injected with Botox (which inhibited their own sense of muscular feedback), their ability to guess others’ emotional states was significantly impaired. Conversely, increasing subjects’ skin resistance to underlying facial muscle contraction improved emotional perception. This suggests that facial feedback moderates emotional processing rather than simply mediating it (677), supporting Jeannerod’s theory of empathetic affect.83, 84

By enacting the sensorimotor qualia of others’ affect, we may also begin to experience these affects as our own through a process called *emotional contagion*. In this case, someone else’s emotional state becomes “infectious”: we smile around cheery people, feel low when our friend is depressed, or prepare to run if we see somebody is terrified by something lurking in the shadows. This too is a functional adaptation, optimizing our engagement with the environment by letting us immediately apply others’ affected strategies without needing to understand why they are doing so. According to Amy Coplan,

> My contagion-based emotion response and the physiological changes and behavior that are part of it cause me to respond to whatever stimulus has provoked the other’s emotion without my having to have noticed that stimulus or to have evaluated the environment in a way consistent with the emotion. Nevertheless, I am prepared to immediately act and in all likelihood will act. (48)

83 The participation of the MNS was also implicated in a multi-modal study of emotional recognition cited by Gallese and colleagues (see Adolphs et al., “Dissociable neural systems for recognizing emotions,” 2003), where brain damage left a patient unable to recognize disgust either personally or in others. An experimenter eating with the patient acted out a dramatic display of disgust by spitting, retching, and making disgusted expressions, but the patient could not understand the actions, let alone recognize any underlying emotion, and suggested that the food was “delicious” (see “Gallese et al., “Unifying view” 400). This subject’s other emotional responses were undamaged.

84 Generalized problems with empathetic skill may be involved in disorders along the autistic spectrum. See Dapretto et al., “Understanding emotions in others,” 2006.
In a survival situation, and also in a case of creative collaboration, this instinct permits quick responses to stimuli of collective interest.\textsuperscript{85}

Moreover, as modes of embodiment, it follows that affects needn’t have a specifically “emotional” quality to be autonomously “contagious.” Indeed, a study by Paccalin and Jeannerod found that immobile observers, watching either an effortful weight-lifting performance or a treadmill run, began to breathe more heavily. Moreover, in the latter case, subjects’ rate of ventilation even increased according to the speed of the treadmill.\textsuperscript{86}

Without necessarily hewing to conceptually discrete emotional datum (be it positive/negative, happy/sad, etc.), affective mindsight and contagion give us insight into the salience of the world as it is disclosed on another’s perceptual horizon, and invite us to perceive our world accordingly. They facilitate our participation in especially sophisticated forms of embodied social engagement, whereby we may intuitively “know” what’s important and what our mode of engagement might ideally be.

Stepping back to view the interaction as a whole, the emergent affective dynamics surrounding our social engagement are crucial in determining what sort “game” we think we’re playing at any given moment. In performance, empathetic affective insight may allow the audience to understand the affective tone of a piece whether or not the salient features of the

\textsuperscript{85} Bandura was an early proponent for the sort of empathetic social learning this adaptation affords (see Bandura et al., 1963). However, he also emphasizes an important caveat to theories of embodied empathy, noting that experiential evidence suggests we do not always wholly assume another’s’ affective conditions: “Reflexive empathicness [sic] would produce emotional exhaustion, inhibitory strain, and debilitate everyday functioning” (Bandura 24). Furthermore, the perceiving agent is likely to have an individual response to a given situation (ibid. 25).

Answering these concerns, I believe we can expect social mindware to do some of the inhibitory work Bandura requires, and have already noted that disorders of weakened volition can be debilitating in this fashion (see again Jeannerod 68). I accept his second point that personal intentionality may temper empathetic response, but believe that the process of relevance realization satisfactorily accounts for the application of (or suspension) inhibitory mindware.

\textsuperscript{86} These results are eerily reminiscent of simulation-based ventilation experiments by Wuyam and colleagues (“Imagination,” 1995), which showed comparable increases in ventilation according to the difficulty of the imagined task. See chapter 3.
environment are especially concrete. For example, in *Pictures at an Exhibition*, Mussorgsky’s song “Baba Yaga’s Hut” portrays the flight of a bone-crushing, child-murdering witch through the night sky (see Russ), but in creating her performance, Ms. Williamson eschewed either narrative or direct characterization. Her choreography was developed to express a complex affective orientation, as she imagined that a ball of sinister energy was moving through her chest and spine, threatening to possess her. This affective image was never made explicit to the audience, but the quality of Sarah’s movements implicitly reflected it indirectly: her actions were muscular, striking, and off-balance, performed with a dropped, clenched jaw and eyes rolling into the back of her head. It is highly unlikely that an audience member would explicitly understand or adopt the precise affective modality that Sarah has adopted in her own experience of “Baba Yaga’s Hut,” since unlike the peanut or the pop can, her actions do not reflect a particular sensorimotor contingency corresponding to their own expertise. Yet by virtue of empathetic mirroring, the audience may be empowered to share in her experience of knotted tension and reeling dizziness, and perhaps through mindsight, even recognize a malevolent intention underlying the dance.

An audience member may certainly have his own affective response to the piece, but at the very least, he could easily differentiate the affective character of this piece from Sarah’s choreography for “Dance of the Chicks,” where wide darting eyes, slightly pursed lips, erect posture and broad, dynamic gestures suggested a quirky sense of childlike confusion. Because affect denotes a field of salience, an empathetically affected audience member is invited to experience the movement sequence as expressions within the field they disclose.

Sensorimotor empathy therefore permits an immanent and intuitive engagement with others’ affected intentions, whether these intentions are phenomenally concrete or subjectively opaque. Even in the absence of an explicit directive (i.e., if the actions are themselves abstract,
or if one cannot identify a recognizable character or emotion), the audience can develop an implicit and coherent affective “understanding” of both the performer and the performance.\(^\text{87}\)

**Functions of gesture**

Actions may also be tacitly expressive when they accompany speech as *automatic gesture*, which in this case, can be commonly defined as “talking with our hands.” Yet unlike other forms of affective disclosure, gesture can both qualify and express non-personal ideational content.

Hand talking is evident across every known human culture, takes place whether or not there is anybody else in the room, and is even evident when speakers are congenitally blind (Goldin-Meadow 4). We might deictically indicate objects that exist in a known spatial relationship to us (i.e., pointing to an object, or to a door where an individual might enter), but unlike the mimes I expressed above, automatic gestures tend to be intransitive rather than discrete or complete, spontaneous and opportunistic rather than planned or repeatable, and only make sense within the contextual framing provided by the context of the speech itself (Goldin-Meadow 189). As I describe below, gestures may also beat out the tempo of an exchange, but for now, I will emphasize how gesture elaborates upon the intended meaning of what the subject is expressing, and especially, how it might reflect or augment verbal information.

Hostetter and Alibali compatibly argue that in action-directed speech, the same action intentions are expressed through both physical and vocal expression: “sensorimotor representations that underlie speaking, we argue, are the bases for speech-accompanying gestures” (499). Yet unlike speech, gesture is not codified: it has both language-like and procedural qualities, loosely referencing discrete phenomena and the operations that one might

\(^{87}\) This further implicates a tacitly metaphorical principle underlying the audience’s affected “reading onto,” which I will discuss at greater length in chapter five, implicating the audience as participants in a joint experience of play.
take in relation to them. It can thus convey information that cannot be succinctly communicated through text,\textsuperscript{88} reflecting “knowledge that, in a sense, is halfway between performing a procedure and describing that procedure using a conventional linguistic code” (Goldin-Meadow 187). Automatic gesture thereby yields communicative benefits as a hybrid form of knowledge, especially for social contexts like devising where subjects must express, understand, and meta-systemically integrate both propositional and procedural information.

Where gestures are \textit{iconic}, they explicitly describe particular movements or entities within the conversation. For example, Sarah might spin her finger while telling Molly to do a pirouette. There is nothing pirouette- or otherwise action-specific about her that gesture: within another context, this same spinning finger could to describe a walk around the room, a run around a park, the rotation of a leg, or her dinner in a microwave. Alternatively, Sarah could use the same gesture to describe her own past or future performance of a pirouette. However, when spinning her finger in her directive to Molly, she is both indicating and illustrating this specific pirouette. The movement of Sarah’s finger may tell Molly a great deal about the size, the fluidity, and the speed of the desired action, all without needing to break it down into verbal details. Gestures thereby adapt to multiple perspectives and verbal contexts, and in each new context, may serve as rich vehicles for expressive meaning.

Apart from an iconic function, the same gesture could be deployed to qualitatively inflect Sarah’s expression of an abstract principle. Suppose she spun her finger and told me that a particular song in the suite “just keeps on going”: she would likely be implying that the song is repetitive or otherwise circular. Meanwhile, if this phrase were accompanied by a long sweeping hand motion, I would likely be made aware of the song’s progressive “length.” As a party to her

\textsuperscript{88} Goldin-Meadow suggests that when manual gestures are specifically coded (as in ASL), their mode of presentation tends to convey the gestural nuances that would otherwise be lost in a verbal account (204). Unbidden mouth movements may also assume some of the gestural functions I’m noting here (206).
communication, I receive additional information about the topic in question, along with her attitude towards it. Hostetter and Alibali would call these metaphorical gestures, mapping spatial functions onto incorporeal concepts like time (504). Here, the abstract concept of time is “made flesh.” According to that incarnation, I gain particular insights into the topic, into the speaker’s orientation towards that topic, and (by way of mindsight) into the speaker herself.

Besides facilitating expression and insight, gestures may also offer cognitive benefits to Sarah as she “works through” the ideas she is expressing: they allow her to externally process her ideas by mapping them into space. For instance, she may be trying to determine two paths for her and Molly to take during the promenade theme. She might find it very difficult to simply think through the whole thing, covertly simulating both their movements in a full-scale imaginary recreation, but through gesture, she can corporeally supplement this simulation. For example, she may use upraised fingers to sketch movement patterns in the air, and even manipulate their movement to express the expressive qualities of that promenade. These are epistemic actions, which Menary defines as “physical actions which the agent performs in order to alter their own computational state” (565). Radford elaborates on this point, and in a tacit support of enactivism, reminds us that gesture is an embodiment of cognition:

Thinking . . . does not occur solely in the head but in and through language, body and tools. As a result and from this perspective, gestures, as a type of bodily action, are not considered as a kind of window that illuminates the events occurring in a “black box” – they are not clues for interpreting mental states. They are rather genuine constituents of thinking. (113, italics orig.)

Since gesture is not merely an externalization of mental processing, and since it affords unique forms of non-discursive knowledge, gestural “thought” is qualitatively different from discursive thought. Even where it expresses conceptual ideas, the act of expressing it yields new inputs and transformations, and brings new perceptions into awareness.

When gesture accompanies speech, the two may even diverge from one another quite radically, in a phenomenon known as mismatch. Mismatch often crops up in problem-solving
scenarios where subjects are exploring new strategies; without knowing it, the subject is entertaining two strategies at once. For example, despite the shared intentionality of her speech and gesture, the gestural choreography Sarah is working out may not exactly reflect what she says about the movement: she might be thinking out loud and say that her and Molly could walk straight past each other, but as she says this, her fingers might describe a circle. The mismatch suggests she is entertaining both possibilities.

Despite the appearance of ambivalence, mismatch is likely a sign that a subject is very productively engaged with his given task. In early math problems, an increased likelihood of mismatches suggests that a child is “ready to learn.” Discussing one set of studies, Goldin-Meadow writes: “The children who produced mismatches were far more likely to profit from the teachers’ instruction than the children who didn’t” (48). The reasons for this are inconclusive, as the perception of mismatches may also have inspired the teachers to treat their students differently: “If so, it may have been the child’s gestures that let the teacher know the child was ready for a different kind of input, this playing a pivotal role in the learning process” (ibid.). However, in each case of mismatch, gesture predicted later verbal approaches and the discovery of correct strategies. When perceiving instances of gestural mismatch, “gesture tells us which way the wind is blowing – it predicts the next step that a problem solver or learner will take” (ibid. 177).

Goldin-Meadow thus proposes that gesture has transferable functions for both personal and social cognition. For the individual, it presents a way to express thoughts we don’t yet know we have, at the “cutting edge” of our knowledge (116). It also allows us to “offload” mental operations through epistemic motoric acts, freeing up neural resources by employing the environment as a spatial toolkit, which in turn offers new insights (157). In social cognition, gesture stimulates mirror activity in both speakers and listener/observers (185), and provides action-based touchstones that can be implicitly processed to augment verbal comprehension.
In a devising context, iconic and metaphoric gestures would be helpful in a devising context for “shading in” the details around someone else’s idea, and for the collective mindsight they might afford. Yet epistemic and mismatched gestures would be especially helpful for real-time collaboration, allowing an ensemble to intuitively engage with novel intentions and ideas before they are fully realized by the speaker. One deviser may employ gesture as they “work through” a novel idea, which facilitates cognition and introduces new information during her formation of a creative insight. Her collaborators can empathetically mirror her gesture as an idea-in-process and carry that forward into their own work. This mirroring will likely influence their own cognitive processing, as demonstrated in a seminal study by Wolff and Gutstein, who linked the metaphoric qualities of externally-imposed gestures to the form and content of subject’s novel stories. By enacting another’s gestural improv, a collaborator can genuinely “take on” someone else’s impulse-as-process before it crystallizes into a discrete thought or expression, and may employ it as a generative ingredient in her own creative cognition.

Manual gestures are uniquely linked to speech and related cognitive functions since, throughout our development, the hands and mouth are mutually contingent for a great number of learned actions. Consequently, contemporary literature generally does not address the gestural properties of the body proper, which creates an apparent gap in the utility of this data, since devisers in highly physical creation processes don’t merely talk with their hands.

However, I believe there are grounds to believe that expert’s full-body physical expression may exhibit comparable, gesture-like properties. Firstly, as I have already established, our type 1 processing can be educated through training, and psychophysically trained performers may be able to perform whole-body actions with relative spontaneity and ease during improvisation. These are examples of the same psychophysical learning strategies that establish such strong hand-and-mouth contingencies in the first place.
Furthermore, retracing Hostetter and Alibali’s gestural classifications, we can see that epistemic actions are frequently performed through the full body in choreographic rehearsal. For instance, when Sarah was developing a dyadic choreography based on children’s games for the “Tuileries,” she had to experiment with the partnered holds and spins she was developing before she knew how they would resolve without the performers becoming entangled or off-balance. This process also demonstrated signs of mismatch, as her verbal commands and analytic strategies were sometimes at odds with, and then superceded by, the opportunistic discoveries made by her body in practice.

Studies from dance/movement therapy (D/MT) further support a cross application by suggesting that full-body expression can be used (like manual gesture) to facilitate novel insights. According to Koch and Fischman, D/MT is therapeutically interested in “making sense of our behaviors on a nonverbal level” (59), emphasizing ideational embodiment rather than action coherence. It is concerned with the enactment of intersubjective and sensorimotor cognitive processes, constructing novel identities and meanings through exercises that may variously “guide the client to images, metaphors, and verbalizations” (63). Movement is engaged in the process of cognitively “working through” that which underlies it, which echoes the role of gesture proposed by Goldin-Meadow.

By extending this research beyond manual actions, I am not suggesting that all expression serves gestural functions. Rather, I am making a narrow case for whole-body “gestural” facilitation as being highly specific to exploratory movement work. Koch and Fischman’s clients are working through an open, exploratory process where physical enactments are intransitive expressions of an intention, not the straightforward enactment of an action intention. The same might be said for some movement-based exercises in devising where the enactment of a precise form is not crucial to the exercise. Ultimately, the intentions and the effects of physical expression in these performative contexts resemble the intentions and effects of manual gesture,
exercising our sensorimotor, cognitive faculties to participate in a “lively conversation” (Suzuki, “Culture” 163).

Besides understanding actions, intentions and affects as they are disclosed to us, empathetic understanding of gesture allows us to engage with others’ ideational trajectories. Whether or not future research supports a complete extension of gestural properties beyond gesture proper, the functional similarities are compelling. At the very least, we can be assured that improvisational, creative embodiment among collaborators is cognitively provocative and profoundly communicative.

**An enactive framework for social interaction**

Siegel suggests that our ability to acquire intersubjective knowledge is a skill set that we develop over time and which requires a thoughtful navigation of social practices. Still, the ability to understand others via mindsight does not necessarily mean we must agree with them. As I mentioned in chapter 1, devising processes tend to reflect multiple collaborative visions that live in tension with one another (Oddey 1), and exploit further tensions between fictional and authentic narratives (Govan et al. 61) or between theatrical symbolism and visceral immediacy (Barton, “Razor’s Edge” 23). Fortunately, mutual agreement is not a necessary condition of an empathetic engagement. Evan Thompson claims that in an enactive paradigm, “information is context-dependent and agent-relative; it belongs to the coupling of a system and its environment. What counts as information is determined by the history, structure, and needs of the system acting in its environment” (*Mind in Life* 51-2), but in devised performance, histories, structures and needs are continually subject to renegotiation.

Barton similarly locates this issue in his own analysis of Sawyer’s *Group Creativity*, contending that the real question for devising “is not how performers come to share identical representations, but rather, how a coherent interaction can proceed even when they do not”
(Sawyer, qtd in “Introduction” Xv). Therefore, to properly address creative processes and the construction of new meaning in individual or social engagements with milieu, we must be able to account for the emergent dynamics of interaction rather than merely agent-to-agent transfers of knowledge.

Enactive theorists De Jaegher and Di Paolo take up this challenge, being specifically wary of equating MNS activity with complex social dynamics:

Explanations based on mirror neurons provide no more than a snapshot view of how recognition of intentional action could work. The problem is that the same recognition could equally be part of a coordinated or uncoordinated period in an interaction, and the difference between the two could not be explained by this mechanism. It is this difference that . . . plays a crucial role in how the interaction unfolds. (495).

They further suggest that, in order to address how people differently interact, we need to make some account for emergent social interaction itself, “not just the embodiment of interactors” (Di Paolo et al. 26). After all, it is always entirely possible that our insightful, empathetic understanding of others’ intentions can be more or less incorrect:

We don’t experience the other-in-interactions as totally obscure and inaccessible, nor as fully transparent (like an object fully constituted by my sense-making activity), but as something else: a protean pattern with knowable and unknowable surfaces and angles of familiarity that shapeshift as the interaction unfolds. (504)

Though others’ actions are afforded to us within the field of a social interaction field, we cannot establish such a clear, reliable set of contingencies as we might when experiencing the softness of Noë’s sponge, or when mindfully learning how to enter the lion stance.

[Inter-agent contingencies] do not necessarily settle into a lawful relationship. I must alter my actions contextually in order to re-encounter the other and in the process, sometimes, be encountered myself when her sense-making unexpectedly modulates my own. (ibid.)

De Jaegher and Di Paolo propose their own approach towards social cognition, which they reframe as participatory sense-making. It takes seriously the enactive understanding that identities are emergent through the coupling of organism and environment, and asserts that the
identities of individuals as interactors co-emerge within the interaction itself (492). Thus, while interactions with the world create meaning, the interaction of two or more agents affords new meanings and meaning-making structures that were not previously available to either agent.

This co-emergence is made possible through coordination, which they define as “the non-accidental correlation between the behaviors of two or more systems that are in sustained coupling, or have been coupled in the past, or have been coupled to another, common, system” (490). This can involve any number of subjective skills, including mirroring, imitation, anticipation, and can be initiated or regulated by any combination of agents, but it is fundamentally a process that evolves through time. As I suggested above, both action and perception as we understand them are “the specialization of phases in an act of sense-making” as it unfolds (489). In a collaborative devising process, the performer becomes the spectator and vice versa, not through a formal exchange of roles, but in a dynamic flow of participatory emphasis. Our coordination of sense-making activities is therefore a mutual engagement that acquires a form of interactional rhythm.

**Rhythmic interaction**

Though I am only now addressing rhythm, a phenomenological understanding of experience recognizes that duration is an essential facet of all experience and cognitive processing. Russon proposes that the world is disclosed according to rhythmic principles: the objects of our perception are related to one another according to an ebb and flow of awareness, both in terms of how things are grouped in our spatial field and in terms of how and when we attend to them (12). Gill further suggests that we continually enact rhythms through our

---

89 According to Russon: These sensed bodily propulsions – these rhythms – are the original and orginative [sic] meanings, the appearings of reality within the context of which our world of living experience is elaborated. . . The “units” or basic elements of experience are
bodies and voices (119), as heartbeat, breath, speech, and action all exhibit perceptible ebbs and flows. Since we anticipate future states just as we recall past ones, we experience a subjective sense of our actions’ development through time. The same goes for our perception of external rhythms: recalling Merleau-Ponty’s example of the sonata as described in chapter two, we compose our experience over time, perceiving events as being part of greater experiential wholes.

Developmentally, we acquire this rhythmic capacity very early on, entraining to aural pulses as well as to actions. A recent study by Winkler and colleagues found that even a sleeping 6-day-old infant will neurologically respond when a beat is missing from a musical phrase, while another by Zentner and Eerola demonstrated that 6-month-old children tend to move and swing their bodies in time to a rhythmic phrase. Vijay Iyer applies the enactive paradigm in his study of aural entrainment, proposing, “the act of listening to rhythmic music involves the same mental processes that generate motion” (139). 90

Indeed, similar to the way in which our action observation network automatically responds to agent-driven actions, we tend to intuitively synchronize with others’. Oullier and colleagues’ experiment found that synchrony begins without conscious awareness as soon as tapping subjects perceive one another; so long as their action remains continuous, each subject’s new, shared tapping frequency continues even when the other is no longer visible. Schmidt and O’Brien’s own study of pendulum-swinging subjects found that synchrony was almost inevitable.

---

90 Iyer claims that pulses of different frequency tend to correspond to and (at least in African-American music) suggest particular classes of movement: a heavy beat at 1-3Hz (as found in tactus-heavy urban dance music) roughly corresponds to the period of a heartbeat, as well as to stomping, head nodding, and sexual intercourse, while higher rhythmic frequencies associated with musical subdivisions and expressive micro-timing recall quick-twitch muscular activities that are employed in playing music or are intermediary to dance moves (393).
despite their subjects’ explicit instructions to avoid it (cited in De Jaegher and Di Paolo 490-1). Even when subjects are trying to keep consistent, externally mediated rhythms, subjects tapping in sight of each other will drift between one another’s beat and back again, without their conscious awareness of having done so.91

An instinctive attunement to subjective rhythmic action emphasizes our implicitly empathetic embodied understanding of others in that we are always, already, “coupled” through perception. However, this emphasis on rhythm reminds us that in a social milieu, we are coordinating our sensorimotor activity through time. Our sense-making activities are thus no longer ours alone. Therefore, embodied agents may be thought to coordinate their sense-making activities with others. We’re not just sharing our domains of significance, but are disclosing novel domains in cooperation with one another.

Consequently, what we would call “the interaction” is itself an emergent process, disclosed in patterns of coordination between subjects expressing an autonomous identity that is self-sustaining and which modulates the behavior of the interactors. De Jaegher and Di Paolo note that in “optimal” circumstances of participatory sense-making, “sense is created through the stabilization of patterns of joint activity” (500). Though imperfect, some contingently lawful relations may be established, which frames a jointly constructed set of perceptible meanings. These authors use the game of charades as an example, where teammates adapt and negotiate their expressive sense-making strategies to develop a mutually coherent system of meaning (501). This progress towards agreement demonstrates coordinated problem solving, where shared goals and intentions emerge from the group’s interaction.92

Yet just as the cognitive agent is “an active creator of meaning,” that act of creation is also “subject to change and eventual control by emergent levels of cognitive identity” (Di Paolo

92 See also Tomasello et al.
et al. 35). The nature of the interaction will inform how subjects’ sense-making unfolds. For instance, coordinated interactions where one agent is drawn towards a novel domain of significance that was already salient for the other can be distinguished as a process of orientation. When Sarah taught Molly choreography for *Pictures at an Exhibition*, Sarah takes the lead in regulating their relative coordination. Sometimes establishing discrete phases of interaction (i.e., demonstrating an action sequence before asking Molly to attempt it), changing tempos (i.e., slowing down an intricate move, then speeding it up when Molly has learned it), or varying its meaningful content (i.e., explaining things a different way if she doesn’t feel a current teaching strategy is working effectively). As the “orienter,” Sarah “must not only grasp the others’ sense-making but must skillfully act so that the right modulation comes about” (De Jaegher and Di Paolo, 500). In the meantime, Molly remains an active agent by modulating her own sense-making activity throughout the interaction, whether she is actively (i.e., verbally and gesturally) requesting novel regulations or indirectly necessitating them through her progressive orientation. Molly’s progress may even provoke Sarah to change her own sense-making, depending on how much joint participation is afforded in this complex interaction (ibid.).

As an observer who is sitting by the wall making notes, my own acts of sense-making are less influential to their dyadic coordination, and my orientation towards Sarah’s domain of knowledge will be partial. Yet even I would be properly considered a party in this interaction: “an observer of a social phenomenon, even though he can indeed be a passive bystander as it were, is qua sense-maker always in some way, even if minimally, engaged with the other whose behavior he is observing” (ibid. 503). Cynically, we might chalk this up to a truism and simply repeat some well-worn empirical dictum about how observation will always influence the system. But whether or not I draw their attention to myself by my own actions (i.e., by adjusting my chair, laughing, or giving a verbal note), I introduce novel dynamics to the salient field. I am another expressive agent in the field of perception and both of them are aware of me as such.
My actions (or relative inactions) through time will alter the flow of individual attention (theirs and mine), and influence the dynamics of the interaction overall.

Similarly, these principles of participatory sense-making may also provide a contextually sensitive basis for understanding audience-actor relationships in general, and not as a mere informational transfer. They recognize this as a mutual coupling of performers and audience members, whose engagement is flexibly graded throughout the performance, especially when the performer “takes the lead” by regulating her own coordination. Despite a recognizable directionality within the audience-actor interaction, orientation invites us to discuss a shifting field of interactive strategies as all participants cooperatively adapt to one another through time.\(^\text{93}\)

**Enacting conventional rhythms**

Of course, interactions tend not to be so fluid in practice as they are in theory. First of all, they aren’t always ruled by a clear set of mutual intentions: we might suddenly find ourselves in an awkward tango as we try to pass a stranger in a narrow hallway, in which case, the interaction is sustained despite ourselves until after we have apologetically squeezed by (De Jaegher and Di Paolo 493). Moreover, even despite our best intentions, we may still struggle to initiate or sustain mutual social coordination. Here, I think of a bad blind date or a failing improvisation, where attempts at sustained communication falter because their participants simply aren’t “on the same wavelength.”

While the emergent identity of any interaction is enacted through a broad swath of interrelated factors like biology, emotion, context and culture, we call the temporal organization

\(^{93}\) Orientation is undoubtedly a feature of Vygotskian play, where the expert coach (often a parent) directs the novice (often a child) to new information relevant to their playing (Pellegrini 166). However, as I will suggest in the following chapter, orientation may only be one possible phase of a playful interaction.
of these elements an interaction rhythm (Di Paolo et al. 33). In her own study of social coordination, Gill likens this to the interlocking of other agents and elements’ own “internal” rhythms, forming the complex hierarchy of a symphonic score (119).\textsuperscript{94} The interaction rhythm assumes some of its character from the flexible modulation of the interactors in relation to each other, considering their rhythmic dispositions, predispositions, their adaptability, and their interpersonal history. Di Paolo and colleagues suggest that sensitivity to emergent rhythms may be integral to our development of a general social aptitude, as well as interpersonal relationships. But of course, where subjects fail to mutually coordinate, no characteristic rhythm emerges.

Fortunately, our ability to coordinate with one another does not depend solely on interpersonal sameness. Much like with skill acquisition, we often learn to sustain our mutual coordination by recognizing and learning from previous errors. The incidence of coordination, breakdown and recovery over time can be reframed as “a sort of learning in which our previous moves acquire new contextual significance” (De Jaegher & Di Paolo 496). We understand in a general sense how our behavior influenced the exchange. Familiar interactors tend to become better at sustaining and re-initiating an interaction with one another because they can hone in on an interactional rhythm that is mutually sustainable, and optimally, that is mutually rewarding. This begins to explain why members of a devising ensemble who have worked together for some time might develop a practical shorthand - they skillfully attune to an optimal rhythm of sense-making practices that positively facilitates their interpersonal communication, allowing them to sustain creative flow and even to “pick up” where they left off next time they meet.

\textsuperscript{94} Russon likens the fruits of such interactions to harmony and melody, the harmony being a synchronic sense of temporality in co-operative, resonant expressions (perhaps here, a “coming together” of individual dispositions) and the melody as a sequential form of temporality, the unfolding of a narrative identity through time (perhaps here, the identity of the interaction in total) (18). I appreciate the nuance of Russon’s allegory and the further insights it may afford into rhythmic interaction, but in the interests of applying a consistent terminology throughout this project, I decline to adopt it at this time.
Merlin Donald suggests that an ability to hone in on a dispositionally stable set of interaction rhythms is at the heart of human sociality. He recognizes that from an evolutionary standpoint, social coordination precedes linguistic culture, as well as our cognitive capacity to engage in compassionate mindsight. Consequently, he suggests that sensorimotor empathy provided the foundation for early culture. After all, if we see a familiar action, then we know it in relation to our own experience and can recognize it as such; by recognizing agents as behaving like us, we implicitly recognize collective commonalities and may begin to construct a cohesive social identity. Donald thus proposes that “[m]imesis is the level of cultural interaction on which we first assume a basic tribal identity and become conscious of ourselves with reference to our primary social group” (266).

Lizardo makes no anthropological claim, but similarly notes the possibility that tacit sociality is fundamental to our understanding of culture:

The capacity to understand and “grasp” the meaning and telos of action by other agents at an implicit, bodily level, without recourse to an explicit “theory of mind” of other agents, coupled with the capacity to “mirror” the action of others and engage in implicit imitation of the bodily techniques of others, provides a completely different perspective of what it means to be “socialized” into the “culture” of a given collectivity. (718, italics orig.)

Indeed, while culture undoubtedly affords complex forms of expression and interaction, it is most pervasively enacted through individual type 1 processing. In neurological vision study where subjects were either of East Asian or European descent, Lewis and colleagues demonstrated a strong ethic cultural bias in perceptual strategies, despite all the subjects being born and raised as American citizens (“Culture and context”). The former group attended more to the context of visual scenes, whereas the latter focused much more strongly on target events, demonstrating unique type 1 perceptual styles. Gill and Kawamori also noted comparable distinctions in their study of gesture in Japanese and British subjects, who were speaking their

---

95 A.k.a., Coplan’s “empathy proper.”
native languages to others via microphone without any visual feedback. Subjects’ gestures were individually idiosyncratic but were culturally characteristic, with Japanese speakers employing head-nodding actions while British speakers employed a greater variety of shoulder actions, head movements, and body sway. Moreover, speakers’ gestures moved in and out of rhythmic synchrony despite being unable to see on another, which suggests that cultural dispositions are enacted rhythmically, and may be aligned with the language spoken (Gill 114).

According to these studies, cultural identities are only superficially established in terms of what we perform, and are more subtly and pervasively enacted in how we perform it. Through diverse social, biological and experiential channels, “[o]ur cultures invade us and set our agendas” (Donald 298), influencing the dispositional enactment of our sense-making practices while implicating uniquely salient domains of action.97

Though we may implicitly enact broadly cultural dispositions, social coordination can also be directly regulated through disciplined practices, which communicate the nonverbal dimensions of a domain-specific institutional culture (Donald 266).98 According to Lizardo:

Rituals and conventions structure learning and processes of embodied simulation by restricting the organization of time and space, thus enabling the amassing of bodies at designated times, and helping to produce the collective synchronization of embodied rhythms that aid in the encoding and retrieval of practical information. (725)

96 See “Coordination of gestures” (2002), referenced in Gill 114.
97 Though cultures demonstrate emergent properties of autonomy and downward causality, they neither exist independently of their agents, nor can they account for the variety of ways in which their cultural rhythms might play out across other modes of enactment. Donald proposes that we live “in a symbiosis with our collective creation” (ibid. 300), introducing variety to a field that is both socially common and subjectively ours. Thus, however resilient that cultural identity may be, it is semi-permeable in that it remains open to the entry and escape of various elements.
98 Michel Foucault is an obvious touchstone in this conversation, noting how strategic deployments of institutional power produce embodied knowledge and enact a wider political anatomy. Though I haven’t the space to address his politics within this project, future readings through an enactive paradigm may provide fresh insight on his discussion of micropowers as sites of confrontation, instability, risk and struggle (see “Body of the Condemned” 174).
Therefore, much as our indigenous culture informs our embodiment in the world, disciplined training might be thought to enact a microculture in relation to that embodiment, where coordinations of practice foster typified modes of performance, as well as facilitating the enculturation of technical skill.

Lizardo is specifically writing in response to sociologist Loïc Wacquant’s “carnal ethnography” of boxing, which I cited in chapter 1. Wacquant’s trainers suggested that it is impossible to learn boxing from a book because the book cannot communicate the quality of movement that the trainers emphasize. Hogarth notes a similar learning principle in the social tradition of apprenticeship, where observing and imitating another’s performance allows the novice to develop expertise as though “by osmosis” (80); these reflect implicit learning that follows the practice of those technical exercises, where we internalize a system’s logics through their holistic embodiment. Yet domain-specific practices are more accurately “mixed phenomena” (Lizardo 714), such that motoric logics and neural habitus are dynamically informed by the immediate material and social context of training (718). The boxer is drawn into synchrony with the rhythmic exercises he has learned to perform, but also into synchrony with the other boxers in the space, seen and heard at all times through mirrors and in close proximity. However stringent or diffuse the pedagogy, each agent in the room is modeling others’ behaviour or acting as a potential model for others. Training thus consists of a “complete network of relations [that] constitute the space of (physical, auditory and visual) exchanges” (719), where agents are trained in ways of sense-making during practice as much as in particular skills.

Considering that one is being trained as much in “boxing-sense-making” as in “boxing-skill,” we can apply enactive accounts of social cognition to describe domain-specific training and behavior. This reflects the optimal learning forms I discussed in the previous chapter, where
“the process of drawing novel distinctions” (Langer and Moldovenau 1) is facilitated by a deepening knowledge base. According to Wacquant:

Training teaches the movements . . . but it also inculcates in a practical manner the schemata that allow one to better differentiate, distinguish, evaluate, and eventually reproduce these movements. It sets into motion a dialectic of corporeal mastery and visual mastery . . . Every new gesture thus apprehended-comprehended becomes in turn the support, the materials, the tool that makes possible the discovery and thence the assimilation of the next. (p.118, qtd in Lizardo 720)

For my purposes, Waquant implicates boxing as a practice in which the trained subject may experience flow through insight cascade, cyclically integrating new knowledge and then transcending current informational frameworks through further insights. This knowledge is, of course, discipline- and domain-specific. But while Sawyer implies that each technique and convention constitutes an object for creative collective assemblage (Explaining Creativity 121), I will add that a rigorous interpretation of “domain” need not be limited to the content of a practice or the relative organization of this data. I counter that these domains value and afford particular rhythmic modes of strategic practice. In his enactment of a diffuse boxing culture, the boxer learns acquisitive and integrative strategies endemic to boxing. This differs from the “generically mindful,” self-aware approach that I discussed in the previous chapter in relation to Langer’s work, since the means by which the boxers may seek out and integrate new knowledge are privileged by the culture he collectively shares with other boxers, which recognizes particular forms of optimal performance. He becomes mindful of his practice in the way that other boxers are mindful of their practice. While admitting that personalization and reflection are still endemic to one’s own practice, this account suggests it is possible to establish a unifying basis for the expert, intuitive coordination of collective practices.

I consider this as a basis for describing domain-specific group flow in the following section.
Domain-specific group flow

While boxing matches certainly prompt rhythmic interaction, the discipline of capoeira uniquely highlights its collective coordination of participants, both in overt manifestations of rhythm and in a qualitatively distinct tone of engagement.

In his phenomenological account, Downey describes capoeira as a “blurred genre,” “combining elements of dance, folklore, martial art, sport, ritual, and training for unarmed (and sometimes armed) fighting” (490). Capoeira is learned as a discipline to be performed in diverse contexts, “from folklore performances for tourists and physical education classes, to athletic competitions, and for self-defense” (490). Opportunistic self-defense aside, it is almost always performed with a musical ensemble, lead by a bowed instrument called a berimbau. The style of berimbau playing establishes the type of game being played, which moderates the tempo of the musical ensemble and the capoieristas, who entrain to its rhythm. As they gain expertise, all musicians and capoieristas are “encouraged to listen for opportunities to improvise and create engaging tensions” (497). Consequently, “bodily skill conditions a practitioner to hear the rhythm that is being played by another and to feel different, complementary rhythms emerging from his or her own fingers and hands” (498), and later generalized through the whole body.

As those rhythms are stylistically particular, so too are their inhabitation. In capoeira, the participant’s creative activities and rhythmic variations optimally assume a quality of malicia, which Downy relates to a sense of cunning or savvy, manifesting through “humor, technical virtuosity, deceptiveness, the ability to anticipate another’s actions, a superior command of the space, a sense of the dramatic, or even a malicious opportunism” (491). In other words, malicia is a mode of inhabiting practice that is afforded to expert participants within the discipline of capoeira. It is a rhythmically sensitive attunement to a particular field of salience that is enacted in a particular way. Although it is arguably stable as an accessible disposition, its enactments are contextually strategic and irrevocably unique.
Vijay Iyer notes a similar concept in his embodied account of jazz and other African-American music forms, namely groove. He claims, “although groove is a highly subjective quality, music that grooves can sustain interest or attention for long stretches of time to an acculturated listener, even if ‘nothing is happening’ on the musical surface” (388). Meanwhile, rhythmic expression in “groove-based contexts” happens in incredibly short timescales (deemed “expressive microtiming,” 395), despite giving rise to the impression of a steady pulse (398). Groove expresses a qualitative ideal that emerges from the performance and which establishes an implicit field of procedural salience wherein the performer can intuitively enact permissible tensions.

These examples suggest that we can phenomenologically experience and express an optimal style of sense-making, constituted through the coordinated action of skilled agents within a specific domain. Optimal styles of sense-making have also been described in other performance practices, including Jacques Lecoq’s malicia-like complicité, or Zarrilli’s qualitatively broader orientation towards “making the body all eyes.” I would similarly argue that terms such as Grotowski’s “holy actor” similarly orient performers towards an optimal mode of engagement, albeit through an agent-centric vocabulary that puts a name to the interactor’s expert disposition rather than gesturing towards the state of a field.

Readers will note that this isn’t an “optimal performance” in the sense that coordinated agents aspire to formally recreate it. That would be antithetical, likely hampering the sort of risk-taking that characterizes optimal group performance by regulating coordination into rigid rather than contingently lawful relationships. Rather, it may be helpful to understand optimal

---

99 Iyer also claims that he cannot find a rational analogue for this concept, but I believe I’ve offered a rejoinder to that here.

100 See Lecoq’s The Moving Body (with Carasso and Lallias), and again, Zarrilli’s conveniently named, When the Body Becomes all Eyes.
styles of sense-making as correlating to *qi*, but the energetic mode of inhabitation is experienced as being collective rather than expanding from the locus of the self.

This concept also differs from *qi* in that it pertains to domain-specific coordination, especially among multiple subjects, who coordinate their exploitation of affordances that they mutually perceive as being more or less at hand. This does not require creators or ensembles to declaratively anticipate the short-term results of their collective actions, lest the enterprise get mired in evaluation.101 Rather, if the objects of perception are rhythmically actionable potentials rather than deductive objects, then conscious recognition need never interfere in intuitive processing, and ensemble members can continue acting through hypo-egoic attendance to the larger task.

I propose that agents can engage intuitively within the expressive field because of their implicit knowledge that particular acts will afford further sense-making activities in a consonant creative mode. Recalling Vervaeke’s model of flow as insight-cascade, the collective’s ability to engage in optimal, Vygotskiian learning depends on each agent’s implicit understanding of a shared knowledge base being applied and augmented. Even if personal action-insights are temporarily deferred during a turn-taking phase of interaction (i.e., if a bass player “holds down” the rhythm during a trumpet solo), empathetic perception may permit the “waiting” agent to experience some cognitive “ownership” over the expressions he is supporting. Sustained collaborative coordination also tends to yield social, emotional, and cognitive benefits (Gill 118), which may bolster the positive affects associated with subjective flow experience (Vervaeke and Herrera-Bennett) and offer some affective resilience for continued participation in turn-taking systems. After all, the task of sense-making is just the sort of “open problem” that affords a flow cycle of perceptual differentiation and integration.

---

101 See Seddon’s description of hypo-egoic empathetic attunement in jazz improvisation.
Optimal forms of collective sense-making like *malicia* or groove are recognizable because they demonstrate some tendency towards stability, implicating forms of coordination that facilitate autopoetic self-sustenance. Consequently, whether or not performers are applying broader mindfulness strategies, a shared history of collective physical practice may foster highly sophisticated modes of implicit coordination among devising ensembles, disclosing valuable, emergent modes of participatory sense-making that can become increasingly stable as they are revisited over time.

For example, in Erin Hurley’s analysis of the Quebecois dance theatre company Carbone 14, she provides a critical tomography of “the Carbone 14 body” enacted by its dancers, who embody a characteristic set of physicalities, affective ranges and energetic tempos (118). To be sure, the dancers entering the ensemble have previous training that is compatible with concepteur Gilles Maheu’s postmodern roots, but are “open to the play of many influences” (ibid.) and accustomed to an eclectic range of movement tropes (117). All these elements are coordinated according to a characteristically flexible set of texturally salient values, and not as a domain of inclusion / exclusion. This has disclosed an emergent identity through practice, over time, which Hurley describes in detail:

The Carbone 14 body is open to the play of many influences, a responsive instrument that can embody a wide range of emotions, situations, classes and moments. It is able to express extremes (of emotion, of rhythm, of quality of movement, of cultural inflection). Physically, the Carbone 14 body-type exhibits muscular legs and visible, all-over body strength. . . . [T]he Carbone 14 body exerts itself completely, utilizing an excessive amount of energy for short amounts of time.

. . . . .

The Carbone 14 body is a responsive body, articulating a pastiche of choreographic traditions. Yet, it is also an intelligent body whose intelligence can be tapped both in the creative process (in improvisations) and in the performance event (in its execution abilities). It generates its own lexicons of meaning.

---

102 Open Corps Theatre, which produced *Pictures at an Exhibition*, is a young company that has diversified its ensemble and working methods in response to each project. At this time, and as artistic director, it would be premature of me to attempt any qualitative distillation, so I will shift to Hurley’s example instead.
(movement vocabularies) and establishes axes of signification (parataxis, mimesis, pathos) that can be read within individual productions and across the troupe’s oeuvre. (118)

Admittedly, much of Hurley’s description of the Carbone 14 body might be equally suited to describing a number of other highly physical dance theatre companies, especially the athleticism of their performers.\textsuperscript{103} However, considering this text as a direct reference to Carbone 14, we can recognize her description as a phenomenological gesture towards describing a particular kind of responsivity, muscularity, and intelligence, to say nothing of those actionable “lexicons of meaning” and “axes of signification” that uniquely emerge from this company’s creative work and social milieu. It may be possible to identify similar (if tacit) principles emerging from other local coordinated practices, like dance troupes or even devised theatre companies. Therefore, in Carbone 14 and in other cohesively coordinated physical ensembles, emergent styles of idiosyncratic sense-making could become crucial touchstones for an ensemble’s interaction in their performance and creation processes.

In this chapter, I have provided an enactive account for making sense of others’ actions, intentions, affects, and, via gesture, others’ sense-making-in-process. Each of these processes may be rhythmically coordinated between agents, and the rhythms of these interactions may become provisionally stable across time, either in relation to a shared history or a shared domain. This in turn may facilitate collective experiences of flow in shared task performance.

In my concluding chapter, I will consider how this model of coordinated sense-making and the emergence of idiosyncratic sense-making styles may be applied to an understanding of provisionally stable, process-specific dramaturgies, modeled here after Vygotskiiian play. Drawing upon the mimetic work discussed in this chapter, I will also consider how relatively discrete meanings and frameworks of meaning may be negotiated at a preconceptual, intuitive

\textsuperscript{103} For example, Toronto Dance Theatre or Kaeja d’Dance.
level, whether the object of our study is creative collaboration or actor-audience orientation, and consider how the qualitative experience of that negotiation further impacts the experience of those playful interactions.
CHAPTER 5

In my preceding chapters, I established how an enactive paradigm of cognition may effectively describe disciplined training and intuitively-led creation in devised performance. I have differentiated type 1 and type 2 cognitive processing, and discussed their interplay in the enactment of sensorimotor knowledge. Most recently, I have described those empathetic processes by which skilled subjects embody and interpret the intentions, affects, and cognitive processing of others, and have drawn these into my account of rhythmic, coordinated sense-making. Throughout, I have also accounted for flow as an optimal style of individual and collective sense-making, whereby a cascade of novel insights affords increasingly complex forms of participation in a given milieu.

While this analysis has sometimes been framed as a flight from the failure of representationalist discourses, not all forms of representation or signification escape my concern. The insistent materiality of devising practice is performed in a dynamic tension with cultural signs and abstract possibilities, so I must honestly grapple with the changing modes of signification afforded in devised work, especially in relation to broader social orders. Therefore, this project will address those emergent cultural properties of creative play that enable performers and audience to perceive fictive or otherwise “symbolic” expressions.

This chapter will account for the enactment of novel theatrical realities in intuitive creation. It explains that collaborative sense-making allows devisers to intuitively negotiate emergent frameworks of meaning and genuine embody otherwise fictional realities. Such interactions will be discussed in context of Vygotskian play, where participants are challenged to sustain and complexify a shared game. Crucially, participants may accept, reject or manipulate the meaningful frameworks emerging through their play in the absence of analytic
reflection. This suggests that coherent novel dramaturgies may emerge through creative processes that are primarily intuitively-led.

I will also consider broader applications of this framework by describing how audience members jointly participate in the playful frameworks enacted onstage, especially as real-time psychophysical affects preempt forms of experience disclosed by an audience member’s analytic conscious. Here, I draw my primary examples of non-realistic meaningful play from two sources: the National Theatre of Great Britain’s production of *War Horse*, and my own performance research project entitled *Performative Exercise*. Ultimately, I will consider how one’s experience of novelty in play may facilitate especially robust affective responses to both virtuosic feats of skill and to unrealistic symbolic play.

By developing a play-based model for the creation of meaning, and by framing processes of signification through enactivism, this chapter comes into conflict with two popular theories often employed to describe cognition in performance: Lakoff’s theory of embodied metaphor and Fauconnier and Turner’s theory of conceptual blending. These theories have frequently been employed in conjunction with one another to account for our experience of the ideas and images disclosed to us on stage. To their credit, they rightly emphasize the role multi-sensory embodied experience plays in the dynamic restructuring of consciousness that takes place in a theatre event. McConachie, for instance, draws upon Lakoff and Johnson’s metaphors to explain a trans-historical commonality among human cognitive constructs; he also adopts conceptual blending as knowledgeable alternative to Coleridge’s “suspension of disbelief,” where the spectator would otherwise “oscillate between faith and skepticism when watching a performance” (*Engaging Audiences* 43).

---

104 For audience and performers alike, “[t]he game is in dialogue with the now. It cannot escape it.” (Etchels, “Play On” 70).
Nonetheless, I believe that invaluable insights like McConachie’s would find deeper roots in relation to the framework I have established here. I support Vervaeke and Kennedy’s critique against the underlying theories of Lakoff, Fauconnier and Turner, and demonstrate that embodied metaphor and conceptual blending are insufficiently rigorous, plagued by inherent inconsistencies. Furthermore, while they profess to account for “unconscious” analysis, they demonstrate a myopic regard for the unique cognitive features of intuitive thought (as opposed to conceptual thought). Those theories offer inadequate accounts for creative intuition, and should be applied with caution elsewhere in performance studies. Instead, I propose an alternative account for embodied “metaphors” that untangles perceptual and conceptual recognition, and suggest that through playful social coordination, their dynamic interrelationship discloses an immanently meaningful reality.

Framing play

Though devising processes might foster an eclectic range of developmental strategies, physical regimens, and dramaturgical interventions, “play” reflects the volatile collision of these elements in intuitively-led improvisation. Practitioner-theorist Jacques Lecoq placed play (or le jeu) at the very heart of his pedagogical enterprise, and considered it that activity where a performer’s physical and mental agility find their fullest expression. Indeed, Lecoq’s chief criterion for selecting whom would advance within his school was “the actor’s capacity for play” (Lecoq 97), believing that “the performer who cannot play can never be a creative actor. An ability to play . . . is a necessary condition for creativity” (qtd. in Murray 66).

Lecoq often conflates “theatrical” play with childhood play, “exploit[ing] to the full the overlap of meanings . . . between child’s play and drama, games and performances” (191, glossary definition of “play”). Accordingly, many play-based theatre workshops emphasize a need to recapture the pleasure and spontaneity of our youth and, indeed, both Copeau (Murray
30) and Lecoq (22) claimed children as inspirations for their work. But for Lecoq, the remarkable benefits afforded by play rescue it from “self-indulgent tomfoolery” (Murray 50). (Lecoq 22). He claims that, “[p]eople discover themselves in relation to their grasp of the external world” (20), then advances that thought in reference to early play: “[C]hildren mime the world in order to get to know it and prepare themselves to live in it. . . To mime is literally to embody and therefore to understand better” (ibid. 22). His emphasis on understanding through embodiment resonates with the psychophysical learning process addressed elsewhere in this thesis. Theatrical play may therefore be conceived of as a form of game that creatively extends learned skills.

Developmental psychology is also concerned with how play allows an “extension” of one’s knowledge. Under their rubric, play is known to be a universal human behavior with many diverse forms, including locomotor play like running, swinging, and climbing (Pellegrini 138); rough and tumble social games like grappling or chasing (Fryy 56); and pretend scenarios with different degrees of sociality and complexity (Smith 188). All instances of play are regulated by the child’s culture and experiences (ibid.), and all may entertain various degrees of symbolic resonance. They also tend to incorporate functional behaviors in the service of practices that are recognized by its participants to lack a functional intent, and whose rules are subject to continual negotiation (Pellegrini 8).

Consequently, there has been a major shift away from Piaget’s understanding of play as a primarily symbolic, nonadaptive form of “autistic thought” (Pellegrini 22) in favor of Vygotsky’s belief that play is “a dynamic and complex . . . interactive form of social

Lecoq’s understanding of childhood play typically repeats a common bias from developmental literature by zeroing in on cultural niches where a great deal of children’s time and energy is devoted to pretend play (Pellegrini 61). This is certainly troubling in social science research, but since Lecoq’s wider pedagogy is tethered to other, diverse activities that may be brought into a wider understanding of play (including sports, commedia, and circus), I would argue that this bias doesn’t undermine his theories so much as suggest new opportunities for broadening their foundations, as I do here.
imagination” (John-Steiner et al. 11), which is important to the development of cognitive skills. Vygotsky’s theory of the zone of proximal development (ZPD)\(^{106}\) proposes that learning is most effective when the learner is being challenged to the limits of his or her ability. Vygotsky stresses the role of competent others (like parents or especially skilled peers) in promoting this process, since an expert coach (i.e., the parent) can challenge the novice learner (i.e., the child) to adjust his or her behavior, and thereby maximize the novice’s participation. If a young child offers imaginary tea to an unskilled peer, for instance, they may not know how to continue the tea party beyond a few exchanges. However, if the child offers imaginary tea to his mother, the mother can suggest ways her child may extend an interaction, perhaps by asking if there are any cookies with an imaginary tea, or suggesting that the tea is too hot (Pellegrini 166).

The example of the tea party certainly counts as a form of \textit{coordinated sense-making}, and in some ways, it is similar to my prior example of Sarah teaching choreography for \textit{Pictures at an Exhibition}. Sarah attended to Molly’s progressing ability to perform the desired sequence and, in response, adjusted the content and timing of her instruction while directing Molly’s attention to especially salient aspects of the action. Whether it is a choreographer and dancer or a mother and her child, the “expert” ideally challenges the “novice” to participate at the height of his or her powers. However, a crucial difference between these examples is that while the child may indeed learn the rituals and properties of tea as forms of psychophysical skill, mother and child’s shared intention is to further the game itself, insofar as it remains enjoyable to do so. In this case, the expert adopts the novice’s proposals rather than orienting the novice towards her own, and regulates the novice’s ability to make and sustain novel propositions in general.

\(^{106}\) I first noted Vygotsky’s ZPD theory in chapter 3 with reference to Vervaeke and Herrera-Bennett’s article on flow as insight cascade.
Though parental interventions may be explicit or verbal during a play scenario, “play training” (Singer & Singer 106)\textsuperscript{107} is learned tacitly by via the insights those interventions afford while the game is under construction.\textsuperscript{108} By learning to sustain and extend one’s own novel propositions, a child effectively “internalizes” the functions served by the teacher and may engage eventually himself in the ZPD (Vervaeke and Herrera-Bennett). Indeed, Vygotsky recognized play as an activity that facilitates sustained ZPD experience: “In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself” (Moran 141).

The ability to self-challenge in this way is integral to one’s continual self-challenge in both play and insightful flow experience. Successful play shares many characteristics with the experience of flow – including a lack of analytic self-consciousness and a sense of pleasure in performing the task for its own ends – though unlike the optimal styles of collective sense-making I discussed earlier, play activities are pursued across a range of styles and subjects. There is no optimal form except that which is dictated by the child, and even then, the exaggeration and imperfection of play behaviors reflects “creative, or behaviorally flexible, encounters with the world” rather than an imperfect copy of rote, functional activities (Pellegrini 227).

\textsuperscript{107} The vague verbal description of honing one’s “play skills” is undesirable since it implies a discrete domain of attainable processes, which is at odds with the domain-crossing flexibility of creative work. Rather, as I link play and creativity in devising, I wish to emphasize play as a subjectively strategic engagement with more-or-less variable circumstances. Consequently, distinctions between developmental stages, as well as measures of subjective predispositions towards play, are largely absent from my discussion. There may have been promising attempts to verifiably link early imaginary play to the adult measures of creativity I am supposing here, especially Root-Bernstein and Root-Bernstein’s 2006 study evaluating professional creativity in light of the subjects’ self-reported history building complex paracosms or “playworlds” as children. However, those authors and I recognize that more work needs to be done before their findings can be reliably advanced.

\textsuperscript{108} A study by Pedersen and Liu makes a complementary case for problem-based learning. They found that novice learners were best able to adopt transferable problem solving strategies by modeling experts in real-time, as opposed to when they were given verbal instruction or data.
The concentration of our play training in early childhood also makes evolutionary sense, since, unlike adults, children are generally free to explore their environment without attending to the costs of their actions. In terms of relevance realization, a lack of energetic constraints encourages them to experiment with diverse and potentially inefficient sense-making strategies (Vervaeke et al.). Consequently, play behavior tends to be rather exploratory (Oatley 27), increasing one’s behavioral and cognitive flexibility in both the short and long term. This exploration may eventually “afford opportunities for the generation of new responses to novel environments” (ibid. 229), and even allow the child to develop novel skill sets that ultimately prove to be culturally valuable (Berk et al. 78). But whether or not these inventions come to pass, play confers a broader capacity for sensorial experimentation, which confers advantages beyond any one strategy in particular. Creative play might thus be considered a form of optimal sense-making in general, and learning how to engage in this mode of sense-making may be considered a form of “training for the unexpected” (Pellegrini 50).

Creating meaning through play

A broad definition of play befits the potential diversity of strategies enacted within a devising process, but at this time I will focus on pretend play’s capacity for “enriching the available meanings around any particular piece of theatrical business, whether with objects, script or another performer” (Murray 67).

In developmental psychology literature, the child’s ability to pretend transcends firmly delineated categories of play. Manipulations of meaning may even be woven through primarily aerobic forms like locomotor or rough and tumble play: children chasing one another, for instance, might fleetingly cast one another as “bad guy” or “good guy” (Pellegrini 17). Such enrichments of meaning are often classified as pretend play, which can incorporate symbolic
play, make-believe, or sociodramatic play (ibid. 155), and may even involve the creation of recurring fictional worlds over time (see Root-Bernstein & Root-Bernstein, 2006).

Vygotsky believed that pretend play resembles a form of problem-solving, the problem being a goal that seemingly cannot be filled by present circumstances, solved by substituting actionable choices and imaginary constructs for what the child lacks. This might involve the use of props or toys, as when a broomstick serves to replace the horse a child wants to ride, which may be supplemented knowledgeably by making the sounds of a horse, or by assuming a particular riding stance (Pellegrini 23). In the absence of props, children might also mime desired actions without any props whatsoever. At a theatre camp, for example, I taught a young girl who constantly brought me imaginary balls for games of catch during morning break, and who would unwrap and eat whole imaginary sandwiches even when she thought no one was watching.

Developmentally, skilled Vygotskian play could thus be a precursor to abstract thought. When a child substitutes a broom handle for a horse, for instance, he or she is potentially invoking the idea of a horse in its absence. This involves the development of meta-representational skills, or, the ability to assign new identities to objects or persons (Smith 188). Similarly, a child can decontextualize functional actions and artifacts by applying them to non-functional contexts, as in a tea party with toy cups and imaginary tea (Pellegrini 157). According to Berk and colleagues, “the creation of imaginary situations in play helps children separate mental representations from the objects and events for which they stand. Once preschoolers realize that words, gestures, and other symbols are distinct from external reality, they are on their way to using those symbols as tools. . . (79).” Phenomenologically, these “tools” are

---

109 For example, the fictional kingdom constructed by the children in Katherine Paterson’s novel, Bridge to Terabithia.
110 While Vygotsky’s own writings are often concerned with how play might support representations of a symbolic order (see Marjanovic-Shane and Beljanski-Ristic 100), he is not...
uniquely disclosed to the subject, and one learns to manipulate meaning in relation to the world as it is disclosed to oneself.

Moreover, apart from its long-term benefits, play generally pursued for short-term ends: it feels like fun. Apter proposes that playful make-believe affords an experience of cognitive synergy, where one experiences a confluence of opposing identities either at the same time or in a rapid substitution (Danger 98). In the case of the broom handle as horse, the two identities in play may not be associated by a logical connection, but in their contingent expression, they are unexpectedly experienced as ‘working together,’ much in the same way that metaphors unite divergent concepts:

“The ‘magic’ which such toys have for children, and often adults, too, derives from the fact that two identities are conceptually made to overlap. The toy both is, and is not, what it purports to be; and both of these aspects apply at the same time. Its meaning as a toy is therefore a synergic quality which emerges from this contradiction, as does the excitement which toys can impart.” (Apter, “Metaphor” 59)

Experiences of cognitive synergy in play thus perform the same complementary gestures of differentiation and integration that I described in chapter 3. Here, the subject differentiates the opposing qualities of these identities at the same time that he integrates his apperception of sustaining an argument for semiotics. Rather, contemporary extensions of his work recognize that he frames language and symbols as tools at hand for each individual within a complex, interdependent process of meaning making (John-Steiner et al. 12). John-Steiner and colleagues suggest that this includes broader symbolic systems as well, including “mathematical symbol systems, maps, artistic sketches, sign language, imagery, and musical notes” (7).

111 Vygotsky’s theory of perezhivane (sometimes translated as “lived emotional experience”) foreshadows Merleau-Ponty’s description of the lived body), and suggests that our perceptions of the world are mediated by our unique personal experiences. Perhaps not incidentally, Vygotsky’s theory of perezhivane was developed as a result of studying Stanislavski’s actor training system (John-Steiner et al. 8).

112 “Phenomenologically . . . the two identities and their respective identities may be both clearly apperceived, even though their ontological status is different” (Apter, “Metaphor” 59-61).

113 Not incidentally, Apter’s description of our experience of the toy phenomenologically resonates with Roach’s description of the charismatic tension between actor and character in chapter 2. I will not belabor the comparison since Roach’s case requires a deeper engagement than this chapter allows, but as I suggest below, synergic forms of perception may be endemic to the audience’s experience of theatre.
Much like metaphor, synergy enhances one’s experience of both identities in play, and through a transfer of recognizable properties, prompts emergent insights into either object that would not be disclosed from them alone (Vervaeke, “Three Visions”). This further facilitates the sorts of exploration that Oatley ascribes to play above.

Cognitive synergy also increases attentive and physiological arousal: its surprising insights and release from normative thought create a pleasurable sense of heightened awareness (Apter, “Metaphors” 66). However, unlike the positive affects arising from insight in general, the physiological arousal stemming from cognitive synergy is not always desirable. Play only tends to be pleasurable when the individual is in an appropriate mindset. Synergies may be experienced as distracting or annoying problems if one is seriously and single-mindedly pursuing a task (ibid. 67). Alternatively, synergies are actively created and pursued when the subject is in an arousal-seeking, playful frame of mind (Apter, Danger 100).

The success of play depends a great deal on the phenomenological intentionality of its subjects, much like mindful practice does. Therefore, despite its divergent forms, play may also be thought to privilege optimal forms of qualitative engagement. I will consider the social enactment of that mindset below.

**Negotiating meaning through play**

Like the coordinated sense-making I discussed earlier, social play depends upon a confluence of individual sense-making practices. When children first learn how to communicate and integrate their own “conventional knowledge of the world” with that of a playmate, they tend to rely more on well-known frameworks they can successfully play within. Early pretending therefore often involves the enactment of familiar social ‘scripts’ (i.e., playing doctor) (Farver

---

114 Synergic relationships (metaphors included) must exhibit a contextually appropriate balance of similarity and difference. I also address this below.
As mindsight skills improve, then interaction begins to resemble adult sense-making, and children need not establish a rigid representational framework or explicitly diagnose one another’s mental state in order to participate in that joint pretence (Smith 194). Familiar scripts give way to more complex play as children build on this knowledge to construct novel systems of meaning that are jointly understood (ibid.).

Play characteristically remains subject to elaboration and negotiation throughout, either by verbal or behavioral expression (Pellegrini 17). Marjanovic-Shane and Beljanski-Ristic’s practice-based research states that these manipulations of the game itself are often conducted through an experience of bifurcation: participants can behaviorally “step out” of the so-called “play frame” and into an administrative “real-world frame,” where they meta-communicatively negotiate the play frame’s rules and properties (102). Participants frequently stop to assess their progress, change the activity, or correct another’s adherence to agreed-upon scripts. Often, children spend more time negotiating meaning than performing in the play frame proper (Pellegrini 175). Nonetheless, this bifurcation does not manifest as a discrete distinction of phases: multiple frames are often intermingled across time and remain in a communicative tension throughout play (Marjanovic-Shane and Beljanski-Ristic 110).

Even in playful wrestling, which children can accurately distinguish from real fighting (Fryy 61), interpersonal conflicts or expressions of competitive dominance may be enacted at various strata of play. For example, a child might challenge the boundaries between play and reality, or between subjective and shared meaning, through subtle modulations of his own force

---

115 See also Berk et al.
116 Pellegrini further suggests that childhood play is integral to the healthy development of one’s theory of mind: “With repeated experiences where points of view do not match, children come to realize that their views differ from those of their peers. Thus, the process of repeated interaction where meaning must be clarified is probably the mechanism responsible for children being able to consider the beliefs and intentions of others” (183).
117 See also Smith (188): “In sociodramatic play, for example, . . . information may be exchanged about real-life activities (‘Doctors don’t do that, silly!’).”
and intent. By striking just a little harder or pinning his playmate just a little longer than usual, he enacts genuine physical and social struggles between the two of them while sustaining the play frame. If these challenges lack finesse, he might cause the play frame to break down entirely: perhaps his friend will decide this is no longer fun, or a “real” fight might break out. Collaborators thus rely upon both interpersonal and creative agreement to sustain their joint activities, whose subtle negotiation Karlen Lyon-Ruth calls the “precariousness” of play (143).

With a new friend, it can be especially difficult to strike that balance, but for children and devising ensembles alike, this precariousness may be tempered through intimacy. Indeed, children’s play is “more sustained and complex” when they are playing with friends as compared to acquaintances (Smith 180). Howe and colleagues’ review of sibling play found that familiar playmates demonstrated a “seemingly effortless ability . . . to build on to their own and extend their partner’s ideas” (790).

The idea of one sibling appeared to spark a creative idea in the second, which in turn was extended by the first child. . . . These exchanges resemble a well-coordinated dance and speak to the notion of connected and synchronous communication between siblings. (Howe et al. 790-1)

Familiar playgroups even tend to develop tacit “shorthands” (Marjanovic-Shane and Beljanski-Ristic 113) or “restricted codes” (Pellegrini 174), in which seemingly ambiguous gestural communication exploits a common knowledge or context. This echoes my prior discussion on the benefits of gesture with reference to Goldin-Meadow’s work, especially in the context of coordinated sense-making among a familiar ensemble.

These shorthands may in turn be incorporated into favorite games or feed the creation of whole paracosms that may be collectively developed over time.118 Much like the aforementioned members of Carbone 14, who express a characteristic physical style (and perhaps even a particularized working vocabulary), children may come to develop a mastery of idiosyncratic

---

118 This applies in part to the fictional worlds footnoted above, but more compellingly, to devised dramaturgical environments, which I will discuss below.
collaborative protocols, and thereby begin to produce their own “cultural lore” (John-Steiner et al. 11). Among such groups, the enactment of play frames becomes a strategic expression of especially complex but ultimately idiosyncratic social meaning (Marjanovic-Shane and Beljanski-Ristic 105).

Lecoq calls this creative, collaborative intimacy *complicité*. This term already has significant traction among devising ensembles for describing a desirable quality of interrelationship, though by emphasizing its nefarious, collusive implications in their own adoption of the term, Theatre de Complicite highlights the idiosyncrasy of these intimacies:

There is something slightly dark and suspicious about the term, implying perhaps a landscape where rules and laws are transgressed, and where boundaries are tested and extended – not for some wicked purpose, but in a spirit of shared, gleeful pleasure: more the camaraderie of rogues and revolutionaries, than the quiet, self-satisfied handholding of saints. (Murray 71)

I therefore propose that intimate play of this sort is a *collaborative enactment of optimal sense-making*, where skilled peer participants continually challenge one another in the creation of a collective ZPD. Play demands skillful intuitive performance and is adaptable to changing circumstances, reflecting the synergies and affordances made available (or constrained) by the situation as it develops. This view is supported by Murray, who he claims that:

. . . an ability to play is more about openness, a readiness to explore the circumstances of the moment without intellectual ‘editing’, but within a set of rules or expectations germane to the style or form of theatre under investigation. . . (50, italics orig.)

**Devising as play, dramaturgies as play frames**

As play is to devising, so play frames are to novel dramaturgies. This is to say, as an ensemble develops and explores a novel dramaturgical structure, whether this is for a game or for a coherent full-length performance, fields of salience around physical actions and basic metaphors outline the rough constraints of what may happen in-frame, or what “belongs” to that
particular dramaturgical world. Bogart and Landau conflate these distinctions in their Viewpoints work, encouraging creators to improvise and the laws of their “Play-World” up to and including diverse properties of time, morality, manners, dress, and gestural vocabularies (167). Only later are these articulated in terms of a consistent dramaturgy to which the ensemble may return (ibid.).

However, while the term “dramaturgy” has structural connotations, the term “play” reminds us that a devising ensemble is elaborating upon a provisionally stable framework that is continually open to invention and elaboration. The sustenance of play depends on the players adopting one another’s proposals, but it also requires an evolution of the scenario beyond present circumstances. The participants must differentiate novel affordances from the strategies they are currently pursuing, integrate these into the flow of their current practice, which we may call complexification. In the case of mother-child scaffolding, the child’s “problem-solving” mime of imaginary tea prompts her mother to continue problem-finding, perhaps by suggesting the tea might be too hot, in order to complicate and extend her child’s proposition. Similarly, in devising, creators’ choices must support and encourage a mutual continuation of differentiation and integration, thereby encouraging group cognitive complexity. This most commonly takes the form of an age-old rule of improv to accept and extend the propositions of your partners, though this might also involve avoiding normative social strategies that neutralize or disguise differences in favor of creative strategies that cultivate and celebrate them (see Curseu & Shruijer). Tim Etchels expresses this point obtusely but accurately:

> Play as a state in which meaning is in flux, in which possibility thrives, in which versions multiply, in which the confines of what is real are blurred, buckled, broken. Play as endless transformation, transformation without end and never stillness. (“Play On” 52)

---

119 Saturday Night Live alumnus Tina Fey speaks eloquently about this “first rule of improvisation” in her memoir, *Bossypants*: “Start with a yes and see where it takes you” (84).
In other words, both play and devised dramaturgy may be properly understood as dynamic systems that merely flirt with equilibrium, dissipating stable orders while invoking new self-organizing systems from its evolving material and ideational context (Marjanovic-Shane and Beljanski-Ristic 101).

Accordingly, the performance of meta-communicative actions upon (as opposed to within) the “play frame” proper needn’t be considered an infelicitous breakdown of play in general. Rather, one’s ability to negotiate transformations without compromising the activity (or, a “strategic sense” of how the situation can be developed and unraveled)\(^\text{120}\) is a crucial competency that makes play possible (Lederer 235). Therefore, in especially sophisticated instances of playful collaboration, the rhythmic coordination of subjects’ sense-making activities allows them to recuperate and exploit novel insights, and these insights simultaneously change the terms of that interaction without breaking its rhythm.

Devised performance thereby exceeds Hausman’s lofty standards for Novelty Proper as introduced in chapter 1. Hausman claimed that radical creations must feature a structure that is unpredictably different from past structures (12), but in devising, the structure of play (as it is disclosed over time) is itself a novel creation afforded by dynamic, meta-structural, novel subjective and social praxis that would not itself emerge without in-play actions. A devised dramaturgy is thus “a self-structuring process governed by the dialects of expansion and contraction of possibilities” (Di Paolo et al. 40).

Despite the elegant collective flow that play affords, and howsoever that creative flow might be characterized by a particular ensemble in practice, it may still be advantageous to frustrate the flow state at times. Barton’s account of working with Number Eleven Theatre suggests that his role as dramaturg “afforded a localization” to similar self-reflective pauses in the ensemble’s process (“Navigating Turbulence” 114). His intention to promote creative

\(^{120}\) See Lecoq’s discussion of commedia training in *The Moving Body*, 112.
disruption and interruption is portrayed as an overt strategy, enacted by the organization of the collective but akin to Hogarth’s installation of scientific-method-as-mindware. Alternatively, while Barton’s dramaturgy performed an analytic function within Number Eleven, Etchels found that analysis emerged strategically from the ensemble in relation to Forced Entertainment’s games, including brief flickers of asking one another “what are we really doing here?” (“Play On” 56) or lengthier interludes, “where people committed to one task for more or less a whole performance would give it up for a while and do something else” (57). For both ensembles, reversions to the analytic represented an opportunity to rediscover the solid footing of a sociality outside the frames and games of play, even if only to re-imagine it later.

This also demonstrates a political opportunity borne from collective play. Play may afford cultural novelty for the individual, but as a member of an ensemble, one may enact novel, provisionally stable forms of cultural organization. Barton forthrightly suggests that devising in general offers its practitioners “a self-conscious disengagement from dominant culture in order to effect a profound reconstitution of beliefs and values, resulting in a distinctly new and altered ideological balance” (Collective Creation xxii). Etchels expresses a similar impulse, suggesting that breaks from collective flow drew him and his ensemble to an appreciation of their performance within a broader social context: “in the stopping was always the time for measuring how far things had gone, how much the world had changed because of the game” (Etchels, “Play On” 58). According to Vygotsky, this is the ripened fruit of creative play, where sophisticated collective meaning-making fosters genuine symbolic and social change (Moran 145).

A critique of conceptual and blended metaphor

---

121 See chapter 3.
122 Vygotsky defined this social change as “catharsis,” hearkening back to Aristotle.
To some theorists, playful projections of the real to the abstract are characteristically metaphorical, as though qualities from a source domain are mapped onto a target. Lakoff suggests that abstract thought is generated by a metaphorical projection from embodied experience, so that conceptual thought is both rooted in lived experience and metaphorical in structure (Gallese and Lakoff 455; Vervaeke & Kennedy 214). The physiological constraints of our bodies lend characteristic forms to our experience, and oft-repeated and familiar experiences are schematized as a set of fixed action parameters with contextually variable values (Gallese and Lakoff 465); these schemas are subsequently available as primary metaphors that structure language and conceptual thought. For example, “experience with journeys induces an image schema structured to have a beginning, a middle, and an end. The journey image schema can then serve to ground abstract concepts such as a relationship” (Glenberg et al. 906). Here, alluding to the beginning or end of a romance would apply a metaphor of relationship-as-journey. Lakoff builds upon this thesis to propose that our thought and perception assumes a similarly metaphorical caste.

However, beyond its roots in linguistic analysis, Lakoff’s theories of embodied metaphor face an existential challenge from contemporary cognitive research.123 True, they have been supported by recent findings that name action comprehension and the mirror neuron system as likely culprits in the evolutionary development of language.124 Moreover, Aziz-Zadeh and colleagues’ 2006 study suggests that symbolic expressions of concrete actions (i.e., the words “kick” or “bite”) incite MNS activity in much the same way as observing or performing the action itself. Yet that same study failed to find any compatible neurological activity for metaphors using the exact same words (i.e., in phrases like “kick off the year” and “bite the

---

123 Regarding Stanovich’s delineation of type 1 & 2 consciousness, Lakoff’s errors also include shoehorning his model for conceptual mental structures into an account for preconscious intuitive processing, which I’ve rejected at length in chapters 1 and 2.

which complicates Lakoff’s homogenous suggestion that all metaphors rely upon embodied representations (ibid. 1819). Aziz-Zadeh and Damasio discussed this null finding in a 2008 review paper, suggesting that when metaphors become linguistically conventional, their embodied allusions lose their embodied affect. In the case of a conventional metaphor like the phrase, “grasp the situation,” “the metaphorical meaning (to understand) is more salient than the literal meaning (a grasping action). Thus it is the figurative meaning that would be activated first, without needing to access the less salient literal meaning” (38). Thus, while novel metaphors may inspire affective embodied responses, overlearned metaphors have lost the power to do so (ibid.), and seem to “work” differently.

Furthermore, while linguistic metaphors are certainly one source of emergent meaning (Lutterbie, Towards 120), they seem to be an inadequate basis for the massive complexity of novel meanings that might arise in abstract thought or exploratory play. First of all, metaphors are developed through an interrelationship to two distinct ideas: a domain mapped onto a target. Yet even in children’s play with non-functional, ambiguous props, object substitutions tend to be related to the attributes of the object (Pellegrini 159-62). Metaphors rely upon a degree of attraction between known domains to constrain one’s selection of features. Consequently, Lakoff’s model struggles to account for encounters with novel objects or circumstance, especially when we decide that our existing conceptual metaphors are inadequate, since we must be motivated by some idea about a novel target. According to Vervaeke and Kennedy, “if the target domain were a conceptual blank slate . . . then it is unclear why we would adopt or offer one metaphor over any other” (217):

[I]f the only tools are an old metaphor and a new one[, t]he new metaphor cannot be responsible ahead of time for all this cognitive work (i.e., disdaining the old metaphor), and the old metaphor itself cannot be doing the work because it is being rejected as inadequate. So, conceptual metaphor does not actually seem to be doing most of the important work in conceptual innovation. (221)
Even if we imagine that multiple domains might be mapped onto a single target so that multiple metaphors can imply greater complexity in concert, we are similarly limited to our knowledge of those properties we already attribute to them.

The sophistication of Lakoff’s primary metaphors is also limited by the function of metaphors themselves. Again, according to Vervaeke and Kennedy, metaphors tend to boil down their objects to primitive reductions in each comparison: to say that one thing is like a second thing is to communicate something about that first thing, but not to express it in all its real-world complexity. “Those who argue from analogy often describe the subtle (e.g., politics of crowds) in terms of the simple (e.g., physical masses in an avalanche)” (215). Indeed, abstract and conceptual cognition demonstrate cognitive properties that are not strictly metaphorical in nature:

A bonus of the idea of nonmetaphoric understanding is that it would explain why we find certain statements to be very similar in import even when they are based on very different embodied source domains. For example, we find “I see your point,” “I grasp your point,” and “I understand your point” all very similar although the direct experiences of seeing, grasping, and standing under something are very different. It is as though they have converged on a common meaning. Once again, this is very difficult to explain if the abstract target domain is a blank slate with very little independent cognitive power. However, a premetaphoric concept of understanding explains the aforementioned phenomena very well. (Vervaeke & Kennedy 222-3, italics orig.)

To recuperate conceptual metaphor and to describe the co-activation and change of conceptual domains through time, Fauconnier and Turner’s account of conceptual blending is often deployed alongside Lakoff’s work (Joy & Sherry 265), creating a theoretical matrix that, as

---

125 Green and Vervaeke (1997) also identify major errors in the critique of objectivism underlying Lakoff’s initial project, but I won’t dwell on those here in the interests of relevance and time.

126 Eitan & Granot’s 2006 study of associations to changes in melody and rhythm presents a further challenge to the contingency of Lakoff’s metaphorical reading. According to their analysis: “Opposite ‘directions’ in [musical] space do not present symmetrical contrasts (pitch rise is not the opposite of pitch fall, and crescendo not the opposite of diminuendo), but rather, each stresses different spatial and kinesthetic associations” (238-9).
I mentioned above, has found great favor in performance studies. Cognitive blending proposes that an emergent blend of concepts arises through the cognitive mixing of two or more complex conceptual schema. For example, McConachie proposes that the conventions of traditional staging invite a shifting metaphorical blend as the audience blends their perceptions of the unfolding fiction and reality itself (“Falsifiable” 570), which Oatley would call a “metaphor-in-the-large” (17). Discrete facets of that broader metaphor are also subject to emphatic shifts, as when a Brechtian V-effect brings our perception of the non-fictional actor to the fore (“Falsifiable” 561).

Alongside McConachie’s general account of spectatorship, Lutterbie describes a participatory instance of blending in a theatre workshop. He was asked to imagine the floor as a world map, and then travel to part of the floor that “coincided” with a particular geographical location. According to Lutterbie,

[blending] is not a purely mental operation, but an embodied experience that calls on an awareness of where [one is] in the room, the shape of the floor on which the map is to be projected, and the framing provided by the leaders of the improvisation. (General Theory 174)

He further suggests that besides a metaphorical representation, blended inputs may also inspire metonymic insights (ibid.). Oatley defines metonymic processing as an associative, intuitive principle where broader frames of relevance are evoked (128), and indeed, Lutterbie suggests that standing in the blended space becomes emotionally affective, recalling the emotional charge he associates with the geographic correlate (General Theory 175).

Lutterbie’s account is especially compelling, but while conceptual blending sounds like a good characterization of the problem, it doesn’t explain what is actually happening in any objective light (Vervaeke & Kennedy 227). These “input spaces” and “blended spaces” are themselves abstract metaphors without any clear neurological or phenomenological correlates, and it remains unclear what governs and motivates the admittance and removal of information
from any of these spaces. In an unfortunate irony, despite McConachie’s insistence upon falsifiability in performance studies, conceptual blending seems largely unfalsifiable.

**Alternative metaphors in play**

An enactive framework avoids these pitfalls and respects the integrity of experiences like Lutterbie’s by reframing the question of symbolic detachment, providing an alternative to early conceptual symbolism by foregrounding the sophistication of pre-conceptual sense-making.

Remember that in an enactive framework, perception is disclosed as a phenomenological flow in those terms afforded by our skilled engagement with the world. Perceptual understanding does not require us to piece together each biomechanical gesture or thoughtfully puzzle it out: the action is afforded to us both immanently and intuitively. Similar principles are also at work in childhood play. Di Paolo and colleagues suggest that play begins as the intentional application of perceptual skills to novel circumstance, which thereby enacts a characteristically synergic tension between reality and make-believe:

> When a child skillfully supplements the lack of similarity between a spoon and a car by making the spoon move and sound like a car he has grasped in an embodied manner the extent to which perception can be action-mediated. With his body he can now alter his sense-making activity, both on external objects, as well as his own actions and those of others. He has become a practitioner of enactive re-creation. (40, italics orig.)

Vervaeke and Kennedy do not reject metaphor entirely, but they suggest that an externalized, spatial enactment performs much of the cognitive ‘heavy lifting’ with which Lakoff has burdened his own version conceptual metaphor. A great number of Lakoff’s concepts and metaphors rely upon spatial analogies anyway, including action-directed metaphors (i.e., “kicking” and “biting,” discussed above) and more abstract or extended metaphorical concepts (i.e., relationship-as-journey). Arguably, the spatiality of these metaphors, not their conceptual content, is what allows them to facilitate novel insights. As I discussed regarding epistemic
gestures in chapter 4, converting information to a spatial format displays sets of multi-modal data simultaneously rather than sequentially, meaning that we encounter these metaphorical identities as being richly immanent rather than analogously reductive. The perceiver can compare and identify patterns across an entire cognitive data set, synergistically linking procedural knowledge between domains in an immanent relationship to our current sense-making activities. Relevant and actionable possibilities for response are already “at hand” via type 1 processing (ibid. 223-4).

The spatial enactment of sensorimotor skills in relation to perceptual objects also provides a basis for describing metaphorical synergies that are explicitly preconceptual, which Seitz (2006) calls basic metaphor. For example, in concrete, playful semiosis (e.g., with the spoon-as-car), the simultaneous procedural disclosure of a so-called “object” and “target” juxtaposes their salient properties in an unfolding spatial enactment. The subject does not require any specialized cognitive machinery to enact this basic metaphorical relationship. Rather, remembering chapter 3, he is already able to relate and assess percepts and affects across multiple sensorial modes. These forms of metaphorical play employ relatively simple skill sets that we employ in all sensorimotor behaviour, including bidirectional mapping of action representations and skilled recognition of relevant contingencies. Prior and emergent knowledge become functionally integrated, and in turn inform intuitive sense-making skills like anticipation and inferential simulation (Pitti et al. 153). Their synergic coincidence highlights mutually salient features of each, which constrain and give form to emergent knowledge.

The subject’s comprehension of a thing is no less sophisticated just because it is perceptually immanent: a piece of music, for instance, may “sound sad” by engaging the listener’s embodied, affected sense-making, not because of any reflection it might provoke. Similarly, an observer’s awareness of the spoon-as-car is not deduced from a conscious analysis of the child’s behavior, but is experienced as immanent knowledge – they simultaneously
apprehend both “car-like” and “spoon-like” percepts, and experience a basic metaphor in the novel experience they jointly disclose.\textsuperscript{127}

For the player himself, a skilled manipulation of meaning can cultivate basic metaphors that yield tremendous insightful pleasure through a differentiation and integration of their perceptual qualities, even when conceptual metaphorical counterparts seem nonsensical or uninspiring. A conceptual metaphor relating spoon-as-car, for instance, will likely fall flat: both are “shiny means of conveyance,” but these are hardly salient features of either object, and that rather tenuous linkage fails to afford subsequent insights in the absence of an intervening context. However, a synergic basic metaphor relating spoon-as-car affords unforeseen opportunities for sustained play thanks to newly salient properties of the target: in the hands of a skilled player, the size and lightness of the actual spoon-as-car allows it to traverse the rough terrain of a table-top with impossible agility, to “jump” gaps, or even to “fly.” No wonder that while Barton and Number Eleven theatre’s director, Ker Wells, were debating the thematic implications of a door-frame set piece for \textit{The Prague Visitor}, they were inspired by the cast’s transformational experiments, exploring novel possibilities for how this door might be used and what new identities might emerge from that usage (“Navigating Turbulence” 113).

Distinguishing basic from conceptual metaphor also does away with the need for conceptual blending as an explanatory analogy. Rather, theatre-makers may exploit the unique phenomenologies of both intuitive and analytic sense-making, disclosing multi-dimensional perceptual experiences with emergent cultural significance, no input spaces or intermediary blending required. It recognizes that human interaction is itself “a protean pattern with knowable

\textsuperscript{127} Please note that this account for basic metaphor necessarily bumps up against the recurring ontological challenge of this project, in that it is describing intuition through language that is conceptually available. Consequently, when I describe a spoon, a car, or some other coherent perceptual identity at a level of intuitive affordance, I mean to say that these percepts are learned understandings of the objects based on an appreciation of their actionable properties, which is related to, but not quite the same as, my conceptual knowledge of spoons and cars to which these nouns might otherwise refer.
and unknowable surfaces and angles of familiarity that shapeshift as the interaction unfolds” (De Jaegher & Di Paolo 504), so evolving identities, new rules, and an altered balance of intersubjective coordination are all *de rigueur*. By drawing out new meaning, players disclose a set of novel contingent affordances that act as meaningful constraints to which they submit and, as mentioned above, which ideally afford a coordinated flow of novel insights within and in relation to the play frame. By manipulating their enactment of these constraints, players enact a sophisticated autonomous system of play.

**Enactive play in audience spectatorship**

Admittedly, insights emerging from a basic-level metaphor may be supported by more advanced conceptual skills (Seitz 77), especially as these draw the attention of our type 2 processing. Yet this admission does not obviate the need to account for “preliterate (evolutionary basis), prelinguistic (i.e., early development in children), and extralinguistic (e.g., nonverbal, gestural) bases of metaphorical activity” (88). An exclusively conceptual account cannot explain what Ramachandran means when he suggests that we intuit the richness of meaning in metaphor before we can articulate it (237), but an enactivist understanding of basic metaphor can.

Such ‘intuited richness’ is especially prominent in theatrical performance, where one’s experience of a metaphorically laden “play” may incite visceral responses that belie our conceptual awareness. For example, in 2012, Toronto’s Mirvish Productions hosted a tour of the play *War Horse*, produced by the National Theatre of Great Britain in collaboration with

---

128 This point is originally presented in light of Seitz’s own critique of Lakoff, alongside the insightful observation that so-called “primary” metaphors are never found in the speech or language of young children.

129 Here, I am exploiting a further overlap of meanings in the term, relating one’s observation of creative and spontaneous play with the one’s observation of a scripted “play,” enacted in real time.
Hansspring Puppet Company of South Africa. Recalling Vygotsky’s own playful substitution of sticks for horses, this show features a notoriously affective example of playful sense-making in the animation of a life-sized yet visually unrealistic horse puppet named Joey, which seemed to have been “made from a tangle of wood and screws” (Landau). The Globe and Mail’s Andrew Westoll offered a scathing critique of the script, which “tends towards the sentimental and the unbelievable in equal measure,” but was unabashedly moved by the ensemble’s manipulation of the puppet.

Joey’s three human puppeteers are in plain sight at all times, running alongside or beneath his immense, articulated body. But they imbue every inch of his impressive frame with a body language and vocal register so authentically equine that our disbelief isn’t just suspended in those first few moments, it is rendered moot. From the twitch of the ears to the way they scratch their kneecaps with their muzzles to the rise and fall of their torsos as they labour to catch their breath, the horses in War Horse – made of nothing more than steel, leather and aircraft cabling – don’t just come alive on stage, they come alive in our minds.

The puppeteers’ skillful sense-making facilitates a rich perceptual experience that can be best explained through Stanovich’s two-part model of consciousness. Type 1 intuitive sense-making can entertain simultaneous percepts, including the affordance of a horse and the perception of puppeteers. Type 2 consciousness attends to these phenomena, and Westoll is mindfully aware, for instance, of the fact that Joey is a manipulated puppet. Yet type 1 processing precedes type 2. His conscious knowledge that this order of perceptions is taking place within a play frame does not interrupt his having of the experiences that these puppeteers disclose to him through their own coordinated sense-making.130

A conscious awareness of the play frame also fails to preempt the affective experience of said disclosures, as illustrated by Westoll: “At one part of the story, Joey trots off-stage and straight up my aisle. As he approaches, snorting and clip-clopping, the hairs go up on the back

130 It seems plausible that multifaceted disclosures such as this may account for the phenomenological experience of “conceptual blending” as described by McConachie and Lutterbie. I do not intend to re-invent Fauconnier and Turner’s theory at this time, but for those who wish to do so, this might be a good place to start.
of my neck. His massive frame passes within inches of me, and *although my mind understands there is no animal nearby, my body believes the opposite* (italics mine).” Westoll reaffirms that he is still quite mindful of the puppet as a material object in others’ hands. However, as Westoll’s spatial relationship to the action changes, new features are disclosed and the relevance of these percepts will change accordingly. A burgeoning sense of loudness and mass may become especially salient for this reviewer as he is seated in a darkened auditorium, and the salience of these features qualitatively enhances the relevance he already ascribes to the basic metaphor of puppet-as-horse. “His body” believes it because he intuitively anticipates a participatory embodiment of that belief.\(^{131}\)

**Emergent affects and optimal discrepancy**

Ultimately though, much of the pleasure we derive from watching Joey’s performance does not stem from our intuitive perception of his emergent horse-like identity, but in our experience of the frisson between that and our concurrent awareness of his puppet-ness, which Di Paolo and colleagues call the emotionally positive affects accompanying “a cheating of ‘reality’” (Di Paolo et al. 39). The disclosure of these emergent identities over time permits a sustained process of differentiation and integration, which as Vervaeke and Herrera-Bennet note, yield positive affects and motivate our pursuit of flow experiences. Continually complexifying this ‘horse-play’ by attending to its newly salient aspects both sustains the autopoietic system of play and revitalizes the observer’s affected appreciation of the game/play itself. The pleasure of cheating (or, this sense of complicité) constitutes a meta-level engagement with the game itself arising from the audience member’s participatory sense-making.

\(^{131}\) Truth be told, I had a similar experience when I attended *War Horse*, sitting just a few seats away from that same aisle. It also seemed I wasn’t the only one: a woman sitting on the aisle a few rows behind me got quite tense, and her eyes seemed to be bugging out of her head.
A new study by Cross and colleagues (in press) suggests that this ability to engage with playful, pleasurable distinctions from typical reality monitoring emerges as a further property of our intuitive type 1 processing. As I discussed in the previous chapter, our Action Observation Network tends to distinguish unknown actions from known actions; Jeannerod further suggests that the Action Observation Network demonstrates a linear preference for known actions (103; 135), such that it would activate most strongly when one perceives familiar motion patterns. However, Cross’s fMRI study contradicts this linear model, finding especially strong mirror activity in response to subjects’ observation of unfamiliar robotic dance styles, with weaker responses to a dance adhering to typical biological motion patterns.132 This distinction held true whether the movement sequences were performed by a human dancer, or by a human-shaped Lego figure in stop motion.

Cross reconciles her findings with the earlier literature by suggesting that the AON may demonstrate nonlinear preferences for highly familiar performable actions and for those that are novel and difficult, drawing a U-curve on a graph of neurological activation along an axis from familiarity to novelty (Cross et al IP, 14). But before applying Cross’s findings, I believe it is necessary to further refine this hypothetical U-curve model towards novelty.133 Although it is an upturned curve, suggesting increasingly strong responses as actions that are perceived to be infinitely more novel, her parameters for novelty within the study are actually quite narrowly defined. The robotic movements performed by human figures may be novel, but they are intrinsically possible; while the Lego figure might perform genuinely impossible movements, it is itself a human stand-in, and is performing an identical, actionable choreography. Meanwhile,

132 All observers were non-experts who would be incapable of performing the robotic sequence.
133 I am emphasizing novelty here rather than the perceived difficulty of these movements because I understand it to be more directly related to AON arousal. I suspect that novelty and difficulty are correlated in Cross and colleagues’ analysis largely because unfamiliar patterns of movement are likely unfamiliar in part because of their difficulty, and are only possible thanks to significant effort and skillful extra-daily practice on the part of their performers.
studies lead by both Costantini and Stevens demonstrate that mirror activity is significantly weakened when one observes movements that seem genuinely impossible (cited in Cross et al., “Building” 1258). Somewhere between possible and impossible novel actions, we would expect to see a collapse in the perceiver’s AON activity.

Rather than supposing an either-or proposition of novelty versus familiarity, I propose to extend that graph beyond Cross’s novel patterns and towards extremes of novelty that are no longer recognizable as possible movement. By charting a collapse in AON recognition, such a graph would imply the presence of some range (or ranges) of action perception where a particular range of deviance from the familiar incites a strong autonomic response. Thus, when novel actions are disclosed in a contingent pattern of sense-making that corresponds to a known field of salience, these novelties may be perceived as unfamiliar-yet-attractive.

This represents the flip side of earlier findings by Kagan, who noted that a subject’s physiological response to a given action becomes especially strong when that action is presented in a “surprising” context (Kagan 171). Yet for both Cross and Kagan, the subject perceives a salient discrepancy between the novel and familiar phenomena that are being concurrently enacted. Therefore, I will coin a phrase from Kagan, and propose that where discrepancy is both especially affective and affords sustained sense-making activity, novel play might be thought to exhibit optimal discrepancy.

This range effect is in fact predicted by the processes of differentiation and integration I described in relation to the experience of cognitive synergy. Synergy relies upon a confluence of opposing identities, but their similarities and differences must be suitably balanced for them to afford any significant insights or affective pleasure. If the objects are too similar to begin with (for example, in a bad metaphor like “bees are hornets”), there are few opportunities for novel differentiation (Vervaeke “Three visions”). Conversely, if the relation is too abstract, or lacks the contextual constraint to characterize the relationship (for example, in a bad metaphor like
“arguments are chairs”), then one cannot readily identify those salient features that might be insightfully transferred between them (ibid.). According to Apter, “The contradictions are, as it were, held in place by the similarities so that, to develop this metaphor, something like an electrical potential is set up between the contradictions” (“Metaphor” 61). An optimally discrepant range would thus be especially salient for perceivers, offering both the enhanced attention and arousal that we might expect from experiences of cognitive synergy.¹³⁴

A great benefit to this definition of optimal discrepancy is that it understands the terms of both discrepancy and optimization according to the terms of an evolving, real-time enactment, not simply as the remainder of conceptual subtraction. With Joey the horse, for instance, we experience this discrepancy by negotiating concurrent disclosures of puppetry and horse-ness.

Apart from symbolic play, an experience of optimal discrepancy may similarly underpin our pleasurable, often-visceral response to remarkable physical feats in instances like Cross’s robotic dancing. Both Jeannerod and Donald suggest we identify members of our social group and species through a tacitly learned sense of common biomechanical ability, but in circus performance, the MNS may also mark the transcendence of those tacit commonalities. According to Govan and colleagues:

Circus performers show the margins of the capabilities of the body and this emphasizes the corpus as freakish. This sense of freakishness can include over-extended flexibility, highly developed strength, and extreme balance and coordination. But often the development of these attributes is in a manner that unhinges natural somatic codes. (Govan et al.161-2).

---

¹³⁴ Though published in 1982, Apter’s work may also shed new light on Aziz-Zadeh and Damasio’s 2008 paper noting that overlearned metaphors shed their embodied affects. While similarly admitting that language is inherently metaphorical, Apter suggests that “Language is normally ‘transparent’: one typically ‘sees through it’ rather than being aware of it” and it thus “only becomes part of a synergy when one is conscious of the language itself, so that there is a simultaneous awareness of both the language and what it represents,” as in poetry (64-5). Consequently, “dead metaphors . . . are not synergic, since they are based on a conjunction of opposites which has occurred so often that the individual has become unaware of the opposites involved” (64).
In this “unhinging of codes,” Govan and colleagues may be referring to an implicit processing of agent driven actions where collective identification is troubled, perceiving a tension between embodied understanding and its rupture in virtuosic performance. The thrill of that performance thus arises from an audience member’s embodied awareness of contingent discrepancy, disclosed as an immanent and affective experience.

**Case study: Performative Exercise**

I will now consider the implications of this theory in relation to a performance research project I conducted in spring 2009. In that project, a basic metaphor seemed to hijack and heighten autonomic processing above and beyond “real world” responses. Admittedly, this was not an empirically controlled study, and my discovery lacks both explicative focus and statistical veracity. Extensive refinement would be necessary if I were to choose to revisit this experiment at a later date or apply its so-called “findings.”

Yet whether or not these findings are idiosyncratic, they offer an enticing case study by which to demonstrate the applicability of this framework I have developed.

Performativ Exercise was a performance research project studying exertion in performance, produced through University of Toronto’s Graduate Centre for Study of Drama in spring 2009. Using a hybrid methodology of quantitative measurement and qualitative analysis, a small ensemble and I experimented with various texts, games, and tasks that revealed the

---

135 With sufficient resources, however, future incarnations of this experiment could yield more reliable data. For example, I would suggest concurrently monitoring heart rates for all audience members and performers rather than relying on survey reports alone. By outfitting the audience and actors with earpieces, the experimenter could also control for audio stimuli during the live scene, and may opt to compare a broader range of stimuli, including the metronome itself, a tempo-contingent non-rhythmic stimuli (i.e., a pitch), a non-contingent stimuli, or the live scene alone. Post-show surveys, anonymized and correlated to auditory control by seat number, would better assess the audience’s consciousness of the performer’s performance task, their physiological or emotional affects, and any relevant attitudes towards the violent and erotic elements of the text. Further controls also should be considered to account for the intrusive effects of these testing procedures.
influence of effort and exhaustion on different forms of performance. Excerpts from our process were presented as part of a showcase, *Performance Research at the Centre* (April 2 – 4, 2009). During the presentation, the performers’ effort was demonstrated in a variety of ways, including the live reporting of heart rate measurements.

After the performance, our audience was asked to complete a qualitative survey I designed, informed by Paccalin and Jeannerod’s 2000 study of observer ventilation, which as I have noted, suggested a strong link between physiological affect and the perception of others via covert simulation. Lacking the apparatus to measure these changes directly, I wondered if the audience might be aware of similar responses. The post-show survey asked audience members to identify any point in the performance where they became aware of personal physiological changes, like changing heart rate or ventilation.

The performance was structured as a series of experimental vignettes involving a broad range of exertive activities, including strenuous movement sequences or conversations conducted from a stationary bicycle. An especially affective scene involved a performer, Jessie Fraser, struggling to tear her way out of an ankle-to-shoulder plastic wrap cocoon while speaking a text by Tim Etchels, describing his erratic heart disorder. A video camera and TV screen provided the audience with a close-up view of Jessie’s face as she struggled, and she verbally reported her heart rate at the end of the experiment. Several audience members reported feelings of constriction and an elevated heart rate as a result of this scene, which is an expected result, considering the research I have presented in this document supporting theories of empathetic mirroring and affective contagion. Some members of the audience empathetically oriented to her experience of struggle through emulative mechanisms in the AON.

However, another scene incited more than twice as many reports of accelerated audience heart rate and, surprisingly, it was the one scene in the entire performance that was almost entirely stationary. Two performers sat onstage speaking a text from George F. Walker’s
Zastrozzi. In the play text, the sociopathic Zastrozzi (played by Jonah Hundert), sitting several feet away from the sweet and innocent Julia (played by Mikaela Dyke), claims that he is going to rape her without touching her, then calmly describes a seduction that incites Julia to anxiety and, ultimately, to pleasure. In our experiment, Jonah manipulated a handheld dial-driven metronome onstage, which was amplified by a small portable microphone so that both Mikaela and the audience could hear it. Jonah did not move except to turn the dial and spoke an even, passionless tone throughout, but was invited to manipulate the metronome at will, as if it had the power to control Mikaela’s heart rate. Mikaela also remained seated, but was asked to perform the text while responding as though the metronome dictated her heart rate, and to let that condition inform her performance otherwise.

Mikaela’s performance of this task constitutes a directive of type 2 algorithmic consciousness, oriented to the beat Jonah establishes. That directive in turn is a meta-level constraint on playful sense-making, as she and Jonah enact a basic metaphor allying that rhythm and her heart rate. Mikaela’s participation draws on tacit knowledge of facial expression and vocal strain, applying an implicit awareness of how her expression of anxiety may be graded according to the changing tempo of the rhythmic pulse over time. As expected, there was no evidence that Mikaela’s heart rate was actually manipulated by this play, as our measurements of her heart rate during closed experiments and rehearsals revealed very little change.\textsuperscript{136} The audience was not explicitly informed of the conditions of the actors’ task, and the event was framed according to fairly conventional theatrical cues (lights up on the actors in place, lights out at the end of the scene).

The audience likely perceived Mikaela’s behavioral changes through intuitive, psychophysically empathetic perception and implicitly recognized a contingent relationship between salient changes in her apparent level of arousal and salient changes in the tempo of the

\textsuperscript{136} We did not examine Mikaela’s heart rate during public performances.
metronome. An intuitive awareness of this basic metaphorical contingency would precede a conceptual understanding of the metaphorical projection implied by the actors’ task, though an analytic understanding of the metaphor is not necessary for the audience’s oriented sense-making. If members of this audience had successfully oriented their own sense-making in coordination with Mikaela and Jonah’s, then like Westoll above, we might say they have at least that tacit understanding of the constraints of the game being played. They are “in the moment,” appreciating the play scenario as it unfolds in yet-greater complexity.

Recalling that our perception of others in increasing physiological arousal creates autonomic mirror responses, this then becomes a perception of arousal-in-play. Audience members engaged primarily through type 1 perceptual processing may empathetically “follow” her escalation, especially if that play action is afforded as an optimally discrepant form of novelty, since those individuals may experience it through the enhanced sensitivity of their AONs. As the scene culminates in anxiety and ecstasy, that basic metaphorical percept becomes increasingly relevant, and through cognitive synergy, it facilitates increasing physiological arousal.

My enactive framework suggests that if optimally discrepant instances of play can inspire especially sensitive affective responses, the audience’s strong responses to the scene from Zastrozzi may have arisen because of its so-called artificiality, not despite it. Taken altogether, this case study suggests that an enactive model of playful interaction can provide a robust account for playful, generative, and intuitive cognition in performance, whether between actors or with an audience, in material realism or in metaphorical play.
CONCLUSION

Summary

The core objective of this thesis has been to apply contemporary cognitive research in order to account for how disciplined physical training facilitates intuitively-led creativity in devised theatre. In the pursuit of this objective, I have found it necessary to cast a wider net, modeling consciousness, perception, training, social interaction, and symbolic play, as well as their intersections and emergent implications. Consequently, in my efforts to describe a rich creative practice, I have attempted to establish a solid theoretical foundation that might yet be applied to a broader range of performance phenomena.

My first chapter framed this question in terms of existing literature around intuitive creation, as most psychophysical schools of actor training recognize a correlation between the mastery of technical skill and the facilitation of creative freedom. Since the Canadian field of devised practice demonstrates an eclectic blend of training regimens and creative strategies, I proposed to create a broad-based model that accounts for diverse subjective experiences expressed in idiosyncratic creative contexts. I established a general basis for applying cognitive research to humanities discourse, and problematized Csikzentmihalyi and Sawyers’ theories of creativity, especially in their treatment of creative flow.

My second chapter recognized the utility of phenomenological frameworks in describing an embodied mode of worldly engagement and recommended that its objectives be extended through an enactivist cognitive paradigm (in lieu of a computational model of mind). Enactivism recognizes that cognition is both possible and meaningful because of our dynamic engagement with the physical and cultural world around us, emphasizing our active and intuitive participation in the world in terms of skillful sense-making. Keith Stanovich’s dual-processing model of cognition provided an explanatory bridge between the spontaneous processing that
enactivism describes quite well and so-called “higher” cognitive processes, here distinguished as type 1 and type 2 processing respectively.

Chapter 3 applied the enactive paradigm to consider how individual subjects acquire skills and experiences, expanding upon my model of skilled perception to describe the interplay of type 1 and type 2 processing in implicit and explicit psychophysical learning. Relevance realization was also woven into that model as an emergent process mediating the allocation of cognitive resources, which may impact one’s performance of skilled actions in the flesh or in offline simulations. On the basis of this work, and drawing upon both Zarrilli and Vervaeke, I proposed that mindful training practices may facilitate optimal learning by encouraging the differentiation and integration of new knowledge. As each novel insight affords another in the form of an insight cascade, the subject experiences creative flow.

Chapter 4 broadened the scope of my inquiry to consider social dynamics in both spectatorship and collaborative performance. I explained how the Action Observation Network lets us understand and learn from others’ actions, intentions, affects, and even others’ sense-making-in-process via gesture. This “mindsight” also explains and facilitates the rhythmic coordination of our own sense-making practices. Where patterns of rhythmic coordination are resilient and provisionally stable over time, collective practices may assume emergent identities, affording a habituated style of collective or cultural practice. I then contextualized context-specific (as opposed to generally mindful) group flow as an optimal style of sense-making within that practice.

My final chapter explained how these processes were integral to the creation and elaboration of idiosyncratic frameworks for collective sense-making. This nominally includes new dramaturgies, but is modeled here after Vygotskian play. Through this model, I proposed that collaborators could negotiate novel signs and sign systems at a preconceptual, intuitive level. As a robust alternative to current theories of embodied metaphor and conceptual blending, my
enactive framework was also extended to account for an audience’s appreciation of meaningful play, where affective engagement may be piqued through a dialectic negotiation of type 1 and type 2 cognitive processing.

**Future extensions**

While, I contend, this study has been rigorous, by necessity it has not been exhaustive. Even as I come to its conclusion, the richness of the territory I have surveyed continues to yield exciting possibilities for future analysis. I believe that my ability to point to fertile topics beyond the purview of this document demonstrates my work’s ongoing potential as a foundation for inquiry and illuminates opportunities for further instances where my framework might provide a toehold.

For instance, an extended study might explore further ways in which our intuitive type 1 sense-making is influenced by sign systems. It seems that in addition to affording perceptual and conceptual anticipations, the meaning of cultural artifacts may influence how well we perform particular sense-making strategies. According to Slapien and colleagues (2010), the presence of an incandescent light bulb “facilitates performance on spatial, verbal and mathematical insight problems, but not non-insight problems” (699). Since these results were not replicated when problem-solving tasks were performed under other forms of (equally bright) lighting, it seems that the actual image of the light bulb facilitates an illuminating flash of insight by virtue of its cultural associations. This certainly suggests that cultural literacy has remarkably broad implications for sense-making, even beyond meaningful play.

Another related point of inquiry would be to account for synesthetic phenomena, where cross-modal phenomena are linked across concepts and percepts in consistent, unconventional, non-metaphoric ways. The effects of synesthetic perception can be quite striking, as in the case of synesthetes who perceive numbers as having tastes or colors (even in cases of colorblindness;
see Ramachandran). There is also evidence to suggest that all humans are synesthetically empowered in some ways, and that synesthetic perception can be enhanced in sustained flow experience (Vervaeke, “Chi Without Magic”), making synesthesia yet another perceptual skill that might be at play in devised creation and performance. This may further inform some account for how abstract and characteristically “unperformable” imagery might be used in rehearsal to enact particular styles of affective sense-making.

Although I have already described the interplay of intuitive versus algorithmic and analytic attention, especially through interruptive overrides, a future project might directly describe dramaturgies that don’t foster cohesive sense-making. The sort of psychophysical score that Zarrilli proposes (Psychophysical) suggests that cognition ideally proceeds in a fluid enactive process, but other dramaturgies may insist upon an asynchronous or frustrated coordination with their audiences. Here, we might turn to Barba’s dramaturgy of changing states (“Deep Order” 60) or more topically, to Barton’s account of devised dramaturgy as montage (“Navigating Turbulence” 108), both of which foreground a sophisticated interplay of cohesion and disjoint. These might afford uniquely complex forms of engagement, complicating the audience and performers’ experience of play by disrupting one’s inhabitation of “optimal”

---

137 Here, we might think of booba / kiki word pairings (see Vervaeke, “Chi Without Magic”). The links between the form of language and the form of the shapes themselves aren’t specifically metaphorical, but subjects demonstrate a highly degree of accurate discernment across associative visual and linguistic modalities.

138 For example, Zarrilli often coaches using “activating images” (Psychophysical Acting 89), which can take the form of specific visualization exercises (i.e., “imagine water running from your fingertips”) or cite optimal changes to a student’s mode of perception (i.e., “put your eyes into your lower abdomen”).

139 Especially what Hans Theis-Lehmann has famously dubbed postdramatic texts.

140 See Kevin Brophy’s analysis of Emily Dickenson’s poetry for a thoughtful meditation on the incitement of this experience in poetic reading.
styles or mindsets. My framework can be applied to these interests in its current form,\textsuperscript{141} but eventually these deserve to be treated at a greater length, which exceeds the scope of this project.

Further extensions may also expand upon my account of type 2 conscious processing, especially to describe how language may be used to establish the parameters of our intuitive actions. I believe that John Lutterbie’s analysis of conceptual memory (Towards a General Theory 198) would be a relevant point of contact in that respect, especially considering that Thompson’s Mind in Life inspired Lutterbie’s application of dynamic systems theory to understanding the actor’s process (ibid. 7).\textsuperscript{142} However, as a result of the enactivist foundations of my framework, an equally radical approach to reframing conceptual strategy and thought may first be required.

Applications and conclusion

As with even the most substantial interdisciplinary scholarship on cognition in performance, the ideas and extensions I have outlined in this document are necessarily precarious, open to both empirical and rhetorical scrutiny. Furthermore, owing to the breadth of my analysis, I have undoubtedly placed myself in contact (and even in conflict) with vital disciplinary interests that may have well-founded objections to my work. Nonetheless, I believe that my research has been undertaken with a high degree of rigour and is moored in extensive evidence, so I am confident that it will weather critique over the long term.

This thesis has a definite emphasis on the theoretical, and accordingly, its most immediate benefits are scholastic, especially in the burgeoning discourse around cognition in

\textsuperscript{141} Briefly, such dramaturgies may be characterized in terms of how they afford diverse cognitive strategies, some of which may or may not be autopoetically stable. They exploit the tension between sophisticated complexification that adheres to or tests the constraints of a play frame on the one hand, and strategically collapsing the frame by provoking analytic type 2 override on the other.

\textsuperscript{142} Also see Goktug’s article linking phenomenology, cognition, and complexity theories.
performance. Most obviously, the thesis should foster further conversation owing to its critique of Lakoff, Fauconnier and Turner, whose theories have approached hegemonic acceptance in theatre studies even as they have lost favor in cognitive disciplines. Accordingly, my own document reaffirms Amy Cook’s call for an assiduous interdisciplinary literacy (“Interplay” 580), demonstrating a wider need to question the veracity of scientific theories beyond their explanatory appeal, and to approach the authorial conclusions of primary research with a critical eye to methodology. With that in mind, I believe a lasting contribution of my work is its application of enactivist cognition beyond Zarrilli’s phenomenology. It provides a solid theory of mindful embodiment that, even apart from self-consciously enactive projects, should helpfully complicate our understanding of ideas like skill, affect, memory, and imagination, especially insofar as they are intuited or expressed apart from our explicit volition.

Consequently, I would suggest that the appeal of my scholarship extends beyond cognitive specialists. It describes acting and expression apart from a tacit mind-body dualism: rather than disguise intuition as an impenetrable mystery of either the wild body or the sleepy subconscious, it locates intuitive processes as complex phenomena arising from an active engagement with the world at hand. Indeed, it provides a sophisticated vocabulary that places individual subjectivities in conversation with the enactment of cultural forces at global and local levels. My thesis also illuminates the question of signification in both creation and spectatorship by describing it as a process of meaningful interplay that evokes multiple forms of participatory consciousness through time. I suspect this would particularly complement and extend Yana Meerzon’s semiotic epistemology of theatrical semiospheres (2011), which recognizes a continuity of selfhood across concurrent “spaces” of cognition, sensation and belonging.

While my model can inform others’ understanding of core precepts within our shared discipline, it may even provide an unconventional point of access to non-theatre specialists who might not be otherwise equipped to engage with theatre discourses. Institutional, corporate and
governmental granting bodies, for instance, may not always share our experiential knowledge of the need for training, ensemble development, and time in devising processes, and may struggle to understand how and why a given project might demand an unconventional creative structure. Supplementing our proposals with an empirical backbone (or at least an armored carapace) may afford these funding groups a clearer sense of our values and our processes.

Finally, although this thesis has been written with an academic readership in mind, I wholeheartedly believe that this project has practical applications, and hope to expand upon these in future writing projects. For the actor, it emphasizes that the creative benefits we ally to disciplined psychophysical training are most readily harvested in response to mindful learning: it is not just what we learn, but how we learn it that lets us draw upon our skills in creative work. More broadly, this work also demands a genuine reorientation towards the audience-actor dynamic, positioning the audience as a sense-making collaborator in the performance with whom we might engage on affective, semiotic, analytic and intuitive levels. This recognition could undoubtedly inform future theatrical strategies of self-expression, direction and design.

By clarifying our understanding of what constitutes and affords spontaneous, intuitive performance, we are invited to focus our approach to such work accordingly. Especially in devising, recognizing how and why performance structures can free cognitive resources for intuitive thought may inform the development and deployment of new generative strategies. Furthermore, whether or not this model tacitly privileges any particular set of methodologies, evaluating our practices in light of that model lets us perform a meta-dramaturgical analysis upon current dramaturgical practices. To borrow Barton’s words, this knowledge further equips us all “to question habit, to complicate unreflective expediency, and to dig beneath the surface of unearned presumption” (“Navigating Turbulence” 112). Much like physical training in relation to the actor’s work, this engagement with cognitive theories offers performance theorists creative
freedom through structure, and affords novel possibilities for discursive play across a broader scope of performative human experience.
WORKS CITED


Auslander, Philip. “‘Just Be Yourself’: Logocentricism and difference in performance theory.” Zarilli, Acting (Re)Considered: 53-60.


Bandura, Albert. “Reflexive empathy: On predicting more than has ever been observed.” *Behavioral and Brain Sciences.* 25(1): 2002. 24-5. Online


---. *Physical Training at Odin Teatret 1972.* Perf. Else Marie Laukvik et. al. Odin Teatret Film, 1972. VHS


---. “Preface” McConachie and Hart: ix-xv.


