Scenographic Encounters:  
using cognitive theories to explore 
audience embodiment of performance spaces

by

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Abstract

Neuroscience, philosophies of embodied cognition, architecture theory, performance theories of perceptual oscillation, and other relevant theories are used to analyze how artists create affective scenographic environments, and how attendants (spectators) embody these environments. Attendant perception of a performance environment, according to these theories, can be characterized as *action-oriented embodied cognition* — an attendant perceives through physical action, including action on a neural level. Theories of embodied cognition are applied to case studies — theatre performances — that include examples from the author’s work as a performance-maker and from the work of Societas Rafaello Sanzio, a company that has been instructive to the author’s understanding of the encounter between self and scenography. Theories of neural mapping, neural reuse, James J. Gibson’s theory of surface perception, metaphor theory, conceptual blending, the concept of haptic visual perception, and the physics of auditory perception are employed, in combination with detailed examples from the performances, to explain how an attendant *somatically* makes-sense-of/cognizes that which is encountered. Some common configurations from the history of Western scenography are discussed in order to further elucidate how and why an attendant might use existing cultural and personal image schemas to find meaning in the spatial arrangement of a given performance design. In addition, the performances examined, all of which encourage perceptual instability for the attendant, necessitate rethinking the notion of cognition in performance — not-knowing is as valuable a state as knowing. To this end the theory of neural reuse and philosophies regarding *self-and-other*, where *other* is extended to include nonhuman materialities, are employed in a later chapter to argue for the importance of *non-cognition*, a state of prolonged *unknowing* that
allows for new perceptual insights. Each case study concludes with a set of dramaturgical questions intended to have practical use for performance makers and dramaturges, and analytical use for scholars.
Lay Summary

The dissertation examines how audience members use mind and body, as an integrated unity, to make sense of their surroundings during a theatrical performance. Ferguson, a scholar, performance maker, and co-Artistic Director of the internationally acclaimed performance group Fight With a Stick, explores how artists create spatial compositions in which audience members use their physical memories and neural patterns to enter new perceptual states.
Preface

All research in this dissertation, including methodological structure and practice research, was created and undertaken by the author.
TABLE OF CONTENTS

Abstract.................................................................................................................................................. ii

Lay Summary .......................................................................................................................................... iv

Preface.................................................................................................................................................... v

Table of Contents ................................................................................................................................... vi

List of Figures........................................................................................................................................... ix

Acknowledgements .................................................................................................................................. x

Dedication ............................................................................................................................................... xiii

Chapter 1 Introduction ......................................................................................................................... 1
  1.1 Embodied cognition of scenography ............................................................................................... 1
  1.2 Explaining terms .............................................................................................................................. 4
  1.3 The case studies .............................................................................................................................. 7
  1.4 The chapters ................................................................................................................................... 20

Chapter 2 Practice research and methodology ..................................................................................... 30
  2.1 Practice research ............................................................................................................................. 30
    2.1.1 Rigour and standards ................................................................................................................ 32
    2.1.2 New knowledge vs. trans-disciplinary thinking ..................................................................... 35
    2.1.3 The delusion of objectivity ...................................................................................................... 39
    2.1.4 Instrumentalizing practice research ......................................................................................... 39
    2.1.5 New knowledge and the market paradigm .............................................................................. 41
    2.1.6 Misapplication of the scientific method ................................................................................... 42
    2.1.7 Unpredictability, unrepeatability, and generative dialogue .................................................. 45
    2.1.8 Close and far ............................................................................................................................. 48
    2.1.9 Archive instability .................................................................................................................... 49
    2.1.10 Transmission is transformation ............................................................................................. 56
    2.1.11 Emergent methodology .......................................................................................................... 58
    2.1.12 Inter- and trans-disciplinary thinking, part two .................................................................... 59
    2.1.13 Abstraction vs. the whole ....................................................................................................... 67
  2.2 Methodology ..................................................................................................................................... 69
    2.2.1 Audience reception theory and getting to embodied cognition ................................................. 69
    2.2.2 Theories of the materiality of attendant-performance relationship ....................................... 78
    2.2.3 Architecture and scenographic theory ...................................................................................... 79
    2.2.4 Two and three dimensions — screens on stage ....................................................................... 81
    2.2.5 Synaesthesia, multimodal perception ....................................................................................... 82
    2.2.6 Uncertainty ............................................................................................................................... 84
Chapter 7  Theoretical frameworks: cognition and perception ........................................... 91
3.1  Neural maps and conceptual blending ................................................................. 91
3.2  Feeling space through sensorimotor perception of the surface layout ................. 95
  3.2.1  Gibson’s theory of visual perception ............................................................ 101
3.3  Metaphor theory, memory, and performance conventions .................................. 103
3.4  Simulation, memory, and complex metaphors ..................................................... 112
3.5  Maps of unknowing and embracing uncertainty .................................................. 116

Chapter 4  Making sense of sound in Leaky Heaven Theatre’s To Wear a Heart so White:
  neural maps, ear anatomy, auditory mechanics, memory, neural reuse .......... 122
4.1  The performance composition, genre expectations, sound design ...................... 122
4.2  Synaesthesia and multi-modal mapping ............................................................... 143
4.3  Mechanical and electrical propagation of sound .................................................. 147
4.4  Some dramaturgical questions for the artist and scholar inspired by sound design in
  To Wear a Heart so White ...................................................................................... 155

Chapter 5  The perspective stage and sensorimotor schemas in Steppenwolf .......... 158
5.1  Introduction ............................................................................................................ 158
5.2  The perspective stage and the significance of depth .............................................. 159
5.3  Steppenwolf and the Pacing scene ...................................................................... 163
5.4  Perception of surfaces and Gibson's theory of affordances .................................. 171
5.5  Lateral and rotational movement; the vanishing point ......................................... 178
5.6  Metaphor theory, sensorimotor schemas, and the embodiment of spatial depth ...... 197
5.7  Dramaturgical questions regarding perception, sensorimotor affordance, image
  schemas, and perceptual affect, based on Steppenwolf ........................................... 206

Chapter 6  Conceptual Blending in the Carnival scene from Steppenwolf .............. 211
6.1  Introduction ............................................................................................................ 211
6.2  Carnival scene sources — tableaux vivants and frames ....................................... 214
6.3  The Carnival scene ............................................................................................... 219
6.4  Conceptual Blending ............................................................................................. 222
6.5  Dramaturgical questions and exercises based on conceptual blending, neural
  interference, and attendant oscillation in the Carnival scene ............................. 250

Chapter 7  Affordances, the disruption of pattern completion, and maps of unknowing
in Societas Rafaello Sanzio’s P.#06Paris ............................................................... 254
7.1  Introduction ............................................................................................................ 254
7.2  P. #06 Paris, surface perception, affordances ..................................................... 258
7.3  Perceptual presence, the trauma of astonishment – knowing and not knowing ...... 270
7.4  Dramaturgical questions regarding movement, oscillation, knowing and not
  knowing in relation to P#06. Paris ......................................................................... 294
List of Figures

Figure 1 A projection of an audience ................................................................. 10
Figure 2 From the latter part of der Wink ............................................................ 15
Figure 3 During rehearsal of der Wink ............................................................... 16
Figure 4 After the end of der Wink ..................................................................... 17
Figure 5 A white vinyl cover rises ..................................................................... 164
Figure 6 A few minutes later ............................................................................ 164
Figure 7 Pacing sequence ................................................................................ 166
Figure 8 Laptops ............................................................................................... 180
Figure 9 Statue-like figure ................................................................................ 180
Figure 10 A digital projection .......................................................................... 181
Figure 11 After positioning the house structure ............................................... 182
Figure 12 The Tick Tock Room .......................................................................... 187
Figure 13 Later in the sequence ....................................................................... 187
Figure 14 On the left ......................................................................................... 194
Figure 15 The Carnival scene ........................................................................... 220
Figure 16 The simplest form of an integration network ................................... 224
Figure 17 Basic integration network .................................................................. 230
Figure 18 Three of the mental spaces ............................................................... 231
Figure 19 An integration network with matches and compressions ............... 233
Figure 20 An integration network showing the "emergent structure" ........... 236
Figure 21 The Carnival scene .......................................................................... 238
Figure 22 The horse in P.#6 Paris ..................................................................... 259
Figure 23 The baby in B.#4 Brussels ................................................................. 268
Figure 24 Cars falling in P.#6 Paris .................................................................. 276
Figure 25 Naked woman and furry creatures.................................................... 279
Figure 26 Naked woman without scrim ........................................................... 279
Figure 27 On the Concept of the Face Regarding the Son of God .................. 280
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This has also been a practice research study. This means I have created a number of professional productions with my theatre company Fight With a Stick Performance (formerly Leaky Heaven Theatre). These productions have made up three of the four case studies in this dissertation. They have been made with a number of remarkable artists from theatre, visual arts, contemporary dance, sound arts, and more. My chief collaborator has been Steven Hill, who founded the company in 1999. I started working with Hill in 2013. He was the first theatre artist I worked with who asked the question, “What is theatrical representation?” The question now seems so central I can’t imagine beginning a new creation without asking it and considering its historical and immediate cultural implications. Our process starts there. With Hill I learned to
take nothing for granted and to do nothing simply out of habit. The past four years have been one continuous performance adventure.

My two sons were little kids when I started the MA that led to this PHD. Damon is now nineteen and studying computer game design. Beckett is 15 and trying to figure out high school. We’ve had a lot of interesting discussions over the years. I thank them for that. But most of all I want to thank my indomitable partner Delia Brett — dancer, choreographer, and co-artistic director of MACHiNENOiSY Dance. Her support has never wavered. Not for an instant. I’ve learned from her as a life-partner, and her work as an artist has been an inspiration to me. We have found opportunities to collaborate artistically under her company or mine. The creative and intellectual exchange has been rich. She is in this dissertation in ways I can’t explain. When I look to the work of great artists for inspiration and instruction, hers is among a handful I reference frequently.

A SSHRC Joseph-Armand Bombardier Canada Graduate Scholarship Doctoral Award saw me through the first three years of my studies and I am very grateful. For the first time in my life I knew where my rent cheque was coming from, which is a very comforting feeling. Further support for my fourth year was given in various forms from within my theatre department. The BC Arts Council, a provincial government funding agency I am familiar with from my work as a theatre artist, came to my aid as a scholar through its External Graduate Awards program. I am thankful to all the funding bodies that have supported me.

Finally, it’s only recently that I’ve come to notice a few things I had taken for granted. I grew up in Canada with the privileges an ordinary citizen can come to expect (or at least could have expected until recently; we’ll see what the near future holds in store), including affordable education. Upon receiving my MA, my ex-partner and friend Suzanne Hawkes, mother of
Damon, waxed on about what an accomplishment it was for me, the son of a low-income immigrant family from Greece, to achieve a university diploma. This gave me pause to reflect. The main point of my parents emigrating to Canada in 1959 (Dad) and 1960 (Mom and my older siblings) was to have a better life and to give their children opportunities that, at the time, weren’t readily available to them in Greece. All three of my older siblings dropped out of high school; all three later got their diplomas as adults and went on to post-secondary study. I was the only one who felt entitled enough to pursue exactly what I wanted, first as a visual artist, then as a professional theatre artist (mostly as an actor), and then as a scholar-artist. When I got the MA diploma I didn’t think it was a big deal. Now I’m trying for a PHD. When I think of my still low-income mother (my Dad died over a decade ago), my struggling older sister Georgia, my brother Peter who gets by, and my oldest sister Jenny who has given up so much for her children and who has been the main care-giver for my ailing mother, I feel a certain humility.

I can’t pretend I’ve done this alone. When I look at it from my mother’s perspective, and when I feel how important it is to her, I realize it is in fact a big deal. Something that goes beyond my personal ambitions. I’ve been to places where people feel there is no way up or out. Some of those places are right here in Canada. A lot of them have been south of the border in the USA where education can be prohibitively expensive. My hope is that Canada will continue to be a country that, despite the economic trends of the past few decades, provides opportunity for all, especially education for all, including low-income citizens like me.
Dedication

I dedicate this study to:

1. The great performances I have seen and hope to see.

2. The eradication of income inequality.
Chapter 1: Introduction

1.1 Embodied cognition of scenography

In this dissertation I use concepts from neuroscience, theories of embodied cognition, and related theories to explain how attendants\(^1\) embody scenographic environments. An umbrella term for the theories discussed is embodied cognition. A further refinement of the term would be action-oriented embodied cognition. The implication is that cognition is perceptual action as opposed to passive reception of sensory stimuli. A commonly used term in theatre that describes the latter is “passive spectator.”\(^2\) Much of this dissertation challenges whether a spectator is ever passive.

Putting all of the above together, the intent of the dissertation is to explore the following:

\(^1\) I usually use attendant and attendants in place of spectator and audience for reasons performance theorist and theatre historian Di Benedetto who seems to have coined the usage, gives. He argues that the term spectator privileges the visual and the textual and does not address the greater “physiological” experience of the participant (Di Benedetto “Guiding” 126-27). For him attendant means bringing one’s whole sensory being to the event and implies “presence and participation.” Theatre scholar and performance theorist of sound George Home-Cook uses attendant for similar reasons and because in a study of theatre and aural attention the term spectator would privilege the wrong sense (Home-Cook passim).

\(^2\) Philosopher Jacques Ranciere argues against the premise of the passive spectator in his influential essay “The Emancipated Spectator.” He critiques a number of assumed “equivalences” typically associated with theatre spectatorship including “seeing and passivity” (Ranciere 274). Historically in various theories of theatre and audience one’s distance from and passive observance of the spectacle of performance is equated with a fracturing of self: through the passive act of viewing one is deprived of
agency and “captured by images” (272). The viewing self is divided from the active, participatory self. Modernist and postmodernist antidotes for this fracturing include Brechtian alienation tactics that encourage intellectual engagement and political action through critical distance, and Artaudian immersion in shamanistic ritual performance. A further implication of such active or immersive spectatorship is that it will produce an audience that is socially bonded in a communitarian spirit — a community of shared values and political consensus. Ranciere like theorists of embodied cognition, but in a different register, questions the assertion that passivity implies uncritical submission to the spectacle and that an audience bonded in a communitarian spirit through active participation or immersion is a desired or even possible outcome. He troubles arguments (continuing to this day in theatre and performance studies such as Fischer-Lichte’s *The Transformative Power of Performance* and Lehmann’s *Postdramatic Theatre*) that suggest the antidote to optical self-fracturing of the spectator is a restoration, through the theatre event, of her “self-consciousness and self-activity” (274). For Ranciere, as for cognitive theorists, the “gap between activity and inactivity” is a mere presupposition (277). Distance, he argues, does not automatically imply fractured passivity. In actuality the viewer is actively engaged, making associations with her past experiences and re-making what she views. (This is consistent with my arguments regarding neural simulation and the activation of neural maps — in other words activating memories and contrasting and comparing them with immediate phenomena for the purpose of making sense of these phenomena). Passive spectatorship is not a “natural” consequence of the audience-performance spatial relationship. It is an assumed and sometimes desired attitude. It is a political concept that can cut various ways. An authoritarian and conservative ruling class may prefer a passive audience that does not challenge official discourse. The basic spatial and cultural structure of the theatre can be used to support the status quo. The same structure can be used by other artists and other attendants to challenge official discourse and provide alternative modes of perceptual engagement. Distance between a viewer and what is viewed is not an inherently alienating experience: “Spectatorship is not a passivity that must be turned into activity . . . We
(1) How scenographic environments are embodied by attendants through action-oriented cognition.

(2) How artists create such environments.

I apply the concepts of embodied cognition of scenography to three main case studies from my own practice as a deviser and co-director with both Leaky Heaven Theatre (the opening sequence of *To Wear a Heart so White* — Chapter 4) and Fight With a Stick Performance (the “Pacing” and “Carnival” scenes from *Steppenwolf* — Chapter 5 and 6). In each case study I explain the aesthetic choices made by my co-devisers and me, and how the attendant engages with them bodily. In a fourth case study I describe my experience of encountering the work of director Romeo Castellucci and his company Societas Rafaello Sanzio. Here I put myself in the position of attendant and, in a sense, test my arguments on myself. Although my work is very different from Castellucci’s, he and his company have had a profound impact on my understanding of theatre as an encounter between self and scenography. I have not been interested in imitating his work, and would not have the skill to do so. Rather, I have wanted to become as aware as his company is of all the factors that make up a compelling performance design. The Castellucci case study, Chapter 7, follows the studies of my own work for three reasons: (1) I did not want the earlier case studies to be read through the lens of Castellucci’s work; (2) In the Castellucci chapter I develop the concept of a *map of unknowing* which requires familiarity with theories of embodied cognition (*maps of knowing*) discussed in preceding chapters. Thus the theory of a *map of unknowing* is built upon arguments made in those chapters; (3) I wanted to test my

act and know, as spectators who link what they see with what they have seen and told, done and dreamed” (279).
arguments on myself, and explore the complications and challenges Castellucci’s scenography poses to the issue of embodied cognition.

Finally, in grounding this dissertation in concepts from cognitive neuroscience and related theories of sensorimotor perception (how we perceive possibilities for action), I argue that we come to understand the spatial, aural, and textural characteristics of a performance design through the formation of neural patterns. These formations allow us to embody — make sense of with our bodyminds — such environments. “Meaning” is derived from spatial relationships. However, because I have seen so much performance that disrupts perceptual stability for the purpose of inducing new experiential states, and because, as a theatre artist, I make that kind of performance, I complement/unsettle the neural map of knowing with my concept of a neural map of unknowing. In theorizing a map of unknowing I attempt to describe a perceptual state of uncertainty and wonder. (The chapters on The Pacing Scene from Steppenwolf by my company Fight With a Stick, and P.#06 Paris by Societas Rafaello Sanzio are particularly relevant to this).

The dissertation is thus two-headed: it addresses the attendant’s experience of a performance, while at the same time examining how a group of scenographically-minded performance makers design the experience. Theories of embodied cognition provide explanatory tools.

1.2 Explaining terms

Embodiment and neural patterns

By “embodying” a scenographic environment I mean through seeing, hearing, touching, smelling, and tasting, the attendant activates and modifies her existing neural patterns to engage with phenomena in the world, and that these patterns, unique to each individual, have the structure of the phenomena encountered. To have the structure of what is encountered is to say
that patterns of neurons, also referred to as “neural maps,” fire in the brain in a way that analogically preserves, to a certain extent, the shapes, forms, and spatial relationships of that which is seen, heard, touched, etc. Neural patterns are not representations of experience in the usual way we think of representations. They are the stuff our brains are made of. They are part of our bodies. We are our neural patterns.

*Scenography and embodiment*

For me a scenographic environment can be a theatre stage, auditorium, and everything in it. It can also be a sited performance in which artists provide a conceptual framework that offers the attendant a physical stand-point, or moving-points, in relation to the site. In this dissertation I tend to break things down to the materiality of surfaces and focus on interior theatrical settings. Following James J. Gibson’s theory of visual perception and “affordances” (opportunities to do things), I describe the scenography of the case studies as the arrangement of things (including people) — with an emphasis on the surfaces of things, which is what we primarily encounter. Although I tend to speak of what we encounter as *materialities*, I do not mean to reduce experience to one material (including a human body) bumping up against another. As anthropologist Tim Ingold puts it, we do not see light, but see *through* light; we are infused by the media we live in — air, light, and water (Ingold 10-13). At the same time, these phenomena do have material existence: for example, air has mass and weight and it enters our ears as pressure. This becomes significant when designing a performance space. Artists in theatre arrange things in space. We place one object next to, in front of, behind, above, or below another. We move things around one another; and we change the perception of things through
colour, texture, light, sound, composition, and decomposition. This is fundamental to the way I understand and create scenographic environments.

Embodiment of the “space” of scenography means feeling the distance between yourself and the objects that surround you, the distance between one object and another, and how these distances afford movement as pathways to and around them. For example: you watch the performance area, you see things, and you make sense of the distance to things and the pathways around them by activating sensorimotor neural patterns that allow you to feel distance, narrowness, vastness, and so on. Your own body is the measure. In addition to understanding distance and pathways, you activate “haptic” neural patterns to understand how things feel to touch, even when you are only looking at them. Some of the other factors that contribute to your embodied sense of the performance design are intensity and wavelength of light (these can change the perception of the size, weight, colour, and texture of a surface) and sound (volume and timbre of acoustic and, especially, amplified sound, can change the way you perceive the shape, size, and weight of materials and of the general space around you).

*Embodied mind and scenography*

Thus embodiment means engaging with a scenographic environment by using your whole *bodymind*. According to the logic of embodied cognition there is no other way to do this. It is impossible to engage with your surrounding in a disembodied way. Embodiment theories sourced in this dissertation reject the notion of internal representations of the world. You do not

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Haptic: feeling the things you see with your whole body — a kind of “tactile” vision. See discussions of haptic architecture (Juhani Pallasmaa) and haptic film image (Laura Marks) below.
create representations — “pictures-in-the-head” — of what you encounter, that then mediate reality for you. There is no meaningful separation between body and mind, no Cartesian mind located in a metaphysical location within the brain or in a transcendent realm outside of the body. You encounter the world, including scenography, holistically — as bodymind.

1.3 The case studies

The first three case studies are of work I have made with other devisers. *To Wear a Heart so White* (2014) was made with Leaky Heaven Theatre under the direction of Steven Hill. I was a researcher, scenographic adviser, and performance devisor. The next two were made by Fight With a Stick Performance. I became co-Artistic Director of Leaky Heaven at the time we changed the name of the company to Fight With a Stick. Two of the case studies are from our inaugural show *Steppenwolf* (2015), co-directed by Hill and me, with an interdisciplinary group of devisers, many of whom were involved in the other case study, *To Wear a Heart so White*, under the previous Leaky Heaven name. I have also added commentary regarding *der Wink* (2013), my first show with the company, and *Revolutions* (2016), our latest production. *Revolutions* carried forward many of the principles explored in the previous shows, and did so with many of the same devisers. All of the shows described were approached by the company scenographically. I will explain this in more detail below, but I mean that the devisers, as a group, were first and foremost concerned with the performance environment before other considerations. Philosopher Hans Gumbrecht argues in *Production of Presence: What Meaning Cannot Convey* for the importance of “presence effects,” which can broadly be described as spatial relationships, in the creation of meaning. That which is present to us, he writes, “is in front of us, in reach and tangible for our bodies” (Gumbrecht 17).
further elucidates, “implies that the (spatial) tangibility effect coming from the communication media is subjected, in space, to movements of greater or lesser proximity, and of greater or lesser intensity” (17). “Meaning effects,” thinking-about or interpreting, are never completely forgotten or avoidable, of course. Fight With a Stick oscillates, and sometimes vacillates, between the two effects, but we tend to put our faith in foregrounding presence effects.

The final case study is from Societas Rafaello Sanzio’s P.#06 Paris, and is of interest due to Castellucci’s particular way of exploiting sensorimotor tension through the arrangement of surfaces. It also allows me to use myself as a kind of test subject to further illustrate some of the concepts explored in the dissertation. As I wrote above, I have chosen Castellucci because of the profound impact he has had on my understanding of performance and scenography.

A scenographic approach to devising theatre

To Wear a Heart so White, for which I was scenographic consultant and performer, and Steppenwolf, which I co-directed, are discussed in detail in this dissertation. These shows, as well as der Wink (2013), an earlier Leaky Heaven show that I worked on as a deviser, and my most recent co-directed work Revolutions (2016) were approached by the company scenographically — meaning the devisers’ main concern was with architectural space, audience-performance configuration, and audience immersion in the performance “apparatus,” none of which conformed in an obvious way to traditional theatre models. Traditional spatial configurations informed our staging, as will be discussed Chapters Five and Six, but not in a readily apparent manner.

In each of the shows the audience is situated within the scenography, rather than at a distance from it as in a conventional proscenium theatre. We construct what we call genre-
spaces — spatial configurations that suggest cultural tropes (a church gathering, a campsite, a banquet, etc.) and physical settings (a room, a house), and lend themselves to performance styles (psychological realism, Victorian melodrama, documentary narration, human as puppet), or atmospheres — the way all design elements combine to give the room, at a given moment, a particular feel that is immediately sensed by the attendant. Conventional concerns such as character, story, and dramatic arc either do not come into our considerations or are dealt with in such a way that they serve scenographic concerns first. We do not work with text as a primary organizing principle, although it can be among the organizing principles, as in Steppenwolf in which the performance was sequenced according to the general movements of Herman Hesse’s novel of the same title. Actors tend to be thought of as objects, having equal or lesser status than other objects. Objects tend to be thought of as actants having equal status with actors. Character, when considered, is usually schematized as “type” or as its own locus of scenographic affect. We look equally to objects, sounds, lights, and atmosphere for generative principles.

In To Wear a Heart so White we created one genre space after another around the audience through sound, the introduction of a few objects (a podium, taxidermy, a banquet table, a pig-head carcass), and sometimes of projected video (the fronds of coniferous trees to frame a scene, a projection of an audience looking back at the audience). This was done in order to radically change the feel of each genre space.

4 Jane Bennett, in Vibrant Matter, calls for putting human agency in a more “horizontal” relationship with the nonhuman in order to avoid presuming human mastery and to better understand the limits of our influence on “assemblages” (short or long term coalitions of human and nonhuman actants) small and large.
Figure 1 (Screen shot) A projection of an audience (on the upstage wall of the proscenium stage) looking back at the live audience (not seen in this image) in the main hall. An actor playing Macbeth (me) performs to the audience projection. An actor playing Banquo (Sean Marshall Jr.) carries an uncooked pig’s head on a platter through the main hall where the audience is seated. This moment represents a transition from what we called the Victorian Playhouse space to the Elizabethan Banquet space. (To Wear a Heart so White)

The choice of genre spaces was influenced by my study of the history of Western performance space from ancient Greece to the present, heavily guided by theatre historian David Wiles’ *A Short History of Western Performance Space*, as well as me and my co-director’s interest in confronting our settler-colonist narratives in the province of British Columbia.
In *Steppenwolf* we put the audience between a bank of mirrors and three stage decks. The attendants looked at the mirrors to see the action unfolding behind them. This creative investigation was initiated by Hill’s interest in mirrors and self-reflection, as well as psychoanalyst Jacques Lacan’s theory of the “mirror-stage” of psychological development, in which an individual develops the notion of ego through seeing themselves in a mirror. We then began to explore the way objects can be isolated, revealed, and obscured when looking at them in a mirror. This included investigating how sound can be localized to objects and then expanded to surround the attendant — and what this does to our relationship with the objects when “heard” while observed in a mirror: in what ways does the attendant connect and disconnect sound with object? The novel *Steppenwolf* was later sourced for theme and for text extracts. A guiding principle, throughout all of this, was to treat every element, including human performers, as objects — as materials that can be arranged and composed. Everything — sound, light, spoken words — was treated as a plastic element. We posed questions to ourselves such as, “How do we give spoken words an object-like status?” Texture/timbre and auditory dynamic became more important than narrative or logic. How to make light concrete? How to make sound parcel-like? And so on.

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5 Hill had created a similar set-up for a Leaky Heaven show, *Project X: Faust*, several years earlier. Prior to my becoming co-AD of Fight With a Stick, Hill had been in conversation with the PuSh Festival about remounting the earlier show. Instead, for *Steppenwolf*, we kept the basic audience-mirror configuration and threw out the *Project X: Faust* content.
I have spent many years in theatre (as actor, writer, director, dramaturg, and sometimes as critic), and to an extent in contemporary dance (as an actor-mover, dramaturg, scenographic

6 I graduated from Studio 58, the well-known Theatre Arts Program at Langara College in Vancouver. I was exposed to many actor training methods, from American interpretations of Stanislavsky, to clown, to Grotowski, to Lecoq influenced commedia dell’arte. While I became very good at psychological realism and went on to win Jessie Richardson awards and nominations for some of my professional acting work in that vein, it was the “outside-in” work — connected in different ways to commedia — that had a lasting influence on me (I also received Jessie awards and nominations for my acting work in that vein). There were two teachers who contributed to my interest in form and type. Kathryn Shaw, the Artistic Director of Studio 58, put me through commedia training for the purpose of creating characters for Moliere. Canadian theatre luminary Morris Panych took a somewhat similar approach when he cast me in the title role of Moliere’s one-act, *Sganarelle*. It was at Studio 58 that Panych developed, over a number of productions, and in collaboration with Wendy Gorling, the signature style that led to his famous production of *The Overcoat*. *Sganarelle* was the beginning. On the first day of rehearsal, contrary to the approaches of most directors I had worked with (breaking the script down into beats, determining the character’s super-objective, using techniques for finding emotional “truth,” and so on), Panych had us go to the costume room and pick out funny wigs and garments for ourselves (Interesting side note: Stanislavsky created the characters he played in this manner; he put on wigs and make-up and looked in a mirror). It was through allowing the wig and the garments to effect my movement and attitude that I discovered the physiology of the character. This taught me to regard my body as a plastic element. The focus was not on digging out an interior world of psychological “truth,” but on manipulating the body, including the voice, for effect. Between this type of training and my experiences in contemporary dance (see next footnote) I came to see the body as an object on stage that, like other objects, can be manipulated scenographically for its potential expressivity.
consultant, writer, and critic), and have become dissatisfied with the theatre’s fixation on the human figure as the main carrier of meaning. Connected to this dissatisfaction is a lack of belief in the psychological-realist protagonist as hero, which is still the premise of most conventional theatre. I believe that on some level people look to theatre for moral, ethical, and political instruction, and I am very suspicious of the individual-as-solver-of-problems model of instruction. My engagement with contemporary dance, as both performer and attendant, shifted my way of thinking about the human figure in performance. Often in contemporary dance the performer, while not stripped of recognizable human expression, is treated as a formal element — to a significant extent even in famous expressionist choreography such as that of Pina Bausch. It was in contemporary dance that I first learned to use my body as a scenographic element rather than as a psychologically coherent being exercising personal human will.\(^7\) Castellucci kicked me into a whole other level of understanding. In 2008 I saw Hey Girl! at the PuSh International Performing Arts Festival in Vancouver. There was a central human figure in Hey Girl! but nonhuman elements — dripping latex goop, lasers, perfume, a glass window that seemed to self- 

\(^7\) My early work in dance was as an actor-mover with Vancouver companies DanStaBat, Holy Body Tattoo, Kokoro Dance, and others. I then worked as a dramaturg with several companies, including Kinesis Dance and Shay Kuebler. With Kinesis and MACHiNENOiSY Dance I have worked as a writer-dramaturg and writer-performer, respectively. In recent years I have been invited in as dramaturg and scenographic consultant. At the time of this writing I am working with choreographer Helen Walkley, composer James Maxwell, and dancers Josh Martin and Olivia Schaffer on a work that is driven by a series of letters from Walkley’s family archive, a musical composition that includes a live harp player, and movement improvisation. I am both a dramaturg and performer in this work, but I also draw on my past relationship as librettist on several projects with Maxwell.
shatter, a giant painting — became actants in a way that I had not previously witnessed in theatre. I had experienced something of the sort in sound installations, but seeing this degree of object expressivity in a theatre context was new to me. I have subsequently seen five of Castellucci’s shows live, in Vancouver, LA, Montreal, and Paris, and another fourteen on video. I have seen a show where the culminating action was of gigantic constructed flowers moving across the stage (Purgatorio in 2009) and another where the focus was on moving walls rather than on the performers moving among them (Oedipus in 2015), to offer just two examples.

My first show as a deviser with Leaky Heaven with director Steven Hill was instructive in this way. There were human performers (I was one of them), but the most significant action was that of moving walls made of cardboard. Hill created the scenography of der Wink with architect Jesse Garlick. A grid of eighty chairs was created for the audience to sit on. This was divided into four quadrants of twenty chairs each. Forty 4’ x 8’ walls of cardboard, some with windows cut out of them, were moved constantly to change the architecture of the performance area. By sliding them between attendants, barriers were created and then removed.
Figure 2 (Screen shot) From the latter part of *der Wink*. Some of the 4’ x 8’ walls are still upright. Others have been turned on their sides in preparation for the final sequence. (*der Wink*)

Sometimes “rooms” were made around one or more attendants. The shifting walls at times blocked sight lines and at others produced short or long vistas. An audience member might be framed in a window that was close by or at the other end of the grid. Sometimes one was overwhelmed by light and sound. Most of the rehearsal period was spent choreographing the movement of the walls.
Figure 3 (Screen Shot) During rehearsal of *der Wink*. Director Steven Hill (right top) and architect-set designer Jesse Garlick (bottom right) sit among the arrangement of chairs. (*der Wink*)

As performer-devisers we also created very short, transitory scenes that emerged with the movement of the walls and then melted away. But the central affect of the performance was the choreography of walls.
Thematically the show was concerned with issues of citizenship and mutual responsibility. But the here-and-now of it was the action of attendants observing one another through the maze of an ever-moving scenography of walls.

Through my involvement with contemporary dance, exposure to Castellucci and installation art, and through my work with Steven Hill during the past few years, I have come to appreciate the expressivity of nonhuman elements in theatrical performance. I have consciously raised my awareness of these materials, of their ability to carry meaning, of their behaviour, and of how they can be put into dialogue with one another. Significantly, in the context of this dissertation, I have come to understand how an attendant engages with these materials and with the whole scenographic *assemblage* (to borrow an important term from Deleuze and Guattari that implies various materials, including humans, temporarily combining to create a situation or state-
of-affairs)\textsuperscript{8} as \textit{embodied mind}. Installation art offers an example of how attendants can engage meaningfully with art/performance when there is no human figure to identify with. Installation/sound artist Janet Cardiff describes her installations as “hybrids between theatre, music, and the visual arts” (“Lost in the Memory Palace”). Some of her installations seem to create environments that strongly suggest the invisible presence of a human figure, one the attendant can create for herself in collaboration with Cardiff’s scenography.\textsuperscript{9} In others it is the attendant that is central human figure — you immerse yourself in the installation and become the chief agent. It is through the composition of objects, sound, and light that Cardiff creates her particular affects. Human figures are not essential for creating a theatre performance although they can continue to enrich the experience with their presence. We called \textit{Steppenwolf} a “theatre installation” in order to shift audience expectation away from looking to the human figures on

\textsuperscript{8} The concept of \textit{assemblage} is developed in various parts of Deleuze and Guattari’s \textit{A Thousand Plateaus: Capitalism and Schizophrenia}. The chapter “10,000 BC: The Geology of Morals” is perhaps the most relevant here: “A single assemblage can borrow from different strata, and with a certain amount of apparent disorder,” write the authors as they develop a geological metaphor in which different orders of assemblages which are also called “rhizomes” interact with other orders, creating greater assemblages. These can collectively create particular intensities or directions of force. The parts of an assemblage can work in concert or in conflict, and this will somewhat determine their overall efficacy or type of intensity. The authors continue: “conversely, a stratum or element of a stratum can join others in functioning in a different assemblage” (73). Above I called the description of strata a metaphor but it can also refer to actual geological strata and all the actants and non-actants that make them up.

\textsuperscript{9} Theatre scholar Josette Feral, in her analysis of Cardiff’s work, calls this a “presence effect” (see Feral).
stage as the primary carriers of meaning. People can and do make meaning from nonhuman elements. That is part of the premise of this dissertation — that the attendant is able to embody and have a meaningful encounter with a scenographic environment whether or not it is inhabited by human figures.

I should also add that as part of the creation process Hill and I, together with our collaborators, delve deeply into theory and history. This includes performance theory, philosophy, psychology, the history of theatrical performance, and more. Because we work with artists from other disciplines — architects, video artists, fabric installation artists, choreographers — these artists are relied on to bring new perspectives to the process through their practice and through the theoretical readings they bring to the group. We spend months thinking and theorizing what the performance we are aiming for might be like. We then get into the studio and try things out. Theory meets practice. Practice fails. We go back to theory. We practice. We work with materials. Something sticks. We carry on in this manner. Eventually we face the pressure of putting something before the public. We perform. We end the performance run. We reflect. We theorize some more.

Fight With a Stick’s audience is hybrid. It includes patrons who attend all kinds of theatre, contemporary dance, visual arts, new music, electronic, and electro-acoustic performance, experimental video and film events, and of course partake in all kinds of multi-media and mediatized performances. These are the patrons typically found at festivals like PuSh, FTA, Avignon, and many others. Our show Steppenwolf was featured at PuSh in 2015. While our next show Revolutions was performed in a large warehouse in Vancouver, outside of the festival circuit, the audience composition was much the same. As was clear from the nightly post-show discussions, it included local film makers, art gallery curators, many dance artists,
visual artists, theatre artists, and of course patrons of all of these arts (Leaky Heaven *Talkbacks: Revolutions*). I have attended many such festivals as a patron, journalist, student, and representative of a festival, and seen an amazing variety of work. Every event is scenographic — by which I mean the space has been framed in some way — and often the things in the performance environment have been consciously arranged for aesthetic access. Whether the performance is in a purpose-built venue or is site-specific, the first thing the attendant embodies is the arrangement of things in space — the scenography. It literally contains everything.

1.4 The chapters

“Chapter 2: Practice research and methodology” has two parts. In the first part, “Practice research,” I make an argument for a practice-based research that is led by the creative process, and that allows the form of the research to emerge from that process. I argue that this is reflective of practice, and that it provides insights that are different from more traditional approaches to undertaking a dissertation. Practice research can also have a strong reading-writing component and, I argue, should be rigorous and self-critical. The rigour can take many forms, and assessment of the critical standards of practice-research should be made on a case-by-case basis. I counter recent arguments made by performance theorist Ben Spatz who agitates for a technique-based practice research, in which technique, as he defines it, creates transmissible knowledge outcomes from body to body. He argues that, between embodied practice and documentary sources, there is a reliable “archive” of technique and knowledge, one that endures even over millennia. I counter, with reference to embodied practices in theatre and post-structuralist critiques of archival stability, that reliability of knowledge, embodied or archival, to the extent that Spatz requires, is illusory. I find Spatz’s desire to create a critical standard for
practice research, based on his own technique-as-embodied-transmission model, overly abstracts technique from the performance as a whole, and conflates diverse practices that have little to do with one another. Yoga and martial arts, for example, are made contiguous, as training techniques, with theatre practice. While it is true that theatre artists incorporate such techniques into their training methods, they do so for reasons that usually have little to do with the intent of non-theatre practices. As well, the training methods of theatre are normally intended to assist actors to create theatre performances. Yogis and martial artists do not normally apply acting techniques to develop spiritual, athletic, or martial efficacy. This will be discussed further in Chapter 2. Spatz’s model is also so narrow that it closes down avenues for research, rather than opening them up. In connection to the implicit tendencies of Spatz’s work, I also critique what I consider to be the misapplication of scientific method to arts-based research, troubling the subjective-objective binary that is assumed in the scientific method.

In the second part of the chapter, “Methodology,” I describe in narrative form the process that resulted in both the written part of the dissertation, this document, and the practice part, three mainstage productions: To Wear a Heart so White, Steppenwolf, and Revolutions. I have chosen a narrative style for this because I feel it best reflects the manner in which research questions were formed and pursued, both in the reading-writing process and in the performance creation process. In both parts of the chapter I discuss collaborative, inter- and trans-disciplinary thinking as a key methodology in forming questions and pursuing research, theoretical and practical. This research project has been one of working across disciplines. In the most obvious sense this has meant combining the insights of embodied cognition theories with scenographic practice. It has also meant working with a number of collaborators from various disciplines who also prize transdisciplinary devising.
In “Chapter 3: Theoretical frameworks — perception and cognition,” I summarize key theoretical ideas regarding perception that have informed my research. These include concepts from neuroscience and embodied cognition such as neural maps — visual, auditory, and multisensory — and neural patterning, reuse, and interference. I try to explain, in brief, how these might be applied to an attendant’s embodied perception of a scenographic design.

Cognitive theories related to neuroscientific discoveries, such as metaphor theory and conceptual blending, both of which figure prominently in this dissertation, are discussed. Metaphor theory describes how we make sense of metaphors based on past knowledge of spatial relationships; language is thus an embodied perceptual experience. Conceptual blending offers a schematic model for how we combine different concepts to create novel thought; it is a useful tool for explaining the actual-fictive theatre binary. Sensorimotor perception of spatial affordances is summarized from a number of angles that are relevant, including James J. Gibson’s theory of visual perception and Alva Noë’s theory of perceptual presence; each of these has implications for understanding an attendant’s sensorimotor engagement of a performance environment.

Simulation theory is another way of discussing neural map theory; the subject simulates, on an neuromuscular level, that which she encounters, creating analogic neural patterns that have the structure of the encounter; simulation seems to be based on sensorimotor, or visuomotor perception. Finally, I introduce my concept of the map of unknowing. If cognition is about knowing how do we explain states of unknowing, especially prolonged states? How do we explain what both neural interference theory and performance theories of oscillation describe as an unsettled, in-between state? The map of unknowing becomes a critical concern as the dissertation reaches its conclusion.
In “Chapter 4: Making sense of sound in Leaky Heaven Theatre’s To Wear a Heart so White — neural Maps, ear anatomy, memory, neural reuse,” I discuss aural attention as a whole-body perceptual action. I describe the scenography, with special emphasis on Nancy Tam’s sound design. The design, specifically as it pertains to the opening sequence of To Wear a Heart so White, attempts to destabilize the attendant’s sense of spatial surety or emplacement. I try to explain how an attendant engages with this intent, with support from the science of sound propagation as it is “mechanically” produced in the environment, ear anatomy, the biology of neural processing, and theories of embodied engagement. There are two related types of neural patterning discussed: visual and auditory. Each is a structure that, to a certain extent, has the shape of an experience, visual-spatial or auditory-spatial. These patterns form “coalitions” with other sensory modalities to create the gestalt of an experience. Such neural maps structure memory. We use memory — instantiated neural maps — to make sense of what we see, hear, touch, smell, or taste in the present. Memory is never static. Neural maps are updated with each fresh experience. Memories therefore change with each activation/remembrance. That memories/neural patterns can change speaks to the concept of neural plasticity. Neural plasticity is discussed in terms of neural “reuse,” the theory that neurons not only change the manner in which they connect to other neurons, but can also change function depending on the task at hand. Thus neural activation arises out of moment-to-moment direct and dynamic relationship between self and environment. Embodiment of auditory spatial design arises from active sensorimotor engagement with phenomena.
In “Chapter 5: The perspective stage and sensorimotor schemas in Steppenwolf,” I introduce James J. Gibson’s “ecological”\textsuperscript{10} theory of visual perception, go into the details of sensorimotor access, and begin to develop the notion of the neural \textit{map of unknowing}, an attempt to describe a state of perception that is between cognition and non-cognition (between feeling sure about what you are experiencing and not being sure but remaining in a state of openness). The Pacing scene from \textit{Steppenwolf} was constructed to disrupt cognition. It exploits the attendant’s natural ability to form neural patterns by simultaneously encouraging and disrupting their formation. This is done by confusing the attendant’s perception of two- and three-dimensional surfaces with the use of mirrors, video projection, lighting, and sound, and by conflating digital images with actual objects. By “two- and three-dimensional surfaces” I mean the artists’ arrangement in space of surfaces/things such as curtains, people, flats, etc. These surfaces literally provide obstacles and pathways that are perceived by the attendant as affordances for movement and touch. The composition of the Pacing scene, however, induces doubt as to whether there are actual pathways or whether what the attendant sees is a video projected onto a surface. I attempt to describe the embodied perceptual state that might occur for

\textsuperscript{10} The term, “ecological,” as used by Gibson and ecological psychologists, is not to be confused with the ecology and environmental movements of the last half century. Ecological psychology puts an emphasis on examining human behaviour and perception \textit{in situ} — the human animal in its everyday surroundings — as opposed to in a laboratory. Thus Gibson’s theory of human visual perception is a holistic approach: what we call \textit{seeing}, for example, is a total body experience of a person moving through an environment, and not just a matter of the physics of optics (photons stimulating receptors and triggering chemical reactions in the brain). See Chemero and Gibson.
the attendant by using concepts borrowed from cultural theorist/political philosopher/interdisciplinary artist, Erin Manning, and social theorist/philosopher Brian Massumi, specifically their discussion of neurodiverse and neurotypical perception.

The chapter sources the Italianate perspectival stage as an enduring spatial configuration, one that is exploited by Fight With a Stick in *Steppenwolf*. Theatre historian David Wiles connects this configuration to its roots in neo-platonic thought and traces its development from the 16th to the late 20th centuries. I show how *Steppenwolf* relies on and intensifies the audience’s familiarity with this spatial pattern. I then use Lakoff and Johnson’s metaphor theory to further explain how the attendant embodies the perspectival stage as a container schema. Spatial depth comes to be equated with depth of meaning, with the perspectival vanishing point — the deepest part of the container — taking on sensorimotor and conceptual significance. I describe how the larger movement patterns of the show contribute to how the attendant attributes significance to the visual revelation that occurs at the vanishing point. I also source cultural theorist Laura Marks’ discussion of “optic” and “haptic” visuality to show how both of these modes of seeing — the first providing an object-oriented clarity of vision, the second a textural perception that encourages lingering in uncertainty — assist the artists in developing a spatial progression from the materialistic world of the forestage to increasingly metaphysical world of the inner stage.

Conceptual blending is the key theoretical concept used to examine the Carnival scene in “Chapter 6: Conceptual Blending in the Carnival scene from *Steppenwolf* — integration, oscillation, and imagination.” Linguists/cognitive scientists Gilles Fauconnier and Mark Turner’s theory offers a diagrammatic model that schematizes the way we use prior knowledge — sometimes metaphorical (and therefore based on sensorimotor understanding of spatial relationships), sometimes conceptual, sometimes referencing cultural frameworks — from
different domains of experience and blends them to create new knowledge. With reference to both neural map theory, conceptual blending is used to explain how, in the Carnival scene, we exploited the attendant’s ability to blend her prior understanding of walls, frames, and windows, with a stage construction behind, and, in the mirror, before her that offers only the suggestion of a wall, frame, and window. The blending required of the attendant makes her a fully active participant in the success or failure of the Carnival scene. She must blend window with coat rack, wall with partial wall, and aperture with no-aperture in order to construct the novel blend “I am looking through a window at a Fancy Dress Ball.” She must be able to believe in this blend while not believing in it. In order to do this she must access past sensorimotor knowledge while engaging directly with current material affordances. As with the other case studies, the application of conceptual blending offers a new twist on the traditional theatre dialectic of actual-fictive. Conceptual blending offers a clear model for illustrating how the dialectic works “in the blend” (the novel understanding) without losing touch with the “inputs” that were combined to create the blend. The attendant understands the unity of the blend while also maintaining her understanding of the component parts. Theories of neural reuse are further detailed here to explain how successful, partially successful, and unsuccessful blends are partly the result of the same brain region being used for two tasks at the same time, thus causing interferences and oscillations. The Carnival scene exploits these interferences and oscillations to create its particular perceptual game.

In “Chapter 7: Affordances, the disruption of pattern completion, and maps of unknowing in Societas Rafaello Sanzio’s P.#06 Paris” I take the position of attendant at another artist’s performance. I have selected a work by director Romeo Castellucci due to the influence he has had on my understanding of what theatre is and how scenography works. For me, Castellucci’s
work represents a confluence of many historical precedents in theatre and other artistic disciplines. Societas Rafaello Sanzio’s work can be seen on the one hand as an example of Wagner’s *Gesamtkunstwerk* (total art work), in which a number of disciplines are brought together to create aesthetic unity. On the other hand it disrupts the illusionistic tendencies of *Gesamtkunstwerk*, throwing the patron’s attention back on herself. Certain techniques of Castellucci’s can be traced back to French symbolist theatre, others to Oskar Schlemmer’s Bauhaus stage. There may also be a debt to Gertrude Stein’s concept of the “landscape” performance (a performance in which the scenography allows for a meandering focus or for a focus that goes beyond a central visuality), possibly filtered through the landscape performances of Robert Wilson. The influence of various visual arts practices is also critical, and these include medieval, renaissance, and post-renaissance painting, contemporary installation and performance art, and more. The company’s theoretical and historical interests are vast and deep and have been generative in the creation of their performances, including the eleven-show cycle *Tragedia Endogonidia*, of which *P.#06 Paris* is a part. *Tragedia Endogonidia* attempts to get at the pre-classical origins of Hellenic tragedy through sound, image, the construction of a new alphabet, a blending of performance genres, iconic symbolism, and much more. The eleven shows of the cycle offer many different avenues for scenographic encounter. For the purpose of this dissertation I narrow my focus to just one image of *P.#06 Paris*.

My first encounter with Castellucci’s work was revelatory. Everything shifted for me. Although the work I make is very different from his, and although I do not possess anything near the depth of practice he has acquired over three decades, each performance of his that I see is instructive. He has spurred me on to learn more about lighting, sound design, fabrics, colour theory, architecture, installation and performance art. Indirectly he has set me on this quest to
understand the embodied nature of “spectatorship.” To be fair, I had already been investigating this through my work in documentary theatre, specifically a work I developed and directed in collaboration with Urban Crawl Theatre’s Artistic Director Caleb Johnston, The Philippine Women Center of BC, and the Department of Geography at UBC. For my Masters degree I used our show Nanay: A Testimonial Play (which, since 2009, we have directed in Vancouver, Berlin, and Manila, as well as a staged reading at the University of Edinburgh) to theorize the “embodied document” along the lines of a dialectic I call actual-documentive (Ferguson “Productive Tensions” 15-20). But Castellucci presented me with atypical bodies that made me want to investigate further, and ultimately with nonhuman bodies, including animals, robots, objects, and astonishing set-pieces that I felt required a new accounting of embodiment. In other words, my older interest in actor, script, and movement shifted to an interest in the whole performance design. In making the shift of consciousness to scenography, I had to deal with my ignorance of so many parts of what makes theatre what it is — the various integral disciplines, technologies, and media — and to look at how each of these can be generative and suggest meaning in and of themselves or in collaboration with other elements, as well as in ways that resist making these elements subservient to text-based authorial control. Castellucci’s work does this for me. He brings awareness of the performance design to the foreground.

In the chapter I use concepts that have been developed in earlier sections to examine a section of P.#06 Paris — sensorimotor access (including more from Noë on perceptual presence), Gibson’s theory of affordances (but with new detail on enclosures), and neural mapping. In describing the workings of the performance design on the attendant/myself, I arrive again at the concept of the map of unknowing. I describe the way Castellucci creates a particular type of defamiliarization through the use of animals and children on stage. In this particular case
the animal is made doubly strange by allowing only the back end of it to be seen. I return to a
discussion of two- and three-dimensionality, but this time in regard to Castellucci’s techniques of
putting pictorial representation, including actual paintings, against a three-dimensional stage
volume. I again use Manning and Massumi’s theorizing of neurodiverse embodiment, but also
turn to philosopher Emmanuel Levinas’ idea of the “trauma of astonishment” for further insight
into what might happen for the attendant when she is in a state of unknowing during
performance. In Levinas the encounter with the other displaces one’s subjectivity, leaving one in
a state of enduring openness.

At the end of each chapter I offer a list of dramaturgical questions, based on the case,
studies that I hope will be useful to artists and scholars. For convenience of reference, these are
also collected in the appendix.
Chapter 2: Practice research and methodology

2.1 Practice research

*Practice research*, also known as Practice-as-Research (PaR), studio-led research, arts-based research, and by other names, is a new(ish) type of academic research in the humanities. In the arts it usually means that creating an artwork or undertaking an artistic practice such as acting or dance training constitutes a large part of the research. The proportion of *making* (i.e. creating an artwork) to *observing* (i.e. reading and writing about art works) varies from study to study. This is very similar, if not identical, to what happens in an MFA theatre program. For example, a student director’s production of a play may be the core of the research but will usually include a large writing component. This is why I say practice research is a new(ish) type of research. It has such precedents.

The concept of practice research, often considered a type of research that embraces subjective, tacit, embodied experience as knowledge, is perhaps newer with respect to older degree streams. It is fully accepted in some university departments but contested in others. Issues of contention include the establishment of standards of rigour and methodological criteria. Deeply connected to these issues is the worry among some academics and academies that embodied research is *overly* subjective and lacks objective criticality. These issues will be discussed in detail below. I will attempt to justify practice research generally, and my particular version of it specifically. Ben Spatz, author of *What a Body Can Do*, both a defender and critic of practice research, will figure as a kind of adversary. In fact he borders on becoming my own bête noir. This is because I disagree with almost every aspect of Spatz’s argument, including the advocacy for his own version of practice research — which he posits as a new of standard rigour
in the field — his very generalized critique of practice research as it exists in its multiple forms, and his misunderstanding of what cognitive neuroscience brings to the field of embodied cognition. Spatz’s critique represents a summation of arguments he has been making for some time. It is up-to-date in this respect, and yet seems to me a misguided attempt to introduce what I consider to be the wrong kind of rigour to practice research.

The proportion of making to reading-writing in this dissertation is perhaps an even split between reading and writing about embodied cognition, scenography, and other related topics, and making performances, specifically three major main stage productions, To Wear a Heart so White, Steppenwolf, and Revolutions. Because most of the case studies are of performances I myself have made, in collaboration with other artists, I have been asked to justify my methodology, defend practice research, and contextualize this dissertation within the context of practice research debates. I have attempted to do so in the following sections. I begin with debates regarding practice research and end with a description of my own methodology. I have presented the latter description in narrative form because I feel this best reflects the manner in which the study was undertaken — a journey through several stages of discovery by reading texts, and several through creating performances.

Note: I have used several terms interchangeably. Practice-as-Research has been in currency in recent years, as has studio-led or arts-based research, and I employ all of these. My usual preference, however, has been for the older term practice research as described by Frayling in 1993, which can be summarized as: working with certain materials that might be used in the making of an artwork and reporting on the process (5). This comes close to describing my dissertation. In addition to working with materials and reporting on that work, there is also the major component of reading about theories of embodied cognition and reporting on the readings.
2.1.1 Rigour and standards

Since the early 1990s (see my discussion of Frayling below), the case for practice research in the arts, a type of study in which making art is part of the research, has been promoted or critiqued for various reasons. Much of the discussion has been focused on whether practice-based research is as rigorous as some of the older models it has been compared with, both in terms of methodological criteria and knowledge outcomes. Proponents argue that hands-on “embodied” research is necessary to provide insights that cannot be achieved through traditional “field study” approaches in which an investigator attempts to remain outside, or critically distant from, what he is studying. Critics counter, as Spatz does (discussed at length below), that practice alone does not constitute research: it has to be carefully balanced with objective\textsuperscript{11} rigour achieved through what, for example, Spatz considers reliable \textit{transmission of embodied technique} (a newer concept in practice research) (Spatz 16-18), as well as with traditional archival work. I agree that practice alone — for example, creating a theatre performance — is not sufficient to meet requirements of

\textsuperscript{11} To be fair to Spatz, while arguing for objective rigour he qualifies his demand at several times. For example on page 61 he writes: “Embodied technique is objective in that it can only be developed of the field of what is materially possible for bodies to do; it is relative in that this field is infinitely complex (fractal), and so admits of an infinite number of possible discoveries (Spatz). This part of his argument makes perfect sense to me. But in his conclusion, where he sets out something of a program, he writes: research “methodology is clear and outcomes are transmissible” (242). In this chapter I argue that research can be valid without achieving \textit{bodily transmission of technique}, and that in fact such outcomes are unlikely.
academic rigour. I find it reasonable for an academic institution to demand critical self-reflection and careful framing of a research process, although that framing can be “emergent” — as in emerging from the process of investigation rather than established a priori (I will return to this below). It is reasonable to conclude that if a researcher is not willing to attempt both theoretical and practical rigour when undertaking a study, the academic institution may not the right place for him. However, speaking for myself as an artist-scholar who has undertaken both studio-led and document-led research, has been an observer of studio-led research and an external examiner of such projects, I find many of the charges made against practice research amount to generalities that ignore the heterogeneity of the field and, in doing so, seem willfully blind to the varieties of rigour proposed. It is always possible to find studies that fail to achieve sufficient

12 I was recently external examiner for two MFA thesis defenses in the School for Contemporary arts at Simon Fraser University, once in 2015 and once in 2016.

13 An example of Spatz’s generalizing that is pertinent to this dissertation is his misunderstanding of the variety of approaches to embodied cognition that neuroscience offers. He names some of the same researchers I have sourced, such as George Lakoff, Mark Johnson, Antonio Damasio, and Bruce McConachie (Spatz 24). In an endnote he argues that cognitive studies “attempts to offer closure to the problematic on ‘the problematic of realism’” (Pickering qtd. 67) and that it “emphasizes similarity — between individuals and between cultures — over difference” (67). This is a misunderstanding of the claims of cognitive neuroscience as expressed by the authors mentioned above. Difference is not erased. In fact each individual’s embodied understanding of the world is unique to them and is utterly dependent on their personal history and cultural context. Neural patterning — activating personal neural patterns/memories — is idiosyncratic and culturally specific. As is argued in this dissertation, meaning
rigour, and some in which the investigator resorts to statements such as “practice is its own justification” or “art is too ephemeral to meaningfully document.” But if we look at the best examples rather than the worst, we may find there is both sufficient critical thinking and rigourous application of method.

The criticism that practice research, in general, lacks rigour is not reflective of studies I have personally witnessed or read about. It is reasonable to compare new research methods to established standards in order to re-assess both the old and the new. It is also important to ask if practice research offers kinds of rigour that an academy, due to certain entrenched biases, is unable to recognize. I will try to show, when discussing this point below, that Spatz’s proposed standards to improve what he perceives as lack of rigour do not and cannot meet his own criteria, relying as he does on a belief in the stability of documentary, archeological, and embodied “archives.” Such notions of stability have been shown by structuralist and poststructuralist scholars across the humanities in the past half-century or so, as well as some theorists from the sciences, to be anything but stable. In questioning the stability of these archives I also try to undermine the validity of the subjective-objective binary, arguing that objectivity is simply subjectivity at a distance. I take issue with Spatz in particular because his critique is very recent and, unlike most proponents of embodied research (Spatz is both proponent and critic), he attempts to establish a standard.

making is a very personal thing. I do not delve into greater cultural context here because that is beyond the scope of this study.
2.1.2 New knowledge vs. trans-disciplinary thinking

Studio-led research, to use the term Estelle Barrett and Barbara Bolt favor in their anthology, *Practice as Research: Context, Method, Knowledge*, is a heterogeneous field (Barrett 248). Attempts to reduce this heterogeneity, to standardize and narrowly define practice research, will limit rather than expand knowledge in the academy. To be honest, I find the very idea that a study must produce “concrete,” “transmissible” knowledge, as Spatz puts it (Spatz 16-18), very problematic. This end-game approach fails to reflect how artists create and learn from each other. “New knowledge” and “knowledge outcomes,” as conceived of by critics and even some advocates of practice-led research, are misleading terms, promising more than can be delivered and avoiding the real richness of practice research, which is often not very concrete and which, I believe, is to be found in the artist’s and scholar’s attitude toward a process and in interdisciplinary or transdisciplinary thinking and doing, rather than in transmissible outcomes (I will discuss what I specifically mean by these terms below). There are outcomes, but they are often not easily definable or transmissible, are often unpredictable, and generally not “repeatable” in the way Spatz believes they should be.

“Embodied technique” he writes, “refers to transmissible and repeatable knowledge of relatively reliable possibilities afforded by human embodiment” (16). “Relatively reliable” is a problematic adjective that I will try to unpack for its internal inconsistencies later. It should be noted that Spatz makes a distinction between “practice” and “technique,” conferring the rank of transmissibility to the latter, not the former. His distinction, however, depends, as I have already said, on assuming greater stability to the transmission of embodied technique, over great distances and very long time periods, than is provable or likely. In his analysis of the success or failure of transmissibility during a particular type of yoga training, for example, learning is
reduced to acquiring specific postural technique (88). He finds himself dependent on the classes, unable to zero in on repeatable technique. For this reason he feels the classes ultimately fail. There are, of course, other ways of thinking of yoga beyond the specificity of replicating a posture. Many yoga teachers (I live with a certified yoga instructor who teaches classes at a studio several times a week) argue that the postures do not need to be interpreted so rigidly and that this type of replication can be detrimental to developing one’s practice (in other words these teachers consider the more global notion of practice more important than technique). The difference between practice and technique gets blurry.

Ultimately Spatz’s fixation on repeatable technique blinds him to the greater practice. As an actor who has trained in a variety of acting methods, I find Spatz’s distinction between practice and technique arbitrary. The two can be separated only if one goes to absurd lengths to abstract the one from the other, as Spatz does. I am not sure there is much value in doing so. Abstracting the part from the whole is temporarily useful, but one has to remember that it is part of a whole. I can examine a specific part of a scenographic composition, but if I lose sight of the overall design, I may no longer have a composition. It is important to know that a neural cluster is made up of individual neurons, a neuron being a cell with a nucleus, an axon, a myelin sheath, axon terminals, and so on, but if I lose sight of its connection to brain, body, and environment, I may develop a very mechanistic view of how humans behave. Spatz, I feel, in fixating on technique, loses sight of performance, or at least of professional theatre performance. In fact he argues that the division between everyday lived experience/performance and the kind of performance undertaken by trained actors is a somewhat artificial construct. Practices as varied as martial arts, yoga, and actor training are considered equally: “My examples are drawn from three major areas: physical culture, performing arts, and everyday life. Together these are part of
a larger domain, *embodied practice*” (Spatz 1; italics original). While arguing against
universalizing knowledge practices, he argues for a contiguity among extremely varied physical
“techniques,” hoping to zero in on that which he believes is extractable and repeatable. In
conflating diverse practices — “The technique of dance, acting, martial arts, yoga, and even
everyday life will here be understood as a contiguous field of substantive answers to this
question [What can a body do?]” — he exaggerates similarities and distorts the contextual intent
of different practices. A yoga class is not the same as acting training or a theatre production.
Further to this, he risks de-professionalizing theatre art, as Melrose points out:

> Widespread uses of the term ‘the body’ are problematic in the context of performance-
> making … The use of the term ‘the body’ is a nonsense (*sic*)… because use of that term in
> such contexts tends to objectivise, to generalise, essentialise, anonymise, and
deprofessionalise the input of expert performers … [and] what those who use the term ‘the
> body’ in the context of performing arts are actually dealing with is neither ‘the body’, nor
> ‘a body’, but rather ‘some body observed.’ (Melrose qtd. in Fennemore 33)

In other words, for Spatz’s analysis to work the embodied *technique* of actor training must be
divorced from the context in which such training occurs and for which the training is intended.
Throughout this dissertation I argue for the “ecological” approach that is advocated by Gibson
and others. The human animal must be studied in its “natural” context in order to understand it.
Natural context for an actor means a training environment that is also developing within the
greater context of desiring, and probably achieving, a public performance. Not for Spatz. He
goes so far as to argue that theatre does not need an audience. “What if some of the most
effective political theatre unfolds,” he writes, “like yoga classes, away from the public eye?”
(Spatz 7). I have a very broad mind when it comes to thinking of just about anything as
performance, and even as theatre. But I think Spatz is stretching his argument thin here. If “theatre” still means “viewing place,” and if this implies an audience, then a yoga class, while it may be a performance, is not really theatre. And this is the objection I have to Spatz’s conflation of different lived techniques/practices. On the one hand, in his book he tries to look at technique in the context of personal stories; on the other he cuts right through the contextual differences in these stories by insisting on the common denominator of techniques that are extractable, repeatable, and transmissible. It is upon such abstract logic, and I mean abstract in the literal sense, that he builds his argument for academic standards of rigour in PaR.

Finally, interdisciplinary, an important term I have used above, is worth turning over in detail. I feel interdisciplinarity, as an approach to creating that artists such as my colleagues and I assume, has been misunderstood, poorly applied, and somewhat instrumentalized, not only by Spatz (despite his claims to the contrary), but by those who would attempt to break it down into a cause-and-effect chain that will produce knowledge outcomes. Interdisciplinarity in my view is not just a matter of moving “from one discipline towards another,” and putting two or more “discrete” disciplines next to each other, as Spatz argues — a matter of the coming together of two collaborators each with depth of knowledge in their respective areas. Rather it is a matter of thinking fluidly across disciplines in a dialogic, polyvocal, poly-disciplinary manner. Depth of knowledge in a discrete discipline is very useful. Breadth is even more important. Over the years, as a devising artist working in collaboration with creators from other disciplines, most of whom are also scholars and teachers in post-secondary institutions, it this skill — breadth of thought — that has served me best. The term transdisciplinary perhaps describes the breadth approach more accurately than interdisciplinary, the prefix meaning to cross boundaries or to go beyond
boundaries. In other words, to be in dialogue with boundaries while making them less important. This too will be discussed in more detail below.

2.1.3 The delusion of objectivity

Connected to the issue of rigour is the problem of traditional Enlightenment thinking around the objective-subjective binary. The argument is that a perceptual mode we call objective distance offers truer insights than a perceptual mode we call subjective. Objectivity and subjectivity are, in terms of neuroscience and theories of embodied cognition, false opposites — “mind” is neural activity and neural activity is embodied. The concept of objectivity relies on a Cartesian dualism in which mind is divorced from body and can achieve god-like intellectual clarity. It does so by somehow transcending flesh-and-bone casing and getting free of the distorting influences of the senses (Ladron de Guevara 21-23). “Embodied-mind” theory, on the other hand, argues that mind is body and that out-of-body cognition is unavailable to us. We always engage with our surroundings as “bodyminds” (Lakoff and Johnson Philosophy 3). There is no other way. It is possible, however, to describe objectivity and subjectivity in terms of physical distance and closeness — the proximity of a body (a researcher) to what he studies. Different degrees of proximity can yield different types of truths. There is no hierarchy of truth with distance at the top and immersion at the bottom. Both distance from and immersion in can be useful in practice-led research. I will discuss this further below.

2.1.4 Instrumentalizing practice research

In 2007 Barrett wrote, in defense of practice research, “practice-led research is a new species of research, generative enquiry that draws on subjective, interdisciplinary and emergent
methodologies that have the potential to extend the frontiers of research” (15). Practice research was not quite as new in 2007 as Barrett suggests. Christopher Frayling, in a 1993 paper entitled Research in Art and Design, proposed three models, adapted from the art historian Herbert Read:

1. Research into art and design (historical, aesthetic, theoretical).
2. Research through art and design (working with certain materials that might be used in the making of an artwork and reporting on the process).
3. Research for art and design (in which “thinking is . . . embodied in the artefact”). (5; all italics original)

PaR projects tend to blend all three of these with varying degrees of emphasis. The first two — research into and through art — have long been established, albeit often in departments separated from the mainstream of the academy or in specialized art colleges (4-5). It is the third one, research for art in which “thinking is . . . embodied in the artefact,” that raises questions of rigour and objectivity. For Frayling, research for the making of art is a “thorny” issue because the goal is not “primarily communicable knowledge in the sense of verbal communication” but “visual or iconic or imagistic communication” (5). If I adapt Frayling to scenography I might call the goal spatial and sensory communication. Actually, on further reflection, the second category, “research through art,” due to its inclusion of reporting on a process in the form of a “diary” (5), can also be thorny, particularly when the process reported on is as fluid and has as many moving parts as a theatre devising process. Frayling writes, “it seems to me we have a fascinating dilemma on our hands. As much about autobiography and personal development as communicable knowledge.” The implication is that the “personal development” side is harder to deal with from an institutional point of view (although fields like autobiography theory are now well established): is there rigour, and according to what criteria? And then there is the
“communicable knowledge” part, a concept that seems to have morphed over the years into the more demanding justification of demonstrating “new knowledge outcomes.”

2.1.5 New knowledge and the market paradigm

Both of these issues instrumentalize research through the “knowledge economy” paradigm, in which research has value as a quasi-quantity that can be traded for. In this exchange, the funding agency — the state or private foundation — contributes a fixed sum of money through scholarship or subsidy. In return the researcher produces a quantity of “new knowledge.” The funder then rewards the taxpayer or shareholder with the new knowledge bought. It is best if the new knowledge is quantifiable or concrete in some way. A new medicine is superior in this regard to new philosophical speculations about the human condition, or a theatre department’s judgment as to whether a student has improved as an actor or designer. The consequence of this ideology is more money for demonstrable technological innovations in theatre and less money for innovative thinking regarding, for example, actor training or performer-attendant spatial configurations. For reasons that have to with such logic — “the logic of economic exchange” (Barrett 20), a neoliberal economic ideology based on notions of efficiency and open markets — studies in the humanities have been shoehorned into a neo-industrialist model of production: make a better steam engine so we can have a faster train; make a better micro-chip so we can have better processing speed. In countering this logic, Barrett seeks “appropriate discourses to convince assessors and policy makers that within the context of studio-based research, innovation is derived from methods that cannot always be predetermined, and ‘outcomes’ of artistic research are necessarily unpredictable” (19).
As an instructor of several classes in performance, some history and theory based, some
studio based, I am required by the institutions I work for to list the learning outcomes of each
course. These can be quite extensive. My colleagues and I know these lists are unrealistic and
reductive. We know that most learning outcomes are unpredictable. If, by learning outcomes, we
mean that a student can name dates and performance genres then, yes, some kind of list is
reasonable. But if university learning in the humanities is meant to develop critical, ethical, and
philosophical thinking, then the lists become meaningless. In a typical course, I offer a program
of work — the students tell me what it means to them. Every year I am delighted by the
surprising discoveries the students make and the unexpected insights they offer. I am surprised
that a student who comes in majoring in musical theatre goes on to postgraduate studies in
animation, or that the student who specializes in contemporary dance goes on to a visual arts
college. It can be argued that to specify a learning outcome is to preclude learning.

2.1.6 Misapplication of the scientific method

Hand in hand with the positivist economic model goes the paradigm of the scientific method.
The criteria of producing “new knowledge” and concrete “knowledge outcomes” are based in
part on a scientific research model that presupposes a lack of bias on the part of the researcher,
and that measurable knowledge can be produced. It presupposes that questions asked of a lab
experiment can be arrived at by the scientist through Cartesian disengagement. In such
experiments the hypothesis presupposes the outcome. A lab experiment is undertaken to prove
the hypothesis. As cognitive theorist Anthony Chemero puts it, “we always are bringing a lot of
theoretical baggage into the lab with us” (Campbell “Episode 123” 26).
The transference of scientific method to the arts is an awkward one, in which the artist-scholar pretends the following: If I put thing $X$ into box $Y$, I will get result $Z$; I will then show $Z$ to my fellow artist-scholars and they will be able to replicate my findings. Never mind that there is no control group to make the findings falsifiable; in other words, if I undertake to create a show called *Steppenwolf* with an interdisciplinary group of collaborators, there should be a very similar group of collaborators attempting the same show with the same materials in the same kind of space at the same time in order to compare and contrast the results (this would be the control group), and therefore corroborating or disproving my findings.\footnote{As I write this it occurs to me that it would actually be a lot of fun to try.} Extending this logic to the audience reception side, the two shows would also have to have very similar audiences that would also, despite the dizzying array of responses spectators of the same audience have toward a performance (Leaky Heaven, *Steppenwolf Talkback; Revolutions Talkback*), corroborate or disprove my research questions and conclusions. Finally, any claim I make regarding attendant response should be testable. Through a process of falsifiability — for example a remount or parallel showing of the performance in which it is discovered by other researchers that attendants did not have the response I claimed in my experiment/production — my hypothesis can be disproved.

Applying the scientific method to a research project about embodied cognition of interdisciplinary collaborative performance design seems misplaced. My investigation is very open ended. It looks to neuroscience for models, metaphors, and stories that might describe embodied cognition, but is not a scientific investigation, not even a social science investigation. It is performance theory that starts with the question, “How can I use the stories of neuroscience
to describe embodied cognition of scenographic environments?” “Researchers,” writes Barrett, “are recognizing that scientific enquiry is just one species of research and that ‘research is not merely a species of social science’” (Eisner qtd. 302). Different types of investigation will reveal different truths. Referencing the theoretical physicist Werner Heisenberg, Barrett also notes that, “the knowledge of science is applicable only to limited realms of experience and the scientific method is but a single method for understanding the world” (302). Further, as I argue throughout this and the following section on audience reception data, any method of observation including the scientific method, or methods based on the notion of objective distance, will create truths structured by the method itself: “The notion of scientifically based knowledge as statements of ultimate truth contains an inner contradiction since ‘the employment of this procedure changes and transforms its object’” (Heisenberg qtd. in Barrett 302).

And yet the desire to stabilize and quantify, and to seek objective truth, persists among the more exacting critics of practice research. Where Barrett maintains an open attitude as to what might constitute appropriate performance-research, Spatz attempts to create a fairly restrictive standard. Both agree that arts research must avoid being instrumentalized by the ideology of the market, but neither can avoid talking about new knowledge outcomes: Barrett because she attempts to appease the academy by arguing that practice research in all of its heterogeneity is indeed rigorous (but according to its own standards of rigour), and Spatz because he feels he has found a particular key to rigour that others should emulate — “a durable theory of embodied knowledge that can be applied more broadly” (Spatz 18) and that will meet institutional approval.

I mistrust the idea that a research project must create knowledge that should have theoretical durability (in the sense of creating a new standard), and that should also be
transmissible and repeatable: “Embodied technique” writes Spatz, “. . . refers to transmissible and repeatable knowledge of relatively reliable possibilities afforded by human embodiment” (16). There are fields of research in which such criteria are entirely appropriate. For example, neuroscientific lab experiments, although even here what is considered a statistically significant result does not always amount to, for example, more than 50% probability that a hypothesis is true (depending on the quality of the hypothesis or the nature of the experiment, “probability” can mean less than 10% “chance of real effect”) or the lab experiment replicable. There are many controversies regarding statistical significance, to the point that standards that have been used for decades have been dismissed by many as misleading (Nuzzo 150-52). For my purposes statistical probability is less important than convincing rhetoric, such as a philosophical theory of neuroscience in which the theorist, through consideration of what neurobiologists and cognitive psychologists suggest, tries to explain what the new findings might mean to us in terms of animal-environment interaction.

2.1.7 Unpredictability, unrepeatability, and generative dialogue

While Spatz holds to a newfound model of rigour that attempts to abstract technique from practice, such rigour cannot be achieved without distorting the entangled relationship of technique and practice, and without accepting un-provable embodied and archival lineage of a technique. Furthermore, I have observed during thirty years in theatre and dance that even over relatively short periods of time — months and years — predictability and repeatability are elusive goals. Nor have I found, during any of my postgraduate studies into either documentary theatre, transnational performance festivals, or gentrification of arts-identified neighbourhoods, that adherence to strict epistemological criteria produces the kind of stable new knowledge one
hopes for. In fact, the more restrictive the parameters get, the more a study can lead to false knowledge outcomes. Even in conventional theatre performance, repeatability is an illusion. Anyone who has done eight shows a week at a regional theatre knows, for all the research and training that goes into making such shows, and for all the archival precedents that can be drawn on, no two shows are ever the same; every week some shows are poor; audiences vary from show to show altering the quality of a performance; performers, technicians, and crew come to work in different states of bodymind from day to day, altering the quality of the show; weather, time of year, or the current socio-political situation can all change the feel and the meaning of a show.

Variation and unpredictability become that much more pronounced when working with an interdisciplinary devising situation in an unconventional setting. Often artists working in this area embrace unpredictability and are less insistent, or not insistent at all, about what the show they are making means. In four years of working with my current company, we have tried to imagine the outcome of our experiments while always knowing that the outcome, the show, will be radically different from what we imagined. In fact to make the outcome conform to a hypothesis would be to strangle the creative process and shut off possibility. It has been the same for me as a researcher in the academy, even when writing a thesis driven essay. I start with a hunch, which eventually leads to forming a question or several questions, which get modified along the way, which result in a conclusion that I am forced to write, due to the model, but have no faith in. I have no faith in the conclusion because the very research taught me that there are many possible conclusions, multiple conclusions, or that there are none to be had, although the search taught me something — maybe just about the nature of the search. This does not imply a
lack of critical thinking. Things are considered deeply. Questions are formed; provisional ones that lead to provisional answers.

When I begin a theatre project with my fellow collaborators, we might start with theoretical questions about the nature of representation in theatre, our geographical and historical “moment” in the city, the ethical nature of what we are attempting, the perceptual apparatus we might be creating, the materials we are working with, and so on. A kernel of thought, an impression, a thing said — any of these might spark a stage of creation; impossible to say which. The rigour is in the attitude we bring. We read theory and history, we talk about the work of our contemporaries, about working across disciplines, and we try things with materials. The show that comes out the other end will not be repeatable in a different venue, or even in the same venue at a future date. Not even the artists who make the show can repeat it. As Wiles points out, the idea that a performance has ontological coherence that can be picked up from one location and deposited at another in fact is false (Wiles 1). In a different place and time the performance becomes something else. Other artists will see the work and it will influence them in unpredictable ways. It will influence my next show in unpredictable ways.

While there are few new knowledge outcomes that can be transmitted or repeated, a dialogue can be had. The dialogue itself is generative. It will spark new thoughts that lead to new performance or research projects. The outcome is dialogue. Dialogue leads to new performances. In this dissertation I present coherent theoretical questions, show how theory applies to practice, and how practice modifies theory. The exchange between theory and practice is fluid. Insights are provided based on this exchange. I argue that the artistic creation, influenced by theory, could plausibly have had certain effects on the attendants. I argue that the effects are plausible because of what neuroscience suggests are the ways in which we bodily engage with what we encounter
— in this case a particular performance design. I never argue that all attendants have the experience I suggest they might, or insist on what the experience should mean to them. I offer some responses from attendants (including critics) that describe how each of them engaged with the scenographic aspects of the performance. Put together they represent a variety of experience and generate thinking for future explorations.

2.1.8 Close and far

As a refresher, here is the quote from Barrett again: “Practice-led research is a new species of research, generative enquiry that draws on subjective, interdisciplinary and emergent methodologies that have the potential to extend the frontiers of research.” I would like to unpack it. First: “generative enquiry that draws on subjective” methodologies. Obviously the word subjective is inserted as a response to the concept of objective research. As I wrote above, the first term depends on the idea of being very close to or immersed in a study. The negative implication of this is that the researcher is too close, or that the process of investigation is too personal or biased to achieve the kind of insight only objective research can offer. A further implication is that objective study offers truer insights because the traditional research process gives the researcher not only impersonal distance from a subject, but achieves disembodied insight. As I noted above, according to theories of neuroscience and embodied cognition, disembodied insight is not available to us. In material terms embodied-disembodied is a false binary because mind does not exist outside of body. Mind can be thought of as a bodily process. Of course, in physical terms, there are differences between being close to or far away from something. From the top of a skyscraper you can see traffic patterns, report on them, and present them as distanced “data.” The experience of being in a moving car, on the other hand, is not
available to you from the top of a building. From inside a car you can report on sensations of movement, smell, danger, safety, and so on. This is close-up data. The studio-led part of practice research puts the emphasis on being in the car. Being in the car is crucial to understanding what driving is about. The practice researcher lets this immersive experience structure the research. Any theoretical formulation will come first from practice — driving — rather than from an a priori assumption about driving made from a perch at the top of a skyscraper. Distanced data is also valuable. Both being close up and being far away offer subjective insights.

2.1.9 Archive instability

In his introduction to Archive: Documents in Contemporary Art, art historian Charles Merrewether argues it is especially “in the spheres of art and cultural production that some of the most searching questions have been asked concerning what constitutes an archive and what authority it holds in relation to its subject” (10). Challenges regarding archival authority play themselves out in a battleground over what Foucault calls “discourse.” To speak of a discourse, in this context, is to examine who defines what can be talked about and how. “For Foucault,” writes Merrewether, “the archive governs what is said or unsaid, recorded or unrecorded . . . who determines, and what conditions enable, a history to be written depend upon the definition of the archive” (11). Proponents and critics of practice-led research are also engaged in this battle over legitimate academic discourse. In some institutions proponents have, for now, won the battle. I have taught as a sessional over the past few years at SFU’s School for Contemporary Arts and sat as an external examiner on two MFA projects. During an oral defense challenges are raised regarding rigour and critical self-reflection, but the general concept of practice-led research — an artist-researcher studying work she herself has made — is not in question. In the
theatre department at UBC, where I am undertaking this study, the issue has not yet been settled (perhaps it should never be settled). Therefore I find myself writing this long justification regarding a dissertation that I believe can best be described as practice research. I find myself engaged in an ideological conflict regarding whether one can be objective enough to write critically about one’s own work. The standard I am being held to is largely defined by a discourse around issues of rigour and the pseudo-scientific method I described above. Intertwined with this are arguments over what constitutes a legitimate archive. It is complicated. Spatz and Barrett both challenge tradition by arguing for embodied knowledge and studio-led research as legitimate types of research. Spatz, in fighting for the legitimacy of embodied technique, then attempts to disqualify types of embodied knowledge that do not conform to his criteria. Restrained scholarly language seems to be a veneer for an intense political fight.

Derrida, the poststructuralist philosopher associated with the term “deconstruction” (a term he was uncomfortable with), embarked on a project to aggressively undermine the stability of written documents and, by extension, the documentary archive. He did this partly through dislodging relationships between signifier and signified, and showing that the relationship between the former and latter is always contingent and changing, and that there is no originary etymological foundation to the terms we use, only the free-play of signifiers (Derrida passim).15

15 The very fact that Spatz attempts to stabilize the meaning of “technique” by tying it to the ancient Greek word techne only points out that the meaning of the word has changed, that it is in fact unstable, and that the signifier-signified relationship of technique to whatever it references today is different from what the word techne referenced twenty-five hundred years ago. Spatz acknowledges that the application of the word has changed, and that older meanings are lost in current usage of “technique”
While arguing for the instability of the archive, Derrida acknowledges that whatever is sanctioned as archive — the discourse — becomes an instrument of political power: “There is no political power without control of the archive, if not of memory. Effective democratization can always be measured by this essential criterion: the participation in and the access to the archive, its constitution, and its interpretation” (qtd. in Merrewether 13).

In the twentieth century, photographs became a key part of our historical archive. Photography as archival document is troubled throughout the anthology, *Archive: Documents in Contemporary Art*. Art historian Benjamin Buchloh describes various photographic, collage, and photomontage projects, in the form of *atlases* that attempt to capture “collective social memory.” For example, Aby Warburg’s inter-war (WWI and WWII) *Mnemosyne Atlas* in which the archivist-scholar attempted to collect thousands of clippings, photographs, and other images to draw a history of European art from the past to his present (the 1920s) (Buchloh 87-89). This project and others like it create a selected view of history, a view that is inevitably personal. In choosing what is included, one must also choose what to exclude. This is true of any historical account. Thus photography, as well as any other documentary account, becomes a process of (27-28), and yet he continues to use etymology as stabilizing archival precedence: “As I have argued, art can only be research if it is understood in terms of craft (Latin: *artes*; Greek: *techne*)” (231). Aside from his bald assertion that art must be reduced to craft before it can warrant legitimate study, what I find strange is that while acknowledging the fairly radical difference in meaning over the centuries, and thus providing a clear example of the instability of transmission and archive, he elsewhere (as in the sentence above) insists that embodied technique can be transmitted in a “relatively” stable way over decades, centuries, and millennia.
both “enacting and destroying mnemonic experience” (qtd. in Merrewether 13). To put a neuroscientific spin on this, your latest neural formation slightly or radically remakes the previous formation — a memory. Re-membering is perhaps more an act of dis-membering or over-writing. The act of remembering is also one of erasure. Or, in more concrete terms, the publication of a book on, say, the history of acting methods, will be an act of including this and excluding that. This is inevitable due to the historian’s preferences, biases, and how those are circumscribed further by the current archival discourse. All historiography is revisionist. When Spatz suggests that the diachronic archive is “relatively” reliable, again not only over several years but over decades, centuries, and millennia, he renders the word relative meaningless. Relative to what? I think it is more correct to say that archives are relatively unstable.

Returning to the issue of practice-research in the academy: can embodied practice be considered a legitimate archive, and should it be? Barrett and her co-editor Bolt make the case for what they call “tacit” knowledge, arising from studio-led practice, as an equal partner with “explicit” knowledge, what we might call knowledge that is explicable through the creation of some kind of documentary resource. In fact they question the division between these two terms: “Tacit [knowledge] refers to embodied knowledge or ‘skill’ developed and applied in practice and apprehended intuitively—a process that is readily understood by artistic researchers who recognise that the opposition between explicit and tacit knowledge is a false one” (Barrett 21). If practice is to be accepted as a legitimate part of our cultural discourse and if it is to produce types of archives, what might these look like? Should they look like traditional archives? If not, should we be calling them archives? If not archives, then what? Do studio-led practices have their own logics and should these logics be accepted as academic research? Critics of PaR raise reasonable complaints about terms like “intuitive” and ephemeral, particularly when these are
seemingly used as a way to avoid rigour. At times, however, such terms are hard to avoid. Spatz is unable to avoid them, as in the following example: “The force of their deeply embodied singing transformed the atmosphere . . .” (Spatz 5). Is there rigour in such a statement? By “force” does he mean air pressure, sonic wave, volume, pitch, timbre, or something else? By “transformed the atmosphere” is he talking about molecular change to the droplets in the air or just a feeling he had? Is this rigour? The fact is it just is not possible to break everything down into analyzable techniques that fit tidily into the logics of the scientific model or the market paradigm. Csikszentmihalyi and Robinson, in the preface to a study on the aesthetic experience write, “Methods, representative of the postivistic epistemology of recent years, would attempt to break down . . . experience into its component parts and identify lower-order mechanisms implicated in its occurrence, in order to predict and control . . . behavior” (Csikszentmihalyi and Robinson xiv). Barrett adds, “This notion of intuitive knowledge is closely related to what Bourdieu has theorised as the logic of practice . . . where strategies are not pre-determined, but emerge and operate according to specific demands of action and movement in time” (Barrett 18).

Spatz’s argument for greater academic rigour in practice research makes the very demands Bourdieu cautions against. For example he writes, “A live event, cannot constitute a research outcome, because it is bounded in time and space” (232). By this, Spatz means, that “real” research is conducted through the diachronic archive — documents and digital media collected over time and accessible to the researcher through conventional means, as well as the less “concrete” archive of embodied transmission of technique. I find these “archives” useful but, as I will argue later, not because of their supposed historical veracity, rather because an archive can generate thinking and doing. An archive can be fictional. As long as it is compelling, it can be useful. Spatz’s argument that events bounded by time and space cannot be considered research is
bizarre. First of all because the live event, the thing being studied cannot, according to his logic (“bounded by time and space”), be a legitimate part of research — only the archive can (although he argues otherwise; but see my next point). Second, because it would disqualify everything — all events are bounded by time and space. The writing of this dissertation is bounded by time and space. It has limited duration. As digital media it has even less durability than paper – the software that runs the word processing program will become obsolete, the plastics that preserve and transmit the words will decompose or become inaccessible in the absence of an energy source, and so on. Not to mention that the context in which I am writing these words is situated in time and place. The context (yesterday it was my office, today it is a café) provides both meaning and form. Meaning and form change depending on context. The situation in which the reader engages with these words will be different from the one the words were written in, and reader’s new context will contribute to how he attributes meaning to the words. Eventually an oral defense will be made, changing context and meaning again. What David Wiles observed was true for performances created in a site-specific location and subsequently moved to the studio is also true of the archive — the thing changes. Ontological stability is an illusion. Neural embodied cognition, with its constant updating of memory/neural patterns, also makes this argument.

While ephemerality means both “bounded in space and time,” in the sense that whatever is ephemeral is impermanent, and while performances are in this sense “ephemeral,” they are also made up of materials such as sets, clothing, costumes, people, lighting instruments, and so on. These constitute an “archive” of sorts, one that has as much a claim to transmissibility as, and perhaps has more stability than, the body-to-body transmission Spatz argues for. But how much stability does any of this have? The same materials can be put in another location, even an almost
identical location. They can be moved from one black box to another of the same dimensions and aesthetic design and achieve different results. I am reminded of a 1997 production of *Picasso at the Lapin Agile*, by Steve Martin, in which I played Picasso. It opened at The Grand in London, Ontario, where it was received ecstatically, and closed at the Vancouver Playhouse where it was deemed a failure. There are of course countless examples like this I could point to. Documents such as dissertations are also made up of materials: plastic keyboards, LCD screens, human writers and readers, rooms where reading and writing take place, printers, paper, ink, etc.16 As I have already noted, Spatz argues that the document is “relatively” stable compared to a performance. “Relatively,” however, has a very relative meaning in this context. It can mean “more stable than not,” which does not really mean stable. It can mean “more unstable than stable,” which again means unstable. Steve Martin’s script, *Picasso at the Lapin Agile*, is relatively stable compared to the performance, but what does it tell us about a production of the play? How did the relative stability of the text contribute to a performance that was received so differently from one venue to another, and from one performance to another? In discussing the archive as it relates to the teachings of Stanislavski, Spatz admits to relying heavily on one source (Spatz 5), the memoir of an actor who had been with Stanislavski “for a relatively short time” over seventy years ago (Cushkin 11). Neuroscience reveals the relative instability of memory. A memoir can be a great source of generative thought, but can in no way be considered a stable archive. I will return to this issue of the stability of the archive, and what I think the archive is good for and not good for below.

16 For a clear and eloquent discussion of “distributive agency” and the nature of “assemblages” that addresses this very point, see “Chapter 2” of Jane Bennett’s *Vibrant Matter*. 
2.1.10 Transmission is transformation

In the meantime, I ask what kind of objectivity the archive, as document or digital recording, provides and whether pretending to stability the archive actually provides an example of what Bourdieu calls the “subsuming” of “the alternative logic of practice” to the “logic, knowledge, and cultural capital” of “rationality” — a rationality that “achieves privileged status by appropriating and subsuming” the alternative logic of practice. In the example of practice-based research, a new type of research is introduced into the academy, something that provides insights that traditional research does not. The academy, rather than adjusting by trying to understand the inherent rigour of the new type of research, appropriates and subsumes it, making it conform to the logic of rationality. Rationality here means objectivity. Objectivity, as I have argued, presupposes a lack of bias based on the concept of transcendental mind, and is the binary opposite of subjectivity. I have argued, following various theories of embodied cognition I have found no convincing refutation of, that “objectivity” can only mean greater physical distance. Wherever a body (a researcher-artist) is in relation to what it is studying, however distant from the immersion of subjective closeness, it is still in fact immersed in whatever context, whatever time and place it is in. It is never un-situated, never free from immersion in an environment (a café, an office), never free of socio-political constructs and biases, and never outside of the center of its own sensorium.  

17 Whatever truths the researcher achieves, whether close up or far

17 The body can “recede” perceptually, in that one’s attention can be focused in such a way that only intense physical pleasure or pain brings awareness to the body, but the processes and sensory
away, these truths will be situated, contextual, contingent, and temporary. Rather than being durable, transmissible, and replicable, they will be contingent, unreliable, and transformational.

I use the word *transformational* because, although I agree that “transmission” occurs, that which is transmitted will go through transformation with every transmission. After a number of person-to-person transformational transmissions, some that according to Spatz will continue over centuries and more, what went in some time ago may have little to do with what comes out. What acting technique meant in classical Athens may have little to do with acting technique today.

Spatz, in typical self-contradictory fashion, throughout his book acknowledges the principle of transformation while at the same time arguing for relatively reliable repeatability. His insistence in locating, through analysis, a specific causal moment in which, for example, Stanislavski’s method changes — “If Stanislavsky indeed conducted research into acting, then we should be able to: identify the precise points at which his research branched off from previous technique” (122) — is quickly contradicted when he argues against simple causality — “As Carrick writes, we should avoid ‘investing the system with linear and teleological development’” (124).

I can say, as I reflect on the topic of this dissertation — embodied cognition in an interdisciplinary devised performance environment — that in the process of devising, something gets transmitted between artists, between attendants and artists, between attendants and other attendants, between artist-makers and artist-viewers, and so on. Each transmission is an act of transformation. Even with the most concrete elements — a set piece of a certain dimension placed in front of another set piece of a certain dimension — each individual comes to understand receptors continue to influence thinking, reading, and writing, and these continue to influence bodily processes (Ladron de Geuvara 21-23).
the spatial relationship in a way that is unique to her. It is impossible to predict how an artist or scholar who sees the performance will be influenced by it. As Derrida would argue, there is no absolute, foundational center to the experience. Each decentered subject makes meaning in her own way. The very scenography, with the audience stretched across the space, each attendant occupying a unique location, is in itself un-centered. Transformation cannot be concretized and measured in this context. Closeness and distance are equal qualifications for investigation and are equally immersive (but qualitatively different in unpredictable ways). If the taxpayer wants a measurable product in exchange for her investment she will be disappointed. If she wants to engage in an event, a performance, or a discussion as a curious co-adventurer, she may be delighted with her return.

2.1.11 Emergent methodology

When discussing subjectivity and objectivity in terms of immersion and distance, I have tried to show that both have validity as investigative approaches and that in fact both approaches are contextually bound, situated, and ultimately immersive. Practice research in theatre tilts the emphasis towards closeness. How far a tilt depends on the particular study. From an intimate, hands-on working relationship with materials comes what Barrett calls “emergent methodologies,” the next part of her quote I would like to address.

The particular contours of my dissertation have emerged from years of practice and from particular devising experiments/performances, including *der Wink*, *To Wear a Heart so White*, *Steppenwolf*, and *Revolutions*. The process usually begins with an interest in materials, place, and spatial relationships. I follow hunches, momentary inspirations, suggestions, and so on. Actually this explanation is not adequate because I also work with ideas, old and new, my own
and others’, at times deeply considered theories, and at others sudden impulses. These are also “materials” in the Deleuzian sense of the assemblage: various actants, including physical objects and mental constructs, that work in *confederacy*, as Bennett puts it, to create a situation of limited duration — “an animal-vegetable-mineral sonority cluster with a particular degree of power and duration” (J. Bennett 24). Limited duration can mean millions of years of geological transformation or a few hours in a rehearsal studio. If we expand literary critic Mikhail Bakhtin’s theory of dialogism to include the nonhuman, causality becomes very distributed and very fluid. The “dialogue,” or at least the listening part of the conversation, includes the “voices” of materials such as lighting equipment, a costume, or a cardboard flat. I try to allow other voices in, so to speak, theories or practices that have arisen, influenced the process, and added layers to the investigation.

From this highly collaborative process, in which things, ideas, and devisers from different disciplines come together to work across boundaries, emerge a working method and a show, a research approach and a dissertation.

2.1.12 Inter- and trans-disciplinary thinking, part two

“Interdisciplinary” is one of the terms Barrett puts forward as part of her definition of the “generative enquiry” of studio-led research, another term from her quote would like to discuss. For Spatz, “interdisciplinary” begins with having depth of knowledge in one discipline and possibly developing some level of depth in a second or third (Spatz 229). Two or more researchers, each specialists in their own field, come together to trade information. The process is dialectical and categorical: there’s a clear division between at least two areas of expertise. In Spatz’s version discrete disciplines bump up against each other, each maintaining a level of
authority regarding a particular sphere of knowledge. Each researcher comes to the process as a *knower* who imparts that knowledge. This is what Spatz calls disciplinary “depth,” something he finds lacking in many PaR studies. For example, when critiquing fellow PaR theorist Robin Nelson for her “radically interdisciplinary” approach, one lacking the supposed rigour of the diachronic archive, Spatz writes, “Nelson sees PaR as recent and interdisciplinary, whereas embodied research as defined [by Spatz] is ancient and often disciplinary in form” (229). Spatz insists that “narrowly focused research projects” will “help to establish the validity of an emerging field” (229). I argue, along with Nelson, that it is not as simple as “[moving] from one discipline towards another,” an “engagement with discrete disciplines” (Nelson qtd. in Spatz 229). On the contrary, interdisciplinarity can be and often is an *indiscrete* engagement between *indiscrete* disciplines: there is a blurring between areas of expertise and an acknowledgement of a complex array of causalities (what Jane Bennett calls “distributive agency”) — a shifting and multiple causality that never knows what its effects will be, and can examine the effects only after the fact to get a general sense of possible causes. Spatz, despite invoking Delueze and Guattari early in his book, seems to have failed to grasp the central idea of the assemblage — a temporary formation of energies lacking easily defined causality. In an assemblage many actants temporarily form a contour of “efficacy” (Deleuze and Guattari 60). In embodied interdisciplinary creation, some of the actants or agents (the human ones) are artists; they need not all be in agreement. None of the artists within a group need be masters of a discipline. Rather each is a temporary “force” asserting itself at times and receding at others.

Spatz adds to his argument for discrete and repeatable technique the idea of “contiguity” of varied techniques such as acting, martial arts, and yoga. However, contiguity by definition is not interdisciplinary. It puts one thing next to another, allowing for contact only at the borders. We
might generously call it co-disciplinary, or perhaps juxta-disciplinary, or sequential disciplinarity. Spatz’s lack of understanding of interdisciplinarity as a set of complex interrelations that require fluidity of trans-disciplinary thinking, rather than rigidity of categorical thinking, has put him in error regarding the contiguity of the embodied practices he describes (as I described earlier regarding taking technique out of context). While I value the same historical/diachronic research Spatz privileges, I disagree that it is necessary or relevant to all research projects. Contrary to what Spatz claims, the “synchronic” — the way current practices inform one another — can easily outweigh the diachronic. Take for example Gertrude Stein’s concept of the Landscape play and its influence on theatre artists of the 1960s and 70s. During those decades, Robert Wilson, The Living Theatre, La MaMa, Judson Poets Theatre, The Performance Group, and others claimed lineage to Stein (Lehmann 63). They had little to go on other than Stein’s writing and a few pictures of the landscape opera *Four Saints in Three Acts*. What these companies produced was radically different from that opera. It was only later, when lost film footage emerged, that we could see that what *landscape play* meant in 1934 had little connection to what it meant in 1976, although Stein’s theory of the landscape play was applied to work such as Wilson’s and Philip Glass’s *Einstein on the Beach* (see Fuchs; Verges). Embodied transmission of technique over three decades was not possible in this case. And yet three decades does not seem that long when put against claims of the relative stability of ancient traditions. Stein’s landscape theatre can be connected to Wilson’s landscape theatre, diachronically, but not through the kind of embodied or archival transmission that Spatz believes in. Instead, what gets passed down is a rumour, a vague idea, Stein’s poetry and novels, and other scraps of information. The performance groups working in the New York scene fed off one another *synchronously* more than *diachronically*: “Though historical knowledge is not effaced, my
notion of a practice review focuses on what other practitioners are achieving in synchronous space and time” (Nelson qtd. in Spatz 229).

Spatz’s personal claim of embodied lineage to acting guru Jerzy Grotowski through his own training is similarly problematic. There is a crucial issue he acknowledges in his diachronic construction and then immediately dismisses: Grotowski’s rigorous training methods were not conducted for the purpose of transmission of technique. Quite the opposite. Grotowski made physical training successively more difficult so that it could never be mastered. He felt this would push the actors beyond superficial performances (Mitter 93-98) — “The method we are teaching is not a combination of techniques borrowed from [other] sources . . . We do not want to teach the actor a predetermined set of skills or give him a ‘bag of tricks’” — and into something suffused with that mystifying aura we call presence: “This is a technique of the ‘trance’ and of the integration of all of the actor’s psychic and bodily powers which emerge from the most intimate layers of his being and his instinct, springing forth in a sort of ‘trans-lumination’” (Grotowski Poor 16) — a thing Spatz tries to break into analyzable parts. It did not really matter what the physical technique was. It could be juggling or throwing sticks. It might be some form of yoga. The goal was spiritual and as analyzable as trying to see a ghost on a film negative: “The body vanishes, burns, and the spectator sees only a series of visible impulses” (16). The point of technique in Grotowski, be it rigorous physical training, as in the early years in Poland, or learning traditional songs, as in his last phase in Italy, is to overcome technique. If a technique is employed, it is for the purpose of undoing technique.

Spatz finds this idea, articulated by just about every teacher of acting (something he acknowledges), romantic, excessive, wrong-headed, and ultimately not worth taking seriously. As he points out, many canonized acting teachers, perhaps most of them, express wariness
around codifying a method or predicting outcomes. Grotowski himself was against recording or transcribing his methods: “Grotowski became increasingly wary about providing descriptions of specific physical and vocal exercises,” writes Spatz (114). To this caution Spatz adds a list of other luminaries: “Jacques Lecoq, Monika Pagneux, and Philippe Gaulier ‘would strenuously deny that their teaching practice represents a “method”’ (Hodge qtd. 114), to name a few.

Grotowski felt there was no way, outside of the studio, to represent his teachings. It had to happen in person. Spatz, rather than asking whether there is some validity to the reservations expressed by these teachers, reservations about codifying a practice and turning it into qualitative data, dismisses their concerns as “romantic” (115).  

In my opinion he is right to treat claims of mystical presence with skepticism. And I find no fault in his attempt to discern useful repeatable techniques from their training methods, provided they are investigated within the greater context of a training method. If he is able to

18 I am currently teaching a first year physical theatre training course for actors at the University of the Fraser Valley. One of the books I source is Through the Body: A Practical Guide to Physical Theatre by Dymphna Callery. Callery draws on a variety of training methods from Copeau to Grotowski to Lecoq. Based on her own practical experience she reiterates what she has learned personally and through book study from these other teachers: the training “is not codifiable” (Callery loc. 197). Dick McCaw, the author of the introduction writes, “Exercises aren’t a recipe for success, rather they are open structures by means of which we can make psycho-physical connections within ourselves” (loc. 119). I do not wish to split hairs over terminology, but I think the intent behind these statements, made by so many practitioners who have devoted so much time, in studio, to training is that technique is something of a by-product of practice, and not the other way around. Spatz argues that “embodied practice is structured by technique at every level” (10). These experienced practitioners seem to disagree.
find application for whatever he can uncover, this may lead to interesting further training exercises. My issue is his claim that what he has uncovered or received has diachronic stability and represents a new standard of rigour in performance research. That the authenticity of the training he has prized most, his own, through a Grotowskian lineage of sorts, is so hotly contested among many practitioners and some scholars, gives the lie to his claim of the “relative” stability of the transmission of technique over time.

The diachronic archive is a useful fiction. I intend no sarcasm by this. The archive is always partial, fragmented, and sometimes barely there. It requires an act of imagination to string the bits together as narrative. No two people will string together the same narrative. Therefore, as historians and theorists of historiography tend to point out, our creation of the archive tells us more about ourselves than about the past.19 History is always revisionist. In Chapter 4 I take the research of David Wiles as inspiration for the creative construction of Steppenwolf. Wiles, in his rethinking of the history of Western performance spaces, writes a little differently about theatre history than others do. Is his version the right one? How convincing are the connections he draws from the allegory of Plato’s Cave, written in the 4th century BC, through the invention of the Italianate stage, to the mid-20th century musical theatre production South Pacific? His narrative appeals to me. I am drawn to the way he connects the dots across time. More importantly I find I can use his theories. They have practical application. In a few years we may get a radically different version of how the spatial configuration of the Italianate stage came to be. Wiles’ version, for now, is a useful fiction/history for me. Studies of oral cultures show that even though

19 Historian Hayden White makes this point in Tropics of Discourse. For a discussion related specifically to theatre historiography, see Balme.
members of a social group believe they faithfully transmit their oral story from generation to
generation, field recordings conducted over decades show otherwise (Ong 46-49). A story is
adapted to meet current socio-political expediency. Does this mean the stories aren’t “true”?
Something is transmitted. Someone told someone something and they told someone, and
something the culture considers valuable is passed along. Truth becomes a negotiation, a creative
transformation.

I think there is great value in discipline-specific depth of thinking. I work with lighting,
projection, and sound designers, installation artists, visual artists, and choreographers. Although I
have learned something of what each of them does, I do not possess their technical knowledge or
aesthetic predilections. Most of them do not possess the depth of thought I have put into
scenography, directing, and performing. We educate each other a little more with every project. I
think this is the kind of interdisciplinary collaboration that Spatz describes. As much as I value it,
I also consider it the most basic type. What I value more is what I have been calling trans-
disciplinary thinking. This is where breadth becomes more important than depth: knowing a bit
about many areas, and sometimes next to nothing, but being able to think across disciplines in
collaboration with others.

What I am describing is the opposite of what for Spatz amounts to objective rigour. One of
my areas of disciplinary expertise, in Spatz’s sense, is acting technique. I graduated from three
years of formal training at one of Canada’s top accredited theatre schools, have received several
awards as a professional actor, have been nominated for several more, have received critical
acclaim from reviewers, have performed in everything from large Shakespeare festivals to self-
produced alternative “experimental” (whatever that means) productions, have performed
professionally on film and in radio plays, have studied acting theory and the history of acting
training, have directed shows and taught acting in several universities and colleges, and have often been employed in contemporary dance, variously as a performer, writer, acting coach, and dramaturge. And yet this “expertise” (and to be honest I do not consider myself an expert and do not really agree with the connotations that go with the term) is perhaps less important, in the devising process, than areas in which I have less expertise or no expertise at all. What is important is listening, considering a variety of approaches, blending them in the moment, disregarding what seemed important yesterday or an hour ago, taking on another’s attitude, picking up information on the spot and applying it on the spot, stopping activity to theorize with the group, abandoning theory in order to make something, learning a new skill when something calls for it and forgetting that skill when it gets in the way. This is breadth. This is transdisciplinary thinking.

I also use it in the writing of this dissertation. I am not a neuroscientist, an expert in embodied cognition, a cognitive psychologist, a philosopher, a political-theorist, a scenographer, a historian, or a neurobiologist. And yet I have investigated and borrowed ideas from all of these disciplines to create this dissertation. Prior to this study, I have written, among other topics, on the gentrification of arts-identified neighbourhoods, on the exchange of symbolic capital through international performance festivals, and I have developed a theory of documentary theatre. If I succeed in defending this dissertation I might be called a performance theorist. I think performance theory is an interdisciplinary category in itself. The point is, it is in thinking across the academic disciplines listed above that I have been able to undertake this particular study. I have tried to mine specific theories across these disciplines in such a way that the gestalt of the performance experience does not get lost in depth mining.
2.1.13 Abstraction vs. the whole

In arguing for rigour, Spatz falls into the trap of abstracting an element of practice — for example, a physical training technique from a performance or rehearsal — from its greater context, to the extent that the complexity of interrelated parts that make up a performance or rehearsal gets lost. The abstracted bit obtains the name of rigour, while attempts to wrestle with the complexity of the interdisciplinary whole are dismissed as sloppy and fuzzy, or problematized as events “bounded in time and space.” James J. Gibson’s theory of vision offers a counter-argument to such thinking, one that shows how limiting Spatz’s theory can be. The mechanics of how a photon enters the eye, triggers nerve cells, and stimulates the visual cortex is useful information but should not be confused with the totality of seeing, which is a whole body experience in which eyeballs rotate in a head that swivels on a neck that floats on a body with many moving parts, which in turn interacts with an environment. We learn much by studying optics. We learn just as much by studying a person moving in a context bounded by time and space. In the case of the transmission of embodied knowledge in theatre art, we can isolate parts — how a lighting instrument works, how a fader brings up a light, how a riser is built — but successfully operating a single lighting instrument is not the same as creating a lighting design in collaboration with an existing space and with fellow artists. Except when the lighting instrument itself is foregrounded by the artists, the attendant will engage the performance event as a whole. A neuroscientist can describe the action of a single neuron — a nerve cell — with its nucleus, soma, dendrites, axon hillock, axon, myelin sheath, axon terminals, exchange of chemicals and transference of molecules from one synapse to another. This is useful information. But the efforts of a single neuron do not tell us enough about how we engage with our environments, including scenographic environments. We need to scale things up to the level of bundles of neurons firing
in concert, then up to neuron firing across brain regions, up and down the spine, out to muscles and organs and back. We need to consider how neural maps get formed and reformed. This is where the philosophers of embodied cognition step in and try to offer explanations of how humans and other animals engage with their surroundings in a non-representational manner. The performance theorist then applies this thinking to the embodied production/reception of a performance design. In trying to demonstrate rigour by abstracting technique from performance and demonstrating it in isolation, Spatz loses sight of technique-in-performance. He fails to recognize the validity of the arguments made by the very subjects he studies, Stanislavski and Grotowski among them: that technique cannot in isolation be scaled back up to a performance; it is not a substitute for the complexity of a performance — an actor in a production. In Grotowski’s case it is not even a building block upon which the edifice of a performance can be built — it is an opportunity for exploration and development.

Practice research is indeed a heterogeneous field. Each study should be taken on its own merits. It is not necessary to impose a new one-size fits all version of rigour. Standards of rigour should be applied on a case-by-case basis. Methodology and criteria can emerge from a practice. This is the reverse of what Spatz suggests when he argues that “technique is knowledge that structures practice.” Technique in his framing, comes before practice: “If embodied knowledge is both substantive and diverse, then what kind of research produces it, and how does it move from one body or cultural context to another?” (Spatz 2). This puts concept before action. It is an a priori approach in which research “produces” embodied knowledge. I have no problem beginning with a concept as one way to start a research project. It need not become the standard approach. As Barrett argues, adhering to a theory-practice binary is not representative of all
practice research, nor is it necessarily the most productive, insightful, or even intellectually honest way to proceed.

2.2 Methodology

2.2.1 Audience reception theory and getting to embodied cognition

Much of what I write next regarding my methodology has been implicitly or explicitly stated in the sections above. Here I flesh out some of the points in narrative style. I have chosen this style because I feel it reflects the manner in which this study was undertaken over the years. I begin with a summary of audience reception theory and how this dissertation might be contextualized within this still emerging field. Then I move on to categories of study and practice, presenting them in a somewhat chronological order that reveals something of my progress through theory, history, and practice. I became interested in audience reception theory during my undergraduate studies. As a theatre-maker I felt the need to develop a deeper understanding of the relationship between spectator and performance. Generalities regarding the communal nature of the audience, often repeated among theatre colleagues, seemed not only inadequate but, based on my observations over the years as an actor, writer, and director, and my conversations with fellow spectators, completely false. I examined the semiotic approach to audience reception but quickly became dissatisfied with it due to the limitations of the reader-writer paradigm, in which a spectator treats all performance phenomena as decodable textual signifiers. The semiotic paradigm is a scholarly convenience in which the phenomenal world is colonized by those who read and write for a living, and are able to categorize all relationships according to the logic of
their primary practice — reading and writing. A consequence of this linguistic bias is that it tends to ignore other modes of perceptual engagement. For example a dancer-choreographer might engage with performance primarily through her understanding of kinetic force, gravity, weight, tempo, and so on. Why not make this the primary mode of analyzing performance? A carpenter who spends his time working with wood may perceive the world primarily in terms of textures of smooth and rough, of densities and pliability of wood, of tempo, of force and release of his air-compression nail gun, and of the mathematical equations required to measure the things of his world. In both of the above examples the signifier-signified relationship of semiotic analysis fails to explain much. What does gravity reference? What does the smoothness of wood grain point to? There are many instances in which semiotic analysis provides a useful shorthand. For example, a period costume and wig will likely have symbolic value for anyone familiar with the referenced historical period. But even when the signifier is this explicit, it tends to be in conflict with material factors presented on stage: the particularity of the actor in the costume, the fact that the performance is taking place in the present and nowhere else, and so on.

I had not yet discovered the world of embodied cognition but I seemed to have found an antidote to semiotics in phenomenology. Although I did not immediately become acquainted with Merleau-Ponty’s version of the “lived body,” something that has found its way into my consciousness more recently, the phenomenological concept of intersubjectivity seemed closer to the mark, as it treated art and attendant as deeply intertwined. The concept of intersubjectivity

20 As Conquergood writes, “Subjugated knowledges have been erased because they are illegible; they exist, by and large, as active bodies of meaning, outside of books, eluding the forces of inscription that would make them legible, and thereby legitimate” (146).
renders the idea of performance as an autonomous art object, separate from the viewer, untenable. By the mid-2000s in theatre studies, it was recognized that reception and production are so enmeshed in the performance event that they must be considered as a whole (Balme 34-35). On the other hand phenomenology presented a problem for me because it seemed to produce no “data,” in the sense of spectator testimonials — questionnaires, response-machines, talkbacks, or focus groups. As the reader will be aware of, by now I am skeptical of the insights such data can provide. Attendant responses are so varied they merely confirm that it is hard to characterize a number of spectators as a single group (an audience) having a perceptually consistent experience. But at the time I was seeking something less soloed than what was offered in the forms of the investigation of phenomenology I was exploring (there are many types of phenomenological investigation, from its founder Husserl to recent cognitive theory influence adaptations such as Chemero’s dynamical systems theory).

Bruce McConachie’s 2008 book *Engaging Audiences: A Cognitive Approach to Spectating in the Theatre* provided the opening I was looking for. Neurobiology, neuroscience, and cognitive psychology seemed to go beyond mere speculation and provide scientific evidence of how an attendant embodies a theatre performance. Years later it is the philosophy of embodied cognition and its connection to discoveries in neuroscience that I find most compelling. The scientific data alone is also exciting but like most science it is not always as “scientific” as those of us who are not scientists are led to believe. What I mean is that many of the findings are contested. For example, the existence and function of mirror neurons, nerve cells that are involved in neuromuscular mimicry, a concept that has been taken up by many theatre and dance scholars as a way of explaining how the spectator empathizes with, and embodies the performer,
has by no means achieved consensus among neuroscientists.\textsuperscript{21} As well, in journals of neuroscience, I read about lab experiments in which the researchers consider positive human response of something higher than a few percentage points to a test as significant and sometimes conclusive. I cannot help noticing that if fifteen out of a hundred people confirmed a hypothesis, then eighty-five did not.

What we can say with confidence in neuroscience is that there are things we call neurons (nerve cells) that have a particular and observable structure, that they transfer chemicals (neurotransmitters) and electrical energy to other neurons, that they exist in a variety of forms throughout the brain, spine and other regions of the body, and that with an fMRI scanner, a critical tool for the neuroscientist, colourful images can be produced that represent electro-chemical activity as blood flow in the brain and body. These images are of course digital representations of something that at present, due to limited resolution capacity (we can only see to a certain microscopic level and no further), are still very relatively crude. We do not see individual neuronal activity, only broad patterns of activity (with other instruments we can get down to the single neuron, but these instruments, for obvious ethical reasons, are mostly used on nonhuman animals). It seems that even the concept of discrete brain regions, topographical locations responsible for particular sensory modalities (i.e. the auditory cortex), is being stretched. While the idea of the locational cortex continues to seem valid, it is also understood that sensory modalities can be partly distributed across brain regions; for example, while the auditory cortex still seems to be the major center for auditory neural firing, other regions also seem take part. On the other hand the Human Connectome Project, a consortium of investigators

\textsuperscript{21} See Hickock, \textit{The Myth of Mirror Neurons}. 

72
and institutions attempting to map every neural pathway in the brain, has recently discovered a host of new regions by combining three different types of fMRI brain maps, more than doubling the number previously “proven” to exist. Ninety-seven have been added to eighty-three previously-known brain regions for a total of one-hundred and eighty. It is not hard to imagine, with greater image resolution, that we might discover hundreds more — at which point we should ask whether the idea of a cortical or sub-cortical brain region still applies.

Despite these cautions I continue to find neuroscience useful. As a performance scholar, I often source it for its metaphorical value. I am not a neuroscientist and I do not have the tools to evaluate lab experiments and statistical information, but I find the concept of the neural map a useful one. It offers me a way to understand body to environment coupling and how memory is created and re-created. There is a precision to the concepts that I appreciate. Because the concepts are precise, I become more precise in my thinking. Given the current evidence for neurons, neuronal firing, and neurons firing in “bundles” or in relationship to other bundles, I find the argument for the neuronal “mapping” very plausible. It also offers me ways to think about embodiment that goes beyond traditional notions of spectator-performer identification theories, which are connected to humanistic assertions of communality and universality of values and experience. So the neuroscientific turn, part of the embodiment turn in performance studies, has been productive for me.

Most applications of neuroscientific theory in theatre and dance have focused on spectator-performer cognition — how one body comes to understand another through activation of, for example, mirror-neurons. When I began trying to apply neuroscience to attendant-scenography cognition, there was nothing available that explicitly addressed my interest. To my knowledge there still is not. For this reason I turned to architectural theories, theories of scenography and
“performance design,” and to Gibson’s ecological theory of visual perception to try to build several hypotheses as to how someone makes sense of spatial and textural elements in performance. Gibson has been a major reference for theorists of embodied cognition for some time. Very recently a book on architecture and neuroscience, *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design*, has been published, co-edited by one of the world’s eminent architects and art theorists, Juhani Pallasmaa, and this has begun to open up areas specific to how a body interacts with architectural (and by extension, for me, scenographic) space. I have put these ideas in conversation with scenographic theory and history, theories of neural maps, and metaphor theory grounded in both cognitive neuroscience and cognitive psychology, in order to develop my own theories and practices.

During my studies I initially intended to provide concrete data, through depth interviews and questionnaires. Very little of this currently exists in audience reception theories. One of the best-known reception studies is Susan Bennett’s *Theatre Audiences*. It provides no audience data. A more recent work by Peter Eversmann, based on psychologist Mihaly Csikszentmihalyi’s Flow Theory, includes interviews with about one hundred undergraduate students and about twenty-five theatre administrators. The responses are varied, and given the demographic, they perhaps tell us more about undergraduate student audiences in Holland than they do about typical theatre-goers, which tend to be, on average, older than an undergraduate student. Radbourne et al.’s *The Audience Experience: A Critical Analysis of Audiences in the Performing Arts* (2013), is concerned with identifying ways of “enhancing” the audience “experience” and “proposing a tool for measuring audience engagement” (12). As an artistic director of a theatre company, I appreciate the authors’ desire “to identify the qualities that build creative engagement, self-expression, self-actualization, and loyalty among attenders” (12). I am interested in particular in
the spectator’s “engagement” and “loyalty.” These are things we try to foster at Fight With a Stick through our post-show discussions, salon series, and film nights. However, our main concern is not with marketing; it is with making art. We do not tailor our work to suit an audience; we try to convince an audience to like our aesthetic. We think of outreach in terms of propaganda. While our enjoyment of post-show discussions and salons is genuine, we also see these as opportunities to indoctrinate and recruit audience members. The model is more akin to the communist cell than to contemporary marketing research strategies. If we are successful at teaching people to like what we like, they will return and bring friends. We will be able to make more of the kind of theatre art we like.

In *Audience as Performer* (2015) Heim interviews one-hundred and forty individuals — audience members, but also actors and ushers — who “perform” in mainstream theatre: “Comments are taken from personal interviews, post-show discussions and questionnaires undertaken with ordinary audience members, actors and ushers” (8). Heim’s concern is in the more general territory of what it feels like to be an audience member. She also discusses the spectator as co-creator of the mainstream theatre event, as well as reactions to specific performances. Despite this, she seems to fall back into the older model of examining audience reception and theatre production as two closely related but ontologically separate spheres. Her dogged pursuit of the “ordinary” theatre goer seems to be a bit of a cultural fiction. “Ordinary” seems to mean anyone who is not a critic, director, writer; having a professional association with theatre, except for actors and ushers for some reason, disqualifies you (7). Given that Heim’s focus is mainstream theatre, including massive musicals and long-running productions of Shakespeare, her sample size seems very small. And this is another issue I have with the kind of data collection that occurs with audience reception studies in theatre. Of the hundreds of
thousands, perhaps millions of people who attend mainstream theatre every year, one-hundred and forty respondents, only one-hundred and six of whom are “ordinary” theatre goers, seems tiny to the point of being merely anecdotal.

I enjoy reading in-depth interviews with arts patrons. My preference is for those who have well-developed opinions of the art form. In fact my favourite readings are interviews conducted in 1990 by Csikszentmihalyi and Robinson (henceforth C&R) for the J. Paul Getty Museum and the Getty Center for Education in the Arts in *The Art of Seeing*. For this study the authors chose only “experts,” curators and the like, not “the average viewer” (xv). So the intent is a bit different from Heim’s, but has overlap with Eversmann. I appreciate these interviews because I learn things from the expert that I do not readily learn from the “ordinary” theatre goer. Heim’s respondents and Eversmann’s students have various ways of articulating their emotional and visceral responses, but they tell me little I do not already know. Experts, or regular theatre goers with well developed aesthetics, often give me something to think about. They see things I didn’t see. That I can find this in C&R’s interviews is due to the questions they put forward regarding aesthetic experience. I get more out of these, as an artist and as a scholar of the kind of theatre art that interests me, than I do from Heim’s “five standard questions,” questions such as “Do you think your reactions give something to the actors?” (9). I suppose this hasn’t been empirically proven but… did it really need to be asked?

Because I have been asked by my committee to provide voices that corroborate my hypotheses of how attendants embody scenography, I have included a few attendant responses from our post-show discussions as well as the voices of theatre reviewers. The company I work for, Fight With a Stick (legal name: Leaky Heaven Performance Society), undertakes and records discussion after every single performance. One of the shows examined in this dissertation is
Steppenwolf, which had six performances at the PuSh International Performing Arts Festival in 2015. The audience of the sold-out run amounted to close to six-hundred people. About forty percent of every audience stayed for discussion: 238 people in total. The response was extremely positive and I have selected a few comments that most specifically address the issues raised in the dissertation. I have also included some commentary by theatre critics. Our most recent show, Revolutions (2016), had 13 performances. Due to the particular immersive scenography, audience capacity was limited to 23 people per show, for a total of 260 people. About 75% of the audience stayed for talkbacks. The response was even more enthusiastic than for Steppenwolf. I have included some of the comments. Revolutions had six full reviews. Five were raves, one was negative. I have included negative audience and critic comments from both shows to show a variety of response, and to avoid giving the impression that the shows were somehow positively received by all.

I want to restate that I do not think this data reveals much. Does the fact that five critics responded with enthusiasm to Revolutions mean that other critic’s response is invalid? While Revolutions was received with the kind of response a theatre artist like me dreams of getting, there were people who did not like it at all. A middle-age man stated, at one of the talkbacks, that he felt misled by the extremely positive review written by his favourite critic Colin Thomas of the Georgia Straight. For some reason, despite Thomas preparing the reader for something unlike conventional theatre, the man complained Revolutions wasn’t a play. He had seen forty-two plays already that year (it was only May!) and for him Revolutions was indulgent to the point of being masturbatory. At the same show a couple of similar middle-age said Revolutions had finally given them a reason, after many disappointments, to return to the theatre (Leaky Heaven Revolutions Talkback).
I can point to a majority of positive responses for both *Steppenwolf* and *Revolutions* and present individual responses that corroborate my suggestions. I can also present responses that don’t. What do we learn from this? That some people enjoy this type of theatre and respond in a way that seems to agree with the embodiment theories I present, and that some do not. I can say that, as Fight With a Stick intended, our “hybrid” shows have increasingly attracted a “hybrid” audience, meaning that in addition to theatre patrons our audience also comes from the worlds of visual arts, dance, and contemporary music (one audience member, having attended the recent Vancouver Art Gallery exhibit *MashUp!* felt *Revolutions* should be the capstone of the exhibit, since it seemed to exemplify, in an interdisciplinary way, so many of the concerns of visual artists of the past century) (Leaky Heaven *Talkbacks: Revolutions*). I can say that some people find our adventures in theatre worth engaging with. They buy tickets. They come. The data do not prove or disprove the hypotheses I put forward. I don’t see how it could. Rather than building rigour through third-person corroboration in the form of audience response data, I have put my faith in the application of theory to practice and the reciprocal relationship between the two.

2.2.2 Theories of the materiality of attendant-performance relationship

The rigour of this paper lies in the application of several theories — in combination with my practice of interdisciplinary theatre devising — to the issue of embodied cognition of a scenographic design. The reading part began in earnest with McConachie, who, in *Engaging Audiences*, marked out for theatre scholars the terrain of neuroscience and embodied cognition. McConachie gave me a way to rethink spectator-performance encounters. I had previously been heavily influenced by history/theory books such as Fischer-Lichte’s *The Transformative Power of Performance*, Lehmann’s *Postdramatic Theatre*, and *The Theatre of Societas Rafaello Sanzio*
Fischer-Lichte’s emphasis on the materiality of the actor and other performance elements prodded me in a similar direction, one that eventually meshed well with the cognitive theories I was reading. These tended to examine the sensorimotor system in relationship to things in the world that can be seen and physically made contact with. Lehmann addresses materiality but also characterizes non-narrative performance as a sequence of energetic states. In shifting the emphasis away from narrative and onto either the materiality of performer or the dynamism of scenography, these writers helped me move past the usual theatre obsession with the human figure and onto the scenographic whole. Cognitive concepts such as neural maps, sensorimotor accessibility, and affordances sharpened my understanding of attendant perception and gave me practical strategies for exploiting perceptual modes. I was of course also attending performances throughout my years of study. Societas Raffaello Sanzio offered the most intriguing examples of a scenography that resists narrative interpretation and puts the focus on material factors. In their work the usual actual-fictive theatre binary collapses into just the actual, and is therefore non-binary. Because of the affective power of material elements (including less concrete elements such as sound, light, and smell) it can be hard to reference anything other than what is happening on stage. This makes it very useful for applying neural map theory and sensorimotor theories to perception of scenography.

2.2.3 Architecture and scenographic theory

Architecture theory, particularly that of Bernard Tschumi (postmodernist architecture of disjunction), Pallasmaa (haptic architecture), and Peter Zumthor (atmospheres and material), became an important source due to the fact that architects tend to work in a great variety of
situations, and are therefore forced to consider many types of spatial arrangements. Most books on scenography, such as *What is Scenography*, by pre-eminent British scenographer Pamela Howard, tend to deal with some version of the typical Western audience-stage set-up. A relatively conventional narrative as the basis for scenographic design is also usually assumed. Innovative modernist scenographers such as Appia, Craig, and Svoboda, though each has much to offer, tended to work with a performance situation in which audience and stage are clearly separated. It was during *der Wink*, my first show with Leaky Heaven, that I began to think through scenography as architecture and work through embodied cognition in a practical way — in rehearsal and during performance. The show, which put the audience amid forty 4’x8’ moving walls, was co-designed by Vancouver architect Jesse Garlick and director Steven Hill, so the connection between scenography and architecture was explicit. There was no over-arching narrative, only transient scenes that arose from and then melted into the moving architecture. The movement of walls, with light and sound, was the “story.” I found the experience delightful and profound. And, of course, the burning question was: Why was I, and why were attendants and critics, able to find meaning in this experience?

A choreographer I know, after seeing the *der Wink*, wrote: “One of the most interesting elements in this exploration of community and alienation is the audience’s physical relationship to the set and actors. On the floor of the Russian Hall, the folks from Leaky Heaven have set out viewers’ chairs in a grid, so wherever you sit, you have narrow aisles on all sides of you. In the opening movement, as Parjad Sharifi’s green light washes the crowd and the sloshing waves in Nancy Tam’s excellent sound design are joined by tones that sound like ship’s horns—a note, a harmonic, a chord—there’s plenty of opportunity to notice the beauty and fleshly vulnerability of those around you” (*Thomas Der Wink*). Peter Dickinson wrote: “Leaky Heaven’s latest
Wink, said it was the best choreography she’d seen in some time. “Meaning” had been derived from an embodied encounter with moving walls. The application of embodied cognition in theatre and dance studies until then, and still today, is primarily concerned with how human bodies understand other human bodies. What became clear during der Wink was that embodied cognition of scenography — body to environment — needed to be thought through.

2.2.4 Two and three dimensions — screens on stage

Around this time I also began to reflect on plaything, a work I had seen a few years earlier by Vancouver dance-theatre company MACHiNENOiSY. plaything was conceived by choreographer Delia Brett and created in collaboration with two visual artists (an animator and a painter), a sound designer, and a puppeteer. What interested me most about it was the tension created between three-dimensional elements such as human bodies, a giant skirt, and puppets, and two-dimensional elements such as a downstage projection screen, projected animations, and performance work, der Wink, is a thrilling immersive experience, a multi-sensory exploration of space and how that influences the sense we make of our own embodied encounters in and with that space . . . We are also watching each other watching the performers. And, in doing so, we are not just part of the performance installation; we are the installation. This is underscored most materially when, near the end of the piece, the cardboard panels are rearranged to wall off different sections of the audience from others. It induces a moment of reverse agoraphobic panic (at least it did in me), as, suddenly separated from my community, my public, I no longer have any sense (quite literally) of my place within it” (Dickinson Leaky).
shadow puppetry. Among other things I was intrigued by the way the three-dimensional body would “puncture” the screen.

*plaything* was first presented in 2009 at the Dance Centre in Vancouver. A year earlier I had begun to attend and read about Societas Rafaello Sanzio shows, usually directed by Romeo Castellucci. A feature of many the company’s works is the downstage scrim, through which the world beyond becomes hazy and muted, later to be revealed in vivid clarity of shape and colour due to the removal of the veil. Between *plaything*, the theatre of Societas Rafaello Sanzio, and *der Wink*, a scenographic theme was emerging: the power of moving surfaces, screens, and frames, and their relationship to the perception of two- and three-dimensional space. This ended up having huge ramifications for *Steppenwolf* in particular, and to a lesser extent for *To Wear a Heart so White* and *Revolutions*.

### 2.2.5 Synaesthesia, multimodal perception

In 2013 I delved into Wiles’ *A Short History of Western Performance Space*. I was working closely as a scenographic deviser and performer on Leaky Heaven’s *To Wear a Heart so White* (2014). In working through spatial arrangements proposed by the director Steven Hill, myself, and others, I found Wiles’ expansive but focused study of six major spatial configurations offered me models for exploiting patterns familiar to most theatre spectators – the circle, the rectangle, the triangle of the single-point perspective stage, the stage or auditorium as container, and so on. Wiles also discussed patterns that were less common but still recognizable, such as the procession and the symposium. I began to think through and experiment with such patterns in rehearsal, considering them in the light of neural maps and spatial metaphor. In *To Wear a Heart so White* we employed many of these configurations: the procession (both audience and
performer processions), the circle as a seating arrangement, the rectangle/container combined with the Italianate stage, and the symposium (in this case a dinner with audience and performers at tables in a circular configuration).

Space, or more precisely place — a specific location with things in it, a material context — is always a multisensory encounter. Two of the most obvious factors in any performance design are sound and light. Therefore it becomes impossible to talk about scenography without talking about the inseparability of these from tangible factors such as set-pieces and actors. Sound reinforces or alters our perception of a place, whether the sound already exists in the environment or is introduced by design. Sound waves require surfaces to bounce off of and this influences how we perceive these surfaces. Light waves/particles also require surfaces that photons strike and bounce off of. Both sound and light have been addressed in some detail in this dissertation, often from an explicitly neuroscientific standpoint. How sound and light clarify or confuse an attendant’s sensorimotor-based perception of a performance design, and how the artists involved in the case studies create specific conditions for this, is also examined in great detail. Other sensory modalities — for example smell and taste — are also critical but have been touched upon only briefly, for the sake of keeping this study within manageable limits.

However, my theorizing and performance-making have been influenced by the multisensory scenography of French symbolist theatre (particularly as described in Deak’s book Symbolist Theatre, and by Lehmann) and Di Benedetto’s work on multisensory embodied cognition in theatre. The late 19th century Symbolist theatre, with its use of downstage screens, dim lighting, scented audience areas, a hieratic acting style, and its explicit emphasis on synaesthetic experience, offers precedent for the work of Castellucci and others. As an example of non-narrative performance that foregrounds sound, colour, vocal quality and scent over plot
and character, it offers strategies for shifting audience attention away from what philosopher
Gumbrecht calls “meaning effects” — interpreting sign systems\(^{23}\) and the mind of another (51-
54; xv) — and toward the intensifying of “presence effects” — the way meaning is “produced”
through “spatial relationship[s] to the world and its objects” (xiii). Di Benedetto’s explorations of
multi-sensory performance continue this shift. Like me, he also looks to the precedent setting
performances of the symbolists, particularly their experiments with perfumes and incense. His
arguments are built on a neurological and physiological foundation and use many historical and
contemporary theatre performances as examples.

2.2.6 Uncertainty

In reading Di Benedetto, I found support for my own views but also became wary of the
confidence with which he states his claims. There is something a bit simplistic in his application
of neuroscience to the transmission and reception of sensory affect. I’m uncomfortable with the
lack of uncertainty expressed and lack of acknowledgement of how contested many of the
aspects of neuroscientific theory he employs are. Based on my reading of his text I suspect that
he, like me, has a rudimentary grasp of the neuroscience. Therefore I think it best to
acknowledge uncertainty and make claims for plausibility and no more.\(^{24}\) Di Benedetto’s

\(^{23}\) This may seem a contradiction given that symbolist theatre artists developed specific and
elaborate sign-systems intended to unlock deep spiritual mysteries, but my interest is in the spatial
relationships, audio-visual-olfactory and surface affects, not mystical sign systems.

\(^{24}\) I also found Di Benedetto’s argument for aggressively violating the attendant’s sensory space
problematic. He claims this is an ethical responsibility of the artist, undertaken for the purpose of freeing
overconfidence, similar to Spatz’s, is another example of why I find it more productive, not to mention ethically responsible and intellectually honest, to keep the dialogue uncertain regarding research outcomes. Every single one of my Masters level studies taught me the same thing. For example, when examining documentary theatre as a political project I came to understand the complexity of what is considered a document and to question notions of authenticity regarding document and archive. In applying Bourdieu’s theory of symbolic capital to the international performing art market I found his analysis overly cynical, reducing every action in the field to rude economic exchange and political position-taking. Trying to apply Bourdieu’s analysis became problematic because its confident truth-claims do not allow for other motivations, including altruism. In exploring gentrification of arts-identified neighbourhoods, causality seemed far less deterministic than I first thought, although some causes could certainly be identified. I do not mean to say that knowledge outcomes are impossible. We build bridges and car engines based on experiments that lead to knowledge outcomes. In theatre we make lighting instruments and use sound mixing software that can be expected to perform with some the attendant from desensitization induced by the saturation of images of pain and torture in our culture. Personally, I am up for it. I acknowledge the self as dialogic, polyvocal, constructed, rehearsed, and performed; open to and constructed by, among other things, multi-sensory experience, past and present. Playing around with fluidity of identity in performance is something I enjoy. But I also know from experience that such violations are simply traumatic to some people. I feel it is beyond the skill of most theatre artists to deal with the consequences of inducing such trauma. Therefore I make the opposite argument: It is our ethical responsibility as artists to prepare the attendant for perceptual experiments that may be trauma-inducing and to stay within manageable limits. It is not up to me to decide if someone else needs a dose of extreme sensitization or personality fracturing.
reliability. On the other hand, when it comes to audience reception, embodied cognition, and transmission of embodied knowledge in the arts, we can claim only so much.

2.2.7 Neural maps

After having spent so many pages questioning data collection and the misapplication of scientific method to performance research, I should further clarify my reasons for turning to neuroscience. As I wrote above, McConachie opened the way. The next major source for me was *Philosophy in the Flesh*, by Lakoff and Johnson. In this major tome the authors revisit their earlier work *Metaphors we live by*, but grounded in the findings of cognitive neuroscience and cognitive psychology. Their argument for the sensorimotor foundation of metaphor — that metaphors only make sense because we understand them in terms of physical, spatial relationships to other things — is one I have fully accepted in this dissertation. I also fully accept their dismissal of the Cartesian notion of a split mind and body (the body being an instrument of the mind), and agree with their contention that we are integrated bodyminds that make meaning the way we do because of the physical structure we possess.

In *The Meaning of the Body* Johnson further develops the concept of the neural map, a metaphor for complex patterns of neural firing. It is through the repetition, instantiation, and modification of such “maps” that we create embodied memories. Neurobiologist Antonio Damasio explains, by reference to theories of the evolution of the human brain, that we are able to “store” and “retrieve” such maps as formulas rather than as representations. A key idea of the non-representational neural pattern is that it is an analogic correlate of perceivable phenomena: neurons fire in our brains in patterns that preserve, to a degree, the spatial structure of that which is perceived. Visually, when perceiving a chair, neurons in the brain fire in the shape of the chair.
This non-representational approach is sometimes called “direct realism.” We simulate (as Barsalou, Bergen and others have put it) that which we encounter. The theatre patron, it stands to reason, must do the same with a performance. Gibson’s theory of spatial affordances, in which perception is for action, adds another layer to the embodiment concept. If something is available to me, whether a pathway for movement or a thing to be eaten, I understand it through sensorimotor perception. I do not have to move along a path or eat something, but I understand such opportunities through neuromuscular action — the same or similar neurons that fire when literally doing the thing also fire when seeing the possibility or considering the action. We see for the possibilities of movement/action that the environment affords us.

I consider Gibson’s book a kind of scenography primer, although it was never intended as such. His discussion of how we perceive surfaces has broad application. I have been able to use his ideas to create perceptual experiments for the audience, especially for Steppenwolf and Revolutions. Using concepts of sensorimotor access and neural maps, together with models of Western stage space, I became sharper in my arrangement of scenographic elements. Understanding perception as physical access allowed me to play with providing or obscuring physical access through arrangement of surfaces — placement and illumination of all kinds of surfaces. I was also able to analyze the works of other artists such as Castellucci from this standpoint, and gain some understanding as to why his works affect me and some others the way they do.

2.2.8 Into the unknown knowledge outcome

Applying theory to practice does not necessarily mean having a plan. Steppenwolf began with the interest of my co-artistic director, Steven Hill, in Lacan’s theory of the mirror stage of ego
development, in which one develops a sense of “I” separate from others through discovering one’s image in a mirror (something Lacan felt was ultimately a delusion). I wasn’t so interested in Lacan, but I was fascinated by the way in which objects “perform” in a mirror — the strange tension between illusion of depth and flatness of surface — and the way objects, with the help of a little directed light, can be isolated from other objects on the reflective surface, more so than when one looks at the thing directly. It was only after weeks of exploration that I began to see the connection to Gibson and to sensorimotor access. During the later phases of rehearsal, when we were exploring in the performance venue through a very in-the-moment series of explorations that included combining video projection on a curtained stage, movement of the curtains, low red-coloured video light, and the opening and closing of the curtains, did the consequences of messing with sensorimotor access to these spatial features become fully conscious. Even so, it was during the reflective period of writing about it that I found myself fully able to articulate the process. And even armed with all of this information, all of this practical experience, when it came to devising the next show, Revolutions, I only occasionally found myself consciously applying these insights in the devising process. Sometimes I would discuss neural maps and the like with my co-creators. Sometimes I would sit and think through the scenography in these terms. But I never tried to build the show explicitly from these principles.

In retrospect, however, I see that Revolutions can be considered a demonstration of Gibson’s theory of surface perception. A major feature of the show was a dozen 8’ x 8’ wooden walls on casters that were employed in a number of ways with the deliberate intent of confusing the attendant’s sensorimotor perception. I briefly discussed this during the process, but it was just one of many concerns. Others included the company’s deep interest in Jane Bennett’s theory of vibrant matter and the possibility of working with other-than-human materialities in a manner
that doesn’t presume mastery over those materialities. My co-director had been working with panels as far back as der Wink, long before hearing about my interest in Gibson. Jay White, an animator, visual, and performance artist, brought his interest in other-than-human materialities to bear on the selection of materials used, and on our decision to leave the wood panels raw. Sound designer Nancy Tam was mostly concerned with the acoustic possibilities of the panels. Choreographer Delia Brett thought through the panels as dancing bodies. The interest in objects as equal playing partners, something that was central to Steppenwolf, developed into objects as “actants” in Revolutions.

Director Steven Hill had been interested, for some years, in foregrounding that which is usually backgrounded in theatre — the scenery. My interest in Stein’s theory of landscape performance pushed this a little further. In giving the scenery equal status with the human figure, the attention shifted to the affects and “agency” of other scenographic elements. We had begun, with Steppenwolf, to think of everything as an object, including actors, text, light, and sound. Actor Sean Marshall Jr., who has performed in the company’s last four shows, has been adept at giving himself an object-like status in performance. The shift from more traditional acting styles is in keeping with thinking of the actor as a “presence effect” rather than a psychological agent of “meaning effect.” Thus meaning arises from spatial relationships. The body becomes an overlap of surfaces revealed and obscured through light, movement, and sound. The concepts of neural maps and sensorimotor access come into play regarding the human body as much as they do regarding nonhuman bodies. This approach becomes part of the trans-disciplinary thinking of the group: neuroscience, landscape play, choreography, sound design, vibrant matter, etc. Some of it was very conscious during the process, some only fully understood after the fact.
I wrote the chapters on *Steppenwolf* after the production concluded in 2015, but before *Revolutions* was mounted in 2016. So I had a chance to reflect on the way theory influences practice and practice modifies theory, and then to dive back into practice. My conclusion, as I have noted above, is that this type of work does not lend itself easily to overly programmatic preparation. Nor does it result in easy to identify knowledge outcomes that can be carried forward. Rather, it expands frontiers of research through transdisciplinary thinking: an attitude, an openness to the input of others and to in-the-moment discovery, which is a cornerstone of so much theatre practice, even conventional theatre practice. To work in an egalitarian manner with a group of co-devisers is to both contribute one’s ideas, hunches, and knowledge, and to constantly let them go when the ideas of others arise. The writing of this dissertation, which has taken place over a number of (too many) years, has followed a similar path in relation to new discoveries made during reading, making, or attending. It has shifted. In order to make it manageable and readable, professor Robert Gardiner, one of my committee members, suggested I establish a guiding principle for each chapter. This was good advice. While the dissertation is concerned as a whole with embodied cognition of a scenographic environments, each chapter establishes a guiding principle, such as the neural map, conceptual blending, or Gibson’s theory of surface affordances, and tries to explain the relationship between attendant and performance design in these terms.
Chapter 3: Theoretical frameworks: cognition and perception

3.1 Neural maps and conceptual blending

A basic premise of this dissertation is that an attendant (any person, for that matter) embodies performance space (and any other space) as neural patterns—individual neuron cells ‘firing’ in concert (at the same time or in a particular sequence) with a number of other neuron cells. I contend that it is through such neural embodiment that we make performance space meaningful, and that such meaning-making is a physical process of the patterning and constant re-patterning of neural maps and pathways. Hand in hand with attendant embodiment of a performance goes the design of the performance space by the artists who make it. Artists create at least some, and in many cases most, of the conditions for attendant embodiment of a theatrical performance. To argue for embodiment is to say that we are nothing other than our bodies (notwithstanding the possibility of spiritually transcendent states, which I will try to leave out of the argument). It is impossible to have a disembodied experience of a performance environment. “What we call ‘mind,’” writes Mark Johnson when stating the central thesis of The Meaning of the Body, “and what we call ‘body’ are not two things, but rather aspects of one organic process, so that all our meaning, thought, and language emerge from the aesthetic dimensions of this embodied activity”

25 One of my committee members, Peter Dickinson, offered another way of putting it: “We are able to discern spatial patterns through neural embodiment.” I like this description because it beautifully encapsulates the theory. In this instance, however, I have stuck with “embodies performance space through neural patterns” because I want to get the idea of neural patterns and neural maps across to the reader.
(1). By “aesthetic dimension,” Johnson means “qualities” of experience in the sense that philosopher John Dewey puts it: experiences come to us whole and can be assigned single “pervasive” qualities — that meal, that sunset, and so on (Johnson 72-76). Included in Johnson’s broad category of aesthetic dimensions are “images, patterns of sensorimotor processes, and emotions” (1). We come to performances as whole, physically undivided beings, beings that make sense of performance in the way we do because of the bodies we are:

Concepts like front and back . . . arise from the body, depend on the body, and would not exist if we did not have the kinds of bodies we have. The same is true of fundamental force dynamic schemas: pushing, pulling, propelling, supporting, and balance. We comprehend these through the use of our body parts and our ability to move them . . . (Lakoff and Johnson Philosophy 36)

Not only do we perceive things the way we do because we are human, but our personal perceiving is unique because each of us is physically unique and has a unique socio-cultural biography. Even concepts do not exist as floating quasi-objects in a disembodied theatre of the mind. They are based on sensorimotor experiences and are understood bodily. No body, no concept.

In support of my thesis of neural embodiment of scenography I begin with two ideas: the neural map, and conceptual blending. The first, the neural map, is an ‘internal’ (inside my body) analogic correlate of the ‘external’ world (outside my body). To say a neural map is analogic is to say neurons ‘fire’ (exchange neurotransmitters between cells) in our brains and bodies in patterns that, to a certain extent, analogically preserve the spatial relationships of whatever is occurring outside of our brains and bodies (Johnson 127). If it is a visual or spatio-motor map, it will represent an experience topographically. If it is an auditory map of, for example a melody,
the firing of neurons will occur in a sequence that preserves, tonotopically, the upward and downward movement, on a musical scale, of the notes (Levitin loc. 441). As Johnson argues, the map is not a representation, in the conventional sense, of the external world. Rather, it has the structure of the external world (Johnson 131).26 For example, if you are looking at a child running toward a swing in a park, neurons in the parts of your brain that process visual information and motion will fire at distances from one another that preserve the spatial relationship of the child to the swing, as well as the dynamic motion of running in that particular environment (Barsalou 618-19).27

Neural maps are patterns of neurons that fire in concert with other patterns, which can collectively be called a ‘cluster’ (I will often describe a pattern as a map). Neurobiologist Antonio Damasio uses the term neural “image,” for the sake of convenience, to describe maps whether they are visual, auditory, tactile, or other (Damasio 55). He feels that patterns and maps, whether they are of one sensory mode or another, are basically the same thing. Johnson also uses

26 “Internal” and “external” are imprecise ways of thinking about embodiment since neurons and neural pathways do not occur ‘inside’ the brain but are part of what makes up brain matter, the spinal cord, and other parts of the body. However, it is hard to avoid using these terms without resorting to long-winded alternatives. I will discuss the issue further below. For now I offer this footnote as a reminder that we — as minds or selves — do not reside somewhere within our bodies, and nor do our minds reside somewhere within our brains as Rene Descartes believed (he went so far as to suggest the mind or ego is located in the pineal gland at the center of the brain) (Wiles 4). As Johnson argues, we are undivided bodyminds (Johnson 11), or as Lakoff and Johnson put it: “The mind is inherently embodied” (3).

27 Barsalou’s explanation of this is contained within his theory of “simulation,” to be discussed below.
the map metaphor to describe the analogue-like structures that ‘represent’ experiences (Johnson 127-30). Others make a distinction between how a visual pattern is organized — based on map-like spatial organisation — and how an auditory pattern works — based on changing firing strengths of individual neurons within a cluster (Lee and Groh 4). It may be that the auditory pattern is not exactly arranged according to the logic of a topographical map. The map metaphor might apply best to visual stimuli, while another metaphor may be needed to describe auditory patterns. In any case (a map or something else) the neuronal firings are considered to ‘represent’ the experience as an analogue. Another common term used to describe auditory maps occurring in the auditory cortex and other regions of the brain is cochleotopic due to the fact that initial “coding” of sound occurs in the cochlea in the inner ear (see Striem-Amit et al.). Both terms, tonotopic and cochleotopic, refer to the manner in which sound waves are received by the eardrum, transferred through fluid media to the basilar membrane in the cochlea, and are subsequently transmitted as electro-chemical signals through various processing areas in the brain stem and the auditory cortex.

The second concept that will be useful in understanding how individuals make sense of the genre-spaces created for the Leaky Heaven and Fight With a Stick performances is conceptual blending. The basic idea of conceptual blending is that imagination is necessary to create new knowledge. Here imagination means combining two or more mental input “spaces” to create a new “space” that keeps some features of the inputs but results in a novel “blend” that has features not found in the inputs (Fauconnier and Turner 40). For example, in To Wear a Heart

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28 To be clear: a “space” in conceptual blending does not refer to an actual space but rather a ‘mental’ space, an idea or image, represented by Fauconnier and Turner as a schematic. They explain how
so White the audience is asked to take the inputs, “church congregation” and “community hall,” and other input spaces such as “witches’ coven” to create the blend, “I am a witch in a religious congregation invoking a spell.” (This is just one of many ways one might describe the inputs and the blend in this particular show.) Fauconnier and Turner (henceforth usually F&T) note that these input spaces and the resulting blend are neurologically grounded: “In the neural interpretation of these cognitive processes, mental spaces are sets of activated neuronal assemblies, and the lines between elements [in the authors’ diagrams] correspond to coactivation-bindings of a certain kind” (40). They mostly discuss spaces as mental concepts. I will extend their logic to actual spaces in order to show how the mental and the material combine neurologically to create meaningful experiences.

In both the analogic map model and the conceptual blending model, memory is a major factor in helping an individual make sense of what she is encountering. Experiences form neural patterns. During new encounters, past experiences in the form of neural maps, or patterns of neural firing, are activated so that we can categorize and re-categorize. We activate an existing pattern to understand an experience that is familiar; and we combine existing patterns in a way that allows us to create new patterns that may eventually become familiar. Conceptual blending describes this combining of patterns in mostly non-neuroscientific terms.

3.2 Feeling space through sensorimotor perception of the surface layout

When discussing conceptual blending, Fauconnier and Turner often use images, such as we combine these ideas or images to create new ones, related to but different from the inputs. I will explain this further in Chapter 6.
advertisements in magazines, or descriptions of hypothetical situations that emphasize visual features. Their examples tend to fit nicely with the concept of the neural map for two reasons: (1) We tend to think of maps as visual representations that circumscribe an area (Lee and Groh 1); (2) Visual neural maps can be read, to an extent, as topographical representations of spatial relationships (Striem-Amit et al. 1). I have noted, above, that tonotopic maps are different from visual maps. You might say that they represent relationships in time rather than in space — one neuron fires after another. I describe the way a melody rises and falls the same way I might describe the way the slope of a hill rises and falls (Johnson 250-53). However, to describe sound as a map is to translate an aural experience, which is a sequence of sound waves and therefore an experience that requires duration, into the visuo-spatial terms of a map, which can be apprehended all at once.

But there is still logic to the idea of a topography of sound: the way sound waves move through the cochlea in the ear, and particularly the way they trigger “hair cells” in the basilar membrane, can be considered topographical. High pitches trigger hair cells at locations on the membrane nearer to their entry point into the cochlea and low pitches trigger others further along (Levitin loc. 441). There is a spatial logic to the manner in which the hair cells are laid out and triggered. Once activated, these cells send electrical signals through brain stem areas to the auditory cortices in the temporal lobes of the brain, where further neuron cells fire in particular patterns that are organized spatially and sequentially (Lee and Groh 10; Schnupp et al. 90). The neurological interpretation of seeing and hearing functions can be localized to specific areas of the brain, but is also partly distributed across brain regions. Neurons communicate with other neurons, and patterns communicate with other patterns, forming clusters that communicate with other clusters. While a map may be a simplification of the three-dimensional nature of a neural
pattern, both are schemas of how neuronal firings interpret, or rather are the brain’s interpretation of, space. Through complex coordination of the firing of various patterns we are able to understand the spatial nature of what we see and hear — we spatialize the visual and the auditory with such pattern firing.

But what is it that makes a space feel dense, or a sound feel sparse? Why might a low ceiling feel oppressive and, in popular music, crunchy power chords feel aggressive? Neuroscientist/musician Daniel J. Levitin argues that we make sense of music by translating tones and dynamics into terms of human emotion — slow can mean sad, high notes can mean happy, fast can mean excited (loc. 1417). We rise and fall with pitches and rhythms. To hear music is to embody it through the formation of neural patterns. You could say these patterns are our emotions, or that they are part of the cognitive apparatus that make emotion and the naming of emotion possible.

This logic can be extended to space. A place, whatever its dimensions, must also be put into human terms, or scaled in terms of our own bodies, for it to be comprehensible. To put this another way, is it even possible to speak of a place without considering human occupation of it? Is it possible to imagine an “empty” space without first having imagined ourselves in it, and then absent from it? How do we make sense of distance? We can look into a valley, a canyon, a plaza, or a room and say it is empty (meaning there are no humans in it). But how do we make sense of its dimensions, its depth, height, and width? We can assign abstract measures to it such as millimeters, meters, and kilometers, but how do we understand a meter without measuring it against ourselves, or against an object that we have measured against ourselves? How do we understand a kilometer without travelling at least some portion of it? We develop the feel of a space and a distance by moving through it or projecting ourselves, imaginatively, into it. The
imaginative projection makes sense by referencing a past sensorimotor relationship to an actual space and actual objects. This reference helps us give space proportion (it feels that big or that small) and distance duration (it takes so long to get from here to there). Beyond a certain personal threshold, numbers and distances mean nothing. Or we make them mean something by shrinking them in some way, shrinking the “infinite” universe to a size we can make sense of.

Concepts related to sensorimotor access come into play — how we understand dimensions, distances, and qualities of space through bodily sensation and potential for physical action. The term sensorimotor contains the words sensory and motor. Brain anatomy defines three general areas that the word sensorimotor refers to: the premotor cortex, the primary motor cortex, and the somatosensory cortex. These areas lie next to one another on the cerebral cortex in the above order. The premotor cortex is involved with preparing and executing limb movement, and is argued to also be involved with social cognition (empathy) and imitation (learning). The primary motor cortex initiates movement; various areas in this cortex correspond to specific body parts. The somatosensory cortex receives tactile information carried to the brain through neural pathways. Although these three areas are somewhat discrete on the cerebral cortex, sensorimotor theory, particularly as discussed in Noë’s “enactive” approach to embodied cognition theory, tends to treat them as interdependent.

In traditional perception theory a stimulus input is received and computed by the brain, resulting in an action output: the visual stimulus of a ball approaching is received and computed; somehow the ball is represented as an image, an orientation, and a thing of discrete qualities (texture, colour, hardness); the brain then delivers an action output, instructing the body to catch the ball. There is no direct connection between stimulus input and action output — they are mediated by a representation in the brain of the incoming ball. In the enactive sensorimotor
version of perception, perception is a direct coupling of sensory awareness and skillful action. The oncoming ball is understood because the perceiver has the physical skill to catch or avoid the ball. Meaning is action based. Content (the ball as a catchable or avoidable thing) is the result of environment-subject coupling. The environment provides opportunity, an “affordance” in Gibson’s terms, that the subject exploits. But the subject can only exploit the opportunity if she has the skill to do so. If she has no skill at catching, avoiding, marveling-at, and so on, the incoming ball has no meaning, no content that can be understood. Thus sensory awareness and motor action are integrated in sensorimotor perception.\textsuperscript{29} Noë summarizes as follows:

> The world makes itself available to the perceiver through physical movement and action . . . Perceptual experience acquires content thanks to our possession of bodily skills. *What we perceive* is determined by *what we do* (or what we know how to do); it is determined by *what we are ready to do.*” (Noë *Action 1*)

Sensorimotor perception is not a matter of passive reception of stimuli constructed as representations in the brain.

Jacob and Jeannerod (henceforth J&J), when discussing visual perception, argue for two related but somewhat separate visual subsystems in the brain: a visual perceptual subsystem and a visuomotor subsystem (J&J *Ways* 136). In the first subsystem, visual percepts (things perceived) “serve as input to higher human cognitive processes, including memory categorization, conceptual thought and reasoning”; In this subsystem images are created for recognition. In the second subsystem, “Visuomotor representations serve ‘human action’”;

\textsuperscript{29} For more on the “enactive approach” and sensorimotor perception, see Noë, *Action in Perception* 4-7 and throughout.
Images are created for physical manipulation (45). These are the two ways we visually represent the objects we see and manipulate. A visual percept becomes a thought — a thinking about; a visuomotor representation is for action.

J&J’s hypothesis offers a representational model of seeing. Percepts are extracted from the whole and reassembled as a picture-in-the-head, which is then interpreted by a mind that observes the picture. Most of the research J&J use to support this view strongly suggests that the two subsystems can be dissociated from one another. For example, a lesion to a relevant cortical area can disable one or the other mode of seeing, resulting in remarkable situations in which an individual is able to recognize an object but unable to grasp it, or in which a individual can manipulate an object or physical process without being able to identify it. This dissociation suggests that seeing and doing are somewhat discrete processes in the brain. While the two visual systems can be dissociated through such disabling, they normally tend to work together.

30 Noë argues that the clinical research does not support the possibility of dissociation (Varieties 90).

31 J&J, generally support the two systems visual model, but also acknowledge that it is incomplete, and that object recognition and spatial perception of objects in relationship to one another require not only the coordination of the two systems, but of further visual systems that help to account for complex situations with many objects in a visual field: “Visual cognition appears to be far more complex than previously suggested by the current models opposing either visual object perception and space perception or perception and action. These models, which originated from the double dissociation paradigm [one visual system becomes dissociated, due to a lesion, from the other visual system; this can go in both directions], attempted to match a given aspect of visual function onto a given anatomical subdivision of the cortical visual system. The double dissociation paradigm, however, appears to be of
Nevertheless, they create representations for different purposes. The second system, the visuomotor system, is the one that is most in line with Noë’s enactivist theory of sensorimotor perception. Noë also acknowledges that representations have some role to play, in the form of what he calls “content bearing internal states” (2). Chemero simply argues that pictures-in-the-head are probably useful for certain things, such as remembering someone or something that is not there, but have no use during action-oriented activity. Action-oriented activity, as discussed by Noë, is nonrepresentational. However even when we speak of representations we have to be careful to remember that a representation — a pattern of firing neurons — is not a thing that somehow exists as a discrete entity to be viewed by a brain/mind from an equally discrete viewing location. A representation is a neural structure that is part of the brain, interwoven with other structures that communicate with it. We do not and cannot observe our brain structures from within. We are our structures and we experience the world as our structures.

### 3.2.1 Gibson’s theory of visual perception

Perceiving-for-action is a concept that is critical to my analysis of most of the case studies in this dissertation, particularly as it relates to psychologist James J. Gibson’s theory of visual perception. Gibson, whose work has become canonical for many theorists of embodied cognition, including Noë and Chemero, discusses seeing (and sometimes other senses) in “ecological” terms. By *ecological* he means that seeing is not just a matter of light rays limited value when the number of the terms of the dissociation is greater than two. Clearly . . . there are more than two kinds of human visual representations and more than two visual systems in the human brain” (*Visual* 10).
stimulating photo-receptors in the eye, but the active experience of an entire physical animal situated in a natural everyday environment (as opposed to a lab) looking around at, and moving through, its surroundings. Because what we see is light reflected off of surfaces (everything from a wall to moisture particles in the air), Gibson’s theory of visual perception can be boiled down to our physical relationship to the surfaces that surround us. The arrangement of surface distance, size, shape, colour, and texture provides sensorimotor affordances. Affordances provide opportunities for, or obstacles to, action, including seeing, moving, hearing, touching. Our potential for action is based on our ability or skill to act on the “affordance” an environment provides. It is our skill that makes surfaces and spatial arrangements meaningful. For example, my ability or lack of ability to jump over a fence gives the fence a certain meaning (for me), as do other things about it.\(^3\)2

Gibson’s theory of surface perception helps to define scenographic parameters as they pertain to vision as a whole-body system of seeing, and to the visual-kinetic action of sensorimotor perception. In the coming chapters I will try to show how the work I have done with my theatre company attempts to exploit the attendant’s natural tendency to understand the performance design as a field of physical action potential. I assume the attendant will activate her

\(^3\)2 Chemero argues that it is not so much a matter of the environment providing affordances, but of a match between perceptual skill and affordance. We perceive affordances when we have sensorimotor skill that can act on/with the affordance (This is almost identical to Noë’s argument above). Environment and self are interdependent. This is not to say that the environment has no objective existence, that it does not exist if we lack skill to act on it. It means, rather, that we are unable to make sense of that which we cannot interact with (Chemero “Outline” 193).
sensorimotor skills, while at the same time, for the purpose of creating new perceptual states, I disrupt her ability to apply these skills. If we accept that sensorimotor perception is a way of perceiving for action, and that the field of this action is Gibson’s layout of surfaces, we further our understanding how an attendant embodies scenography. She looks at the layout and feels the potential for action — for moving to and around things, grasping things, feeling textures, and so on. For example, in the “Pacing” scene from our production *Steppenwolf* (discussed in detail in Chapter 5), we use the projected light of digital images and conventional lights, in combination with surfaces such as mirrors, cardboard flats, velvet curtains, transparent plastic sheets, and walls to reveal and obscure actual pathways for movement. If we literally shed more light on the Pacing scene, the attendant will be able to identify affordances with confidence. If she were to get up and walk into the performing areas, she would be able to climb onto the stage, move around the flats, feel the velvet curtains, part them, and walk to the next set of curtains, and so on. She would be able to embody all of this, through sensorimotor perception of surfaces, without actually doing it. She already has the neural maps required to understand the situation bodily. However, the Pacing scene is not brightly lit. Due to the scenographic composition, including dim lighting that makes the edges of surfaces unclear, her ability to clearly understand the affordances on offer is compromised. To add to the confusion, it is unclear which parts of what she sees are three dimensional and which parts are two dimensional projections. Thus sensorimotor perception of the surface layout is a key theoretical factor in discussing how an attendant embodies scenography.

3.3 Metaphor theory, memory, and performance conventions

I turn to Lakoff and Johnson’s metaphor theory, grounded as it is in cognitive psychology and
cognitive neuroscience, to explain how we come to develop our neural maps through past experience. My hope is to create a compelling explanation of how we develop sensorimotor skill over time in the form of neural maps, how we update or do not update these maps, and how these maps of our spatial relationships to the world come to define our likes and dislikes (skill and lack of skill) of performance conventions.

We initially develop our understanding of spatial relationships through early childhood sensorimotor development. Neural patterns that “represent” experiences fire each time we experience something new, and are updated when doing so. So memory — the formation of past neural patterns — is crucial. Memory is also a dynamic, active process, in the sense that it is constantly reforming, if only slightly, with each recall. This is connected to current notions of brain plasticity. Neural pathways can die off, become dormant, or become re-activated; and completely new neural connections can also be made (Barsalou 625-26; Johnson 127-30). A pattern gets established and then re-patterned. The new pattern is based on or related to the old pattern, and therein lies some level of continuity.33 Instantiation (something that becomes a

33 Damasio argues that continuity of the conscious self is possible due to the brain’s creation of mental maps that represent the body and its parts (92). These maps are there for the purpose of monitoring the body and maintaining homeostasis (keeping you alive and away from life-threatening disease). They can be considered a “neural double” of the body that is part of the body (38). For this reason there is a tight “physiological bond” between these maps and the bodily processes they represent (98). There is no such physiological bond between the mental maps that represent the body’s interactions with the outside world. In Damasio’s view maps of the outside are actually maps of the body’s interactions with the outside; the map “records the multiple consequences of the organisms [i.e. a human being] interactions with the entity [things, people, in the outside world]” (132). From this I would conclude that the
somewhat reliable neural pattern due to the repetition or intensity of an activity) of patterns makes them meaningful. You know how to skip rope because you have done it before. You may get better or worse at skipping rope depending on how the original pattern gets reformed. Patterns may change more or less from individual to individual. An activity that we undertake only once, one that has no trauma or thrill or survival value associated with it, will likely take on no significance for us in the long run. We need to repeat something in order for neural patterns to become instantiated.

In terms of performance conventions, let’s say you have seen dozens of mainstream, Broadway-style musicals. The narrative structure is similar from one production to another. The musical structure is similar. The acting style is familiar. The lighting design is typical — the same intensities of light, the usual colour gels, the same sculptural side, back, and top lighting from show to show. A familiar vocabulary of jazz-dance-inspired choreography is common to them. These patterns become ingrained in you. When you watch such a show, neural maps fire up, helping you recognize and categorize the experience, and giving you a sense of satisfaction.

continuity element regarding maps of external experience will not be as strong as the sense of continuity one gets from the brain’s maps of internal experience. Unconscious simulation/recall/activation of internal, “interoceptive” mapping (97) will be more accurate and consistent than conscious or unconscious simulation/recall/activation of external experience. Damasio goes on to say that the communication between map and sensory experience shuttles through the upper brain stem. If specific parts of the brain stem are damaged, for example due to a stroke, the information flow will cease and the individual will enter a vegetative state in which the brain will continue to produce maps but the self will have no awareness of them. In fact there will be no “self” to be aware of anything since self is a function of the communication between neural maps and sensory input (161). No information flow, no self.
when the familiar pattern is fulfilled. If the musical theatre formula is handled well, there will be
a moment or two of surprise, when the formula seems in danger of disruption, or when it has
been altered slightly. If the level of challenge is just right, you will enjoy this alteration and
update your patterns (Nakamura and Csikszentmihalyi 95).

Let me offer an alternative scenario: One day you go to a performance inspired by
installation art and American minimalist musical composition. There are no characters in the
traditional sense. There are people who speak and move, but they do not display psychological
depth, nor do they conform to comic or dramatic character types. They are treated somewhat like
objects. There is no dramatic arc, and therefore no satisfying fulfillment of the typical 19th
century well-made play or modern movie narrative pattern. The music does not swell at the
height of the dramatic arc because there is no dramatic arc or peak. There is no story, really, just
a sequence of events. There may be no separation of space between performer and spectator. The
space may be lit by fluorescent tube lighting, or everyday household lamps, or video projectors,
or candles. Perhaps it is a large scale production like Robert Wilson and Philip Glass’s Einstein
on the Beach. The mood is contemplative. The motion of performers and objects on stage is
slow. The music cycles in rhythmic and harmonic layers that almost repeat but never do (Glass
qtd. in Einstein). Rather than a dramatic arc, there is rhythmic and harmonic accumulation. There
is no Einstein, just a violin player who has been made to look like Einstein. All he does is play
the violin. There is no beach, just a stage landscape that evokes other spaces and ideas but is
never really trying to be anywhere other than where it is — a performance hall.

Or perhaps you are attending a small-scale production like Leaky Heaven’s der Wink. You
sit in a chair for the entire show and experience sonic and lighting shifts. Four by eight foot
cardboard walls are moved in and out around you, constantly changing the architecture of the
space. You get glimpses of very short scenes occurring through the maze of walls. Again, no obvious dramatic arc, not much in the way of characters, and no story except on a meta-level. If your experience of theatrical performance consists of mainstream musicals, or even mainstream drama, the narrative pattern completion you are accustomed to will not be fulfilled at either *Einstein on the Beach* or *der Wink.* These shows will mean nothing to you — they will not become instantiated as repeatable neural firings. You may leave the performance wishing never again to be subjected to such an event. Or, perhaps, something has struck a chord. Perhaps there was something that had just enough in common with past experiences to trigger a sympathetic response. A new pattern is beginning to form, one that repeated exposure to such events will make more meaningful to you.

Performance theorist and theatre historian Di Benedetto summarizes the potential of new patterning: “The greater the exposure we have to a particular stimulus, the more pleasurable it will become; its familiarity forges habitual pathways within our brain” (133). The first time I heard a complex jazz composition I was baffled. But something about the time and place of left a trace in me. I remember listening to an FM radio station of Minnesota-based, jazz fusion guitarist Steve Tibbets at 2:00 in the morning, and feeling both mystified and intrigued. The tonalities and time-signatures were unfamiliar, but the environment, time of night, the deep timbre of the DJ’s voice and the superior fidelity of the FM signal felt like an invitation, almost an embrace.

34 I have offered here a rather polarized example between the high- and the low-brow for the sake of argument. In some cases the starkness of this depiction will hold true. In others there will be much overlap. The point is that familiarity is dependent on skill level or on acquiring skill — familiarity breeds appreciation (or contempt).
Tibbets’ music would become, for me, inseparable from that context. The second time I heard it, the totality of the first listening was recalled. Guitars and tabla, yes, but also automobile interior, vinyl dashboard, metal-and-plastic radio dial, deep night on the city streets, and early morning fatigue. Also, the complexity of the music began to make more sense to me. I began to feel the melodic and rhythmic patterns. By the third listen, what had been alien was now a deeply meaningful pattern inscribed in my neural pathways.

Now if a theatre artist wants to mess with that deeply ingrained pattern, my habitual response to Tibbets’ music, he might challenge me the way Marcel Duchamp challenged the art world with his *Fountain* piece (a urinal placed on plinth in a gallery), or the way Brecht challenged his audiences with the V-effect, or the way countless performing artists mess with their audience’s expectations by de- and re-contextualizing objects, styles, and performance conventions. Let us say a bunch of jazz aficionados, fans of Tibbets, are at a warehouse performance of some kind, drawn by promotional material that says the guitarist’s music will be featured. The warehouse artist is a neo-punk rocker who thinks we are pretentious, elitist relics of another era. He wants to shake us from our rarefied estimation of the artist and his educated, music-school approach. Like the original punks back in the late 1970s, he feels we are killing the rebellious youth spirit of rock ‘n’ roll by filling the airwaves with music that is overly virtuosic.

Or maybe he just wants us to hear it afresh. And maybe, given our age and the year in which this guitarist’s music was originally released, the punk knows most of us had our first exposure to Tibbets on an FM radio station which we likely listened to in a car. So he puts a car-stereo in a room lit brightly by fluorescent tube lights, with no car around it, and no bucket seats. Maybe he has added a really powerful klieg light, the kind used by filmmakers to create the impression of daylight, and its intensity just punishes the detached car radio. Maybe he has
nailed the radio to a white-board and surrounded it with scribblings that describe the music theory behind the composition, or even codified the guitarist’s improvisations, making them seem more like mathematical calculations than creative inspiration. This might be hard to for me to take. It is unrelated to my neural patterns of listening to Tibbets, including the tactile and atmospheric memories of being in the car during my first listening, except in a way that disrupts them. Have I become closed-minded? Possibly.

Using the logic of Lakoff and Johnson’s metaphor theory, a metaphor such as “I am closed-minded” can only make sense if I can access the sensorimotor relationship that gives rise to a “container schema” (Philosophy 31-32). To feel my mind as closed, I have to imagine it as a container with no openings. In the past, most likely during my infant and toddler years, I came to understand that there are things like boxes that can be locked shut, and hollow cubes that you cannot put things into and cannot get things out of. A mind is not a thing. It is a concept, an imaginary location to which we assign ‘consciousness’ or ‘awareness.’ I have to give it object-hood in order to make sense of its being “closed.” Or I might think of my mind as a brain, and that brain as a container with possible openings, but all of them locked. In order for the metaphor to have even greater emotional resonance, I might think of the container as a room or a closet, one which is permanently shut. If I am shut in, I cannot get out (and may not want to), and no one can get in. There are many different versions of a container schema. The point is that the metaphor, a linguistic abstraction — “I am closed-minded” — has to make a connection to a past physical experience for it to make sense.

Think of the metaphor “time is passing.” Time also is not a thing. It cannot actually pass you. To make sense of this abstraction you need to access a past experience of being in a stationary position and watching an object move past you. It moves away from you, into the
distance. You are losing contact with this object — the past. Or something like that. Lakoff and Johnson’s argument is that there is a physical foundation to metaphor — metaphors are embodied. An example of a time metaphor they use is “Time flies.” In this, time has the “subjective judgment” of “the passage of time”; it accesses the “sensory domain” of “motion”; the “primary experience” is of “Experiencing the passage of time as one moves, or observes motion” (Lakoff and Johnson Philosophy 52). Metaphors such as “I am closed-minded” and “time is passing” are spatial concepts. They make sense, as opposed to being arbitrary arrangements of letters and words, because I can access actual sensorimotor-spatial relationships when I think of them. These past experiences — you might call them active memories — allow me to relate to current spatial encounters in a way that triggers my history of neural spatial patterning. There is no such thing as a psychosomatic tabula rasa. I come to a space with my established patterns.

The difficulty in encountering my favourite music in a radically different context is that all the meaning I have built up over the years, in other words the neural patterning that has become ingrained in me, is dependent on how the features of the music — tempo, rhythm, melody, harmony, timbre, and so on — are interwoven with past situations of hearing or remembering the music. The music is always related to space, actual and remembered. Because the space the neo-punk has created is so radically different from the usual spaces in which I listen to or remember Tibbets’ music, because it is actually an assault on my memories, I feel the firing up of the usual pattern blocked or radically challenged. I am being asked to repattern in a radical way. In a sense I am being asked to change the meaning of the music. It is hard to do because I have invested so much in that pattern.

When Marcel Duchamp exhibited a urinal in an art gallery in 1917 and called it Fountain
he challenged patrons to think of it as art. It did not fit conventional categories of art. For someone who has embodied art as paintings in nicely made frames, and who is entering a gallery with the expectation of firing up the neural patterns that conform to that category of art, seeing a urinal instead of a painting poses a physical challenge. You do not get offended in the mind. You get offended in the bodymind. Or you adjust. As Di Benedetto puts it: “Only by disrupting the brain’s expectations can we begin to learn” (Provocation 131).

Above, I referred to linguistic metaphors as abstractions that made sense by reference to sensorimotor experience. I described these sensorimotor experiences as relations between a body and objects in space. But that is not a very complete explanation of how words or ideas get into the body. The activation of patterns/memories is multi-modal. Visual, auditory, tactile, gustatory, and olfactory patterns combine to create maps of experience that become instantiated/meaningful. What makes the word “daffodil” meaningful? You can touch and smell the flower as someone assigns the word daffodil to it. The situation in which this happens will contribute to the meaning. Are you encountering it outside in a field or garden? Is it a peaceful setting on a sunny day? Is it raining and cold? Is it in vase in a kitchen? Is it your kitchen or someone else’s? Let us say you are two years old and your mother is introducing you to a daffodil. She guides your nose to it and says, “Daffodil.” The quality of her voice will become bound up with the meaning of the word daffodil and of the flower itself. You will embody the qualities of scent, touch, the weather, and your mother’s voice when you think of a daffodil. This meaning will change over time with subsequent encounters with the flower and the word. Neural patterns will be updated each time. Thus, our ability to make sense of current situations is largely dependent on sensorimotor neural patterns we have built up in the past. We are able to describe these patterns in terms of metaphor because the linguistic structures are bound up with felt
spatial relationships developed over time. These metaphor/spatial relationships also come to define our skill level at recognizing performance conventions and accepting new ones.

3.4 Simulation, memory, and complex metaphors

“Grounded Cognition” is an umbrella term used by cognitive theorist Lawrence Barsalou to group several theories of how knowledge, conscious and unconscious, is a neurologically embodied response to sensory stimuli. I refer to it here in order to avoid giving the impression that embodied cognition in neuroscience has been narrowly defined according to what I have described above. There are many ways of approaching embodied cognition, neural patterning, and representation/nonrepresentation. These matters are far from settled. Barsalou summarizes many (not all) approaches that relate to the cognitive theories I have been discussing in this chapter. One of the key terms in his summation of these theories is simulation. We simulate that which we see, hear, and otherwise experience by activating analogic neural patterns from various sensory modalities (thus “modal”), each of them partial “representations” of the stimulus, or rather partial simulations of the stimulus. These partial simulations work together to create a more complete representation:

As an experience occurs (e.g., easing into a chair), the brain captures states across the modalities and integrates them with a multimodal representation stored in memory (e.g., how a chair looks and feels, the action of sitting, introspections of comfort and relaxation). Later, when knowledge is needed to represent a category (e.g., chair), multimodal representations captured during experiences with its instances are reactivated to simulate how the brain represented perception, action, and introspection associated with it.

(Barsalou 618-19)
We rely on past categories to re-cognize. When we embody space we embody it in a multi-sensory way. According to Barsalou, each modality operates discretely, to an extent, to abstract features from an experience, such as a texture, shape, colour, or temperature, but the modalities also work in concert to create a coherent reception of the experience. Artists create coherent spaces. Even artists who attempt to create fractured or discontinuous spaces do so in a way that results in a particular quality of fragmentation or discontinuity. Artist X’s performance of fragmentation is different from artist Y’s, and each has arisen out of the artist’s very particular aesthetic of fragmentation. Receiving things as a whole does not mean we are unable to attend to particular details within the whole. But as cognitive theorists will argue, we are able to attend to only a very few things at one time. The vast majority of our cognitive activity occurs automatically and unconsciously. While I am attending to the colour of a rose petal, I am unconsciously taking in the whole flower and much of its surroundings (Noë would say that the surroundings are perceptually present and available to me even though I may not be focusing on them at the moment).

In Barsalou’s terms, such cognition is “modal” (618-19). While the parts of my brain that fire when taking in visual experience are active, other “modes” are also active. The motor areas that have to do with moving to and sitting in the chair fire up, adding to my understanding of the perception, which might now be called a perception-action. It is an action because I call up neural maps of past chairs to understand the new chair. In a related “situated action” theory, the perception is an action because we are goal-oriented creatures; we call up memories in order to “reflect the nature of bodily actions and their ability to mesh with situations during goal pursuit” (Barsalou 623). “Mesh with situations” means being able to grasp things, move around them, and otherwise cohabit with the material world around us. Calling up the memory of past movement
allows us to recognize movement potentialities, so the perception-action model uses memory as a way to predict or plan future action. The perception is a simulation because I am simulating the current chair ‘out there’ with the neural-map chair ‘in here.’ How quickly this happens, how quickly I can categorize the new chair as a chair, depends how closely the new chair conforms to patterns I have of past chairs, and vice versa. If the new chair is very similar to past chairs, I will recognize it as a chair more quickly than if it is very different. The level of matching between new chair and past chairs will influence how I make meaning of the new chair (625).

The same goes for human facial recognition. I will recognize the face of someone who is familiar to me — as a face and as a familiar face — more quickly than I will recognize the face of someone who is unfamiliar to me. Because no two encounters, with either a chair or a face, will be identical, I will update my neuronal patterns to develop my understanding of what a chair or face is. Through repetition, chairs and faces become meaningful to us. From such basic sensorimotor foundations, we create more complex and abstract patterns of recognition or of novel thought. Internal structures are not limited to reflecting current stimuli (i.e., the chair that is currently before you). Rather, basic sensorimotor structures are the architecture upon which we build more complex and abstract structures (Pezzulo et al. 7). It seems we can combine internal structures to develop abstract concepts. (I will use the model of Conceptual Blending to discuss this in Chapter 6.) Simulation is another way of discussing how ‘internal’ structure reflects ‘external’ structure.

It may be worth stressing again that what we call internal and external in the context of body and environment has validity in the sense that each of us has a unique body and that body has a coherent physical identity. Emotion and thought arise from a continuity of mind and body, as well as organism and environment coupling. In the Cartesian view mind exists somewhere
within or above the body, as a kind of theatre in which object-like perceptions are paraded before a perceiver who is separate from them (Johnson 113; Wiles 4). In this view the mind is “internal,” and the body is “external” to the mind. So the mind is a perceiver not only of that which is outside the body, but also of processes that occur within the body, being somehow ontologically separate from those processes. In the Cartesian view we are able to retreat into a domain of mind that is able to contemplate itself and the world in a detached, disembodied manner.35

Embodied cognition theory rejects this view. We make meaning of the world in the way we do because we have the kinds of bodies we have. Pezzulo et al. make the point that those of us with greater atypicality of body will produce meaning that is atypical: “Embodied representations are shaped by physical constraints of an individual’s body. These sensory-motor experiences are structured according to physical principles that provide the grounding of cognition. Therefore, unusual bodies create unusual minds” (Pezzulo et al. 4). Based on their physical shape and genetic heredity, frogs, owls, and humans create different types of neural maps (Johnson 127-29). Each species produces different “meanings” from its coupling with its environment. Each individual within a species is also unique. A short human will interact with the world differently than a tall human. They will produce neural maps that are unique to each of them. Neural maps can grow in complexity, allowing for greater abstraction and finer detail. Johnson describes it this way:

35 Curiously Damasio’s neurological theory of internal mapping (the brain creating neural maps of its own body) provides a conceptual basis for Descartes’ dualistic philosophy. Of course, the brain is embodied and material, not residing in a transcendent place such as mind or soul.
sets of visual, auditory, and somatosensory maps . . . map perceptual space in fairly direct analogs — preserving topologies of pitch, the retinal field, color, the parts of the body, and so on. But subsequent maps preserve increasingly abstract topological structure (or even combinations of structure), such as object shape, edges, orientation, direction of motion, and even the particular degree of the vertical or horizontal. Like the frog, we live in the world significantly (but not totally) defined by or maps. Topologically speaking, our bodies are our minds. Our ‘minds’ are processes that arise through our ongoing coupling with our environment. Mind is in and of this embodied experiential process, not above it all. (130; italics original)

The non-dualistic process of embodiment means that we do not “experience the maps” (we do not observe our neural maps in a theatre of the mind), but rather we “experience a structured world full of patterns and qualities” through the maps (130).

3.5 Maps of unknowing and embracing uncertainty

Implicit in theories of embodied cognition is that we map in order to identify and categorize, in order to know the difference between a table and a chair, and crucially, from an evolutionary perspective, to be able to distinguish predator from prey or poison from nourishment. Embodied cognition is how we know things. The question that arises then, in regard to theatre practice, is why would so many artists choose to deliberately destabilize and confuse the attendant? Why not offer surety of perception? Why not confirmation of culturally established patterns? In an attempt to answer this I develop a hypothesis: the map of unknowing. This is a map that does not quite cognize, that allows for unsettled neural pathways that do not quite coalesce. I do not mean to suggest that a neuron somehow fires and leaves its electro-chemical charge suspended in
space, between one synapse and another. But if during a performance I feel a quality of suspension, and if this quality offers neither the satisfaction of resolution nor the feeling of disappointment at the failure of resolution, there must be a neurological correlate of this quality.

It may be a matter of neurons trying to form patterns, coming apart, and reforming at speeds that even the brain cannot decide upon, so to speak. A feature of consciousness, according to evolutionary biologist John Mallat and psychiatrist Todd Feinberg in *The Ancient Origins of Consciousness: How the Brain Created Experience*, is being able to weigh pros and cons and come to a compromise solution. I suggest that the indecision that comes before decision may occur as a process of uncertain neural patterning (This is discussed in more detail below in relationship to the theory of neural reuse). To use a term employed by both philosopher Gumbrecht and theatre theorist Fischer-Lichte, an “oscillation” occurs that cannot be resolved for the time being. For Gumbrecht the oscillation is between “presence effects” and “meaning effects.” A *presence effect* is a spatial relationship. Significance is to be found in, or rather is the effect of, the materiality of the relationship. Gumbrecht “conceive[s] of aesthetic experience as an oscillation (and sometimes as an interference) between ‘presence effects’ and ‘meaning effects’” (Gumbrecht 2). A *meaning effect* is the way we think about and assign meaning, usually in linguistic form, to events. There is always an oscillation between the two effects. Similarly Fischer-Lichte speaks of an oscillation between that which is materially present and that which is imagined; the performer body, whether a human or a set piece, and that which in *illusionistic* theatre the body is supposed to represent — a character, time, and place. Various types of theatre performance put the emphasis, through scenographic composition and the like, on the one or the other. To some extent there is always, even in the most illusionistic theatre, an oscillation between that which is materially present and that which the performance is asking you to
imagine. In most of the theatre performances I study, the emphasis is either equal or it is tilted toward the material — the presence effect. When this relationship is handled by a company like Societas Rafaello Sanzio and director Romeo Castellucci, the oscillation between material and imagined becomes so difficult for the attendant to maintain that a kind of personal fracture occurs: she cannot seem to make the material and the imagined resolve as one ontologically coherent phenomenon, and the resulting awareness of self and situation that occurs once the attempt is given up, leads to a state that Fischer-Lichte describes as an awareness of one’s own extraordinary ordinariness, a “reenchantment” with the world (Fischer-Lichte Transformative (181-207). (And here it must be said that it can also lead to utter disenchantment with the performance.)

This oscillation between presence/material and meaning/imagined states, is given more layers through cultural theorist and dance artist Erin Manning and philosopher and political theorist Brian Massumi’s discussion of “neurodiverse” and “neurotypical” types of awareness. In their essay “Coming Alive in a World of Texture,” autistic perception is explored as a model for a non-instrumentalized way of encountering the world. The autistic mode of seeing is called “neurodiverse” (a term borrowed from the autism rights movement) (Manning and Massumi 8). You perceive the world as a field of texture in which any “texture,” be it a colour, a voice or a scent, can arise or recede without being made subject to the normal hierarchies experienced by the “neurotypical” (Manning and Massumi 6, 18). The neurotypical tends to take an instrumental view of what is around her — cups are for drinking, roses are for smelling, you should pay more attention to the person speaking directly to you than to the colour of that patch of grass by the curb. Neurotypical perception is about sorting what we see for sensorimotor access: the drapes are to the left and right, the pathway is through the middle.
Conventional theatre tends to serve the neurotypical impulse. Cause and effect relationships of narrative and character development tend to line up like dominos, each plot point or character decision tipping into the next. The play-script organizes the director’s choices, the actor’s movements, and the scenographic setting that supports narrative progression, sequential psychological states characters are put through, and so on. Neurodiverse perception, temporary or habitual, sees other relationships as equally or more valuable. I offer Manning and Massumi’s concept of neurodiverse perception as a way of describing what might happen for an attendant as a result of Fischer-Lichte’s or Gumbrecht’s notions of the oscillation throughout the case studies. Anderson’s theory of neural reuse and interference — the same neural assembly attempting to undertake two perceptual tasks at the same time and thus creating perceptual interference — adds neuroscientific support for the oscillation (discussed below).

Although the binaries described here do not line up perfectly, we can say in general that on the one side of the oscillation we have spatial relationships and material presence, and on the other thinking about and imagined elsewhere. Intense oscillation between these can result in neurotypical awareness (a sense of knowing where things are and what they are for) giving way to the heightened sensitivity of neurodiverse awareness (all things flowing together). Fischer-Lichte’s theory of “reenchantment,” in the form of heightened awareness of self and other, fits the neurodiverse model: there is no single focus, but rather a heightened sense of intersubjectivity. There is object clarity but it is one of intersubjective awareness of self and other, and of self, other, and world. Neither subject, other, or world is instrumentalized in this state of awareness.

Concepts of neural reuse and neural interference, support the idea of oscillation. Neural reuse means a single brain region or a common coalition of neural patterns can be used for
different perceptual tasks. For example, neurons that are used for motor action can be used for motor perception. Neurons can change their function for the short or long term. (This is, incidentally, another way of describing neural plasticity). It is efficient for the brain to use the same systems for different tasks, but one consequence of neural reuse is interference (Anderson After 30, 37,41). When a group of neurons tries to simulate an action at the same time it imagines an action, the first task (simulating) can interfere with the second (imagining), and vice versa. We switch back and forth — oscillate — between tasks without being able to settle on one or the other. An artist can simplify a situation through timing: he can separate the invitation to simulate from the invitation to imagine by prompting one task before the other. Or he can intensify the oscillation by making the two invitations at one and the same time.

There is a further point to be made regarding uncertainty of self and other as a consequence of the process of oscillation between perceptual states. When an artist presents an audience with phenomena that cannot be easily identified with, such as pathways that might not be pathways, frames that are not actually frames, objects that cannot be anthropomorphized or made familiar, or, as in the last case study examined in this dissertation — Societas Rafaello Sanzio’s Paris. #06 — a half horse that cannot be made whole, the attendant can either reject the phenomenon as meaningless, try to make it conform to a familiar category, or willingly enter a different mode of perception. Philosopher Emmanuel Levinas’ concept of “the trauma of astonishment” provides another way of discussing the latter, a self-opening process of oscillation. Traditional theatre puts great emphasis on audience identification with a representation of a character: I adopt the other’s perspective, metaphorically changing places with him (Roesch-Marsh 309). There is an intersubjectivity at work that, according to Husserl the founder of phenomenology, makes the other an alter-ego, a knowable other self (308-09). However, when we are faced with something
that does not affirm a stable sense of self we can be left in a state of uncertainty (Roesch-Marsh 311-12). Unable to reconcile sensory affect with rational understanding, we are shaken open. Neural activity remains in flux. Perhaps this flux will also, in the long term, come to be instantiated as a map — not a map of unknowing, but a familiar map of flux. And so the artist begins again, seeking further aesthetic disruptions of the attendants’ sensorimotor sureties.
Chapter 4: Making sense of sound in Leaky Heaven Theatre’s To Wear a Heart so White: neural maps, ear anatomy, auditory mechanics, memory, neural reuse

4.1 The performance composition, genre expectations, sound design

A theme that will recur in this dissertation is that perception is active. Listening, looking, touching, smelling, tasting, reaching, moving — these are the kinds verbs that best describe the act of perception. We are not passive perceivers. This means the concept of the passive spectator, a term commonly used to describe theatre audiences, should be reassessed. “Passive spectator” describes a very general physical situation in which a fairly inert body is restricted, by convention and social contract, to a theatre seat. As the various theories of embodied cognition referred to in this paper contend, even in such a restricted situation, we are perceptually active. We do not simply receive sensory stimulus from our environment — we pursue it, meet it, and shape it. We not only actively perceive, we do this in collaboration with our surroundings. The situations we are in present opportunities for perception, and we take advantage or do not take advantage of these opportunities.

We pursue perceptual opportunities in a given situation ripe for sensory engagement. To speak of being in a situation or collaborating with surroundings is to suggest a degree of immersion. I describe the kind of performances my company makes as immersive theatre installations. Like passive spectator, immersion also suggests passivity: one is submerged, surrounded, enveloped, and so on. It is useful for a performance maker to think in this way. During all of the performances described in this dissertation, the attendants are seated, most of
the time. They have been situated within a deliberately composed space and immersed in sound and light waves coming from all directions. But it is a mistake to equate being restricted to a physical location with perceptual passivity. Perception is a kind of pursuit. Theatre scholar and phenomenologist George Home-Cook cautions, however, in *Theatre and Aural Attention*, that active perception and immersion are ideas that need unpacking.

How does an attendant actively perceive when immersed in a 360 degree performance design? Below I will try to offer an explanation using the case study of *To Wear a Heart so White* (Leaky Heaven Theatre). I will refer to concepts of neural mapping, ear anatomy, the physics and biology of the transformation of mechanical sound wave to electrical signal in the brain, theories of how cross-modal sensory ‘collaboration’ (mostly auditory and visual, but also tactile) influences the ability to perceive and spatialize sound, architectural and phenomenological theories of immersion and *atmosphere*, and sensorimotor metaphor theory as it pertains to the way spatial relationships are made meaningful over time. The intent is to show that, (1) neuroscience — auditory, visual, and multi-sensory, in alliance with theories of embodied cognition, can offer new ways of understanding the affects of scenographic composition; and (2) scenographically-minded theatre artists and scholars can use this understanding to enhance their creative and analytical practices.

A further word on the concept of *immersive theatre* may be in order before moving on, specifically how the term relates to sound and atmosphere. “We exist in an *atmosphere,*” writes Home-Cook, “‘a sphere of vapor’, within which we are inescapably ‘immersed’. Furthermore, this ‘atmosphere’ is filled, indeed flooded, with noise” (131; italics original). This description suggests, again, a passive recipient acted upon by sound. But Home-Cook stresses throughout that there is a “push-pull” between sensory affordances, such as existing noise or deliberately
designed sound, and the perceptual action of “stretching,” as he puts it: stretching to meet and
take advantage of an affordance (149). “Being in sound, like being-in-the-world,” he writes,
“does not consist of a static, passive and spherical existence, but is characterized by a dynamic,
ongoing engagement with any given sonic environment: sound is sounded” (131; italics original)
(by “sounded” he refers to the way sonar or echolocation is as much a sending out as a
receiving). Architect Peter Zumthor, in his published lecture Atmospheres, argues that we grasp
the atmosphere of a place all at once: “I enter a building, see a room, and – in a fraction of a
second – have this feeling about it” (Zumthor 11). However, while the atmosphere is greater than
the sum of its parts, its particular quality cannot exist without the parts:

Coherence [is] the idea of things coming into their own, of finding themselves, because they have become the thing that they actually set out to be . . . when everything refers to everything else and it is impossible to remove a single thing without destroying the whole.

Place, use and form. The form reflects the place, the place is just so, and the use reflects this and that (69).

An atmosphere emerges from the things of a place, the temperature, light, and, of course, sound:

Listen! Interiors are like large instruments, collecting sound, amplifying it, transmitting it elsewhere. That has to do with the shape peculiar to each room and with the surfaces of the materials they contain, and the way those materials have been applied. Take a wonderful spruce floor like the top of a violin and lay it across wood. Or again: stick it to a concrete slab. Do you notice the difference in sound, of course. (29)

Not only does the shape of a room lend itself to an atmosphere, so does the shape of a human body moving through space, the shape of a sound wave striking the ear drum, the shape of the inner ear, the shape of an electrical signal’s lightning quick journey through nerve fibers in
the brain. So let me begin by describing a performance situation, an atmosphere determined by the shape of a room and the things in it: the opening of *To Wear a Heart so White*, performed by Leaky Heaven Theatre at the Russian Hall in Vancouver in 2014, a show in which I was a deviser and scenographic adviser. I will explain, in stages, how the obvious material things encountered such as floors, walls, and chairs, and less tangible things such as sound and light, find expression as neural patterns.

*To Wear a Heart so White*

The audience enters the main hall through double doors on the north side. The hall is a large space reminiscent of a mid-20th century elementary school gym, with a hardwood floor and a raised proscenium stage at one end. Faux wood paneling to the height of about eight feet runs around the perimeter. Above it, an expanse of wall covered in an off-white plaster meets a dropped ceiling high above — an aluminum frame grid with lightweight tiles, the sort of ceiling that is commonly found in office buildings. Metal-frame chairs with wooden seats and back-rests have been grouped into little islands facing in toward an open space at the center of the hall. Red velvet curtains have been drawn across the front of the raised stage at the south end. The light is warm but a little dim due to the inadequate number of pin lights from above, the few conventional stage lights, and the fact that mist from a hazer has been diffused throughout the room.

The attendants have been instructed by ushers to proceed to an altar on the west side of the hall where they are to light a candle and place it before “the ancestor of your choice.” They find their choice strictly limited: there are five portraits of British naval explorers, including James Cook and George Vancouver. Each attendant makes his or her choice, then finds a seat. Once the
attendants have taken a seat in one of the chair groupings, a recording of a church choir welcoming all to build a house of love — “All are welcome, all are welcome in this place” — is played. The company members walk in procession from a side door into the hall in single file. I lead the procession, swinging a censer made of blue glass. Incense sticks have been smoking on the altar for some time. The censer thickens the air a little. Behind me are the other performers, including four actors (two adults and two young girls), the lighting and projection designer/operator, the sound designer/operator, and the script dramaturge (mother of the two girls). We are dressed in everyday clothes. Actor Lois Anderson arrives at a pulpit that has now been placed on the west side of the audience circle. Actor Sean Marshall Jr. and I circulate, smile benignly at the patrons, shake a few hands, and express various types of welcome: “Great to see your faces here,” “Wonderful to see you tonight.” We take our places at the south end of the circle.

Anderson then effects a tone and manner of speaking she remembers ministers using when she attended United Church meetings in the past: “We welcome you into this place. Come, You’ve got yourself here this evening — you’ve had your dinner, you’ve washed the dishes, paid the babysitter, paid for transit, walked, biked, found parking, and have entered this building, this hall. Come, Lay aside the cares of the day, the morning, the week, the cares and woes of this weary world.” The recording of the choir singing “All are welcome” now shifts to a Gregorian church choir. Anderson informs the audience they will soon be reading with her from the “order of service,” a small pamphlet that has been placed on their chairs. “We will bring our voices to this place,” she says. She asks everyone to turn to page one, where they will find “the invocation.”

Laughter runs through the hall as people recognize that the invocation consists of excerpts
from the witches’ speeches in Shakespeare’s Macbeth. Anderson asks the audience to rise. She then begins a call-and-response chant as “Leader,” to which half the audience responds as “Voice 1,” and the other half as “Voice 2.” “When shall we three meet again,” Anderson begins. Voice 1 responds, “When the hurly burly’s done, when the battle’s lost and won.” The call and response continues in this manner and intensifies until the hall is shaken by amplified recorded thunder and strobic lightning flashes. “Peace! The charm’s wound up,” declares Anderson. The thunder and lightning cease, replaced by the sound of rain.

Up to the point described the show has presented one atmosphere. The devisers have constructed the performance as a sequence of such atmospheres, or scenes, which were referred to, for convenience, as genre-spaces: genre because each scene referenced one or more known performance genres; space because we devised each scene as a dialogue between spatial arrangement and genre — a live theatre performance takes place in three dimensions, and a theatre genre always suggests a spatial arrangement. For convenience the devisers called one space “church congregation” (the area in which the audience was seated in islands of chairs facing in), and the other “proscenium stage.” Situating the audience in and shifting between this and other atmospheres was the major devising concern for the company. Some of the factors that create the first Church Congregation atmosphere are:

- Size of the big hall.
- Textures that show the wear and age of the room:
  - A worn hardwood floor, old wooden chairs, dingy off-white walls, old carpet at the entrance.
- Nearness and farness of things.
- The smell of the room:
  - A combination of wood polish, old curtains, humans, dust, haze from the hazer.

- The sounds:
  - The odd indefinable mix of designed sound creating a strange acoustic ambience (to be explained in detail below).
  - The chatter of fellow patrons.

- The dim feel of the room:
  - Low lighting combined with haze creating a soft focus feel.

The tangibles (walls, etc.) and intangibles (sound, light, smell) combine to make the room seem bigger or smaller. They clarify or obscure the things in the room and their spatial relationships. They create an atmosphere that is felt immediately. On entering the room the attendant will take all of this in, but as noted above, this taking in is also a reaching out (stretching). A perceptual pursuit of sensorimotor meaning-making has begun. In truth it began the moment the individual woke up in her bed and has never once stopped during the day. But perhaps as she enters the hall, with awareness that she is also entering a prepared performance space, her senses will be on alert. From the artist’s point of view sensory preparedness is there to be manipulated.

What is being manipulated, in terms of cognitive neuroscience, are the attendant’s ever-changing neural formations. Of the many ways to discuss how neural activity is a crucial expression of embodied cognition, I will employ the metaphor of the neural map, and the concepts of neural simulation and neural reuse. An attendant simulates her surroundings through the activation of maps, patterns of neural firing throughout the brain (and down the spine and into other parts of the body), that have been instantiated due to previous experience. These patterns are not absolutely fixed and, as new body-to-environment experiences are had, they can
change significantly. But what we call memory is a consequence of a certain level of stability of these patterns over time. We might say a memory has a lineage. It is not an exact replica of the original experience. That experience is the ancestor. Each generation of the memory is related to, but different from the ancestor. Some memories are very similar to the ancestor memory, and some seem only distantly related. When an attendant simulates a situation, she activates instantiated, multi-sensory neural patterns to make sense of what she currently encounters. As discussed in reference to simulation in the previous chapter, if her patterns find a ‘match’ with the situation, she will understand it readily. If they do not, she will begin to alter her patterns. New meanings will be made. If she is unable to find any points of compatibility between her existing patterns and whatever is perceptually on offer, the situation may offer her nothing.

What is on offer as she enters the main hall? The first thing she might notice is the size of the room. The main hall is much larger than the rooms she has travelled through so far — first a rehearsal studio-turned-bar upstairs, then an enclosed narrow staircase that travels from the bar to the foyer, and then the foyer itself. As she enters the main hall she may activate patterns for hall, room, and container. The felt sense of the hall’s size will be modified by the dim lighting and the hazer mist. The furthest upper and lower reaches of the hall will likely be out of focus, altering the attendant’s sense of the size of the room. Her sense of space will be significantly influenced by the sonic environment created by sound designer Nancy Tam. There is no clear rhythmic pattern or tonal center to the sound design. And no directional clarity: sounds move rapidly between eight speakers distributed about the periphery of the space, creating a sense of instability verging (for some) on vertigo or nausea (Leaky Heaven Talkback: To Wear a Heart so White). This affects the attendant’s sense of the dimensions and stability of the room. Her neural maps will communicate with her auditory maps (which will sometimes be one and the same map
— see below) to sort out the parameters of the space. There is probably enough visual
information for the spectator to match the current hall with image schemas of halls or community
centers she has previously been in.

Acoustically the situation is more challenging. In the previous chapter, I described the way
sound waves of different frequencies are translated into musical pitches when they trigger hair
cells on the basilar membrane that, in turn, send electrical signals to the auditory cortex where
“tonotopic maps” (or “cochleotopic maps”) are formed. The absence of a recognizable musical
key, or tonal center,36 has the potential to disorient the attendant. “Pitch,” writes Levitin, “is so
important that the brain represents it directly; unlike almost any other musical attribute, we could
place electrodes on the brain and be able to determine what pitches were being played to a
person just by looking at the brain activity” (Levitin loc. 441). Schnupp et al., in the textbook
Auditory Neuroscience: Making Sense of Sound, concur: “. . . pitch is essentially independent of
sound level . . . of the spatial location of sound,” and is “to a large extent, independent of the
relative levels of the harmonics [timbre] composing it” (101).

Another important feature is timbre. When we encounter a song, a composition for an

36 “Tonal” is a quality that describes the relation of several tones (expressed in music notation as
“notes”) to what is called, in a western musical key for example, the “tonic.” The tonic is the pitch to
which all other pitches are related to a musical key. For example, a C major scale has the note ‘C’ as its
tonic. A series of notes are considered to be tonal if there is hierarchical ordering in relation to the tonic.
For example, the ‘G’ note in a C major scale has a powerful relation, based on the overtone series (notes
that resonate in certain frequencies with the tonic) and cultural convention, to the ‘C’ note (Schnupp et al.
94; see also Pritchard 20-21). If a series of notes have weak relations to a tonic note, they may feel atonal.
orchestra, or the sound-design at the beginning of To Wear a Heart so White, we try to make sense of it by calling up past experiences of songs, symphonic compositions, and sound designs. We attempt to categorize what we are hearing. Neural patterns for pitch, rhythm, meter, tempo, and timbre work in concert to identify what we hear. Such categorizing is easy to do when we hear something culturally familiar like “Happy Birthday.” In North America most people will easily identify this as a “song,” and as a song sung at birthday celebrations. Along with this will come a set of expectations regarding what typically happens at a birthday celebration (presents, cake, the attendance of friends and family, etc.) (Levitin loc. 1772). When tested, most people can easily recognize this song, even when it is transposed from key to key, sung by different voices, played by different instruments, and at different tempos (loc. 2319). We create neural patterns for the pitch relations. As long as those relations are preserved to an identifiable degree we will recognize the melody of “Happy Birthday.” The same is true for any song that is familiar to us. We can also easily reproduce such songs with surprising accuracy of pitch and tempo. Even individuals who consider themselves non-singers can do this. When asked to sing a canonical pop song such as Michael Jackson’s “Billie Jean,” people will, without access to the recording, sing it in the correct key and tempo (loc. 2336). They will also be able to categorize it according to style, genre, and era. One of the reasons for this accuracy has to do with timbre recognition.

Timbre is the result of the overtone signature of a voice, an instrument, an object, and other phenomena. When an object vibrates — for example, when a string is plucked, or a metal pot or block of wood is struck — it produces one or more frequencies (Schnupp et al. 41). If the frequencies are related as integer multiples (of Hertz or Hz, see below), we will perceive a particular pitch. All naturally occurring pitches produce overtones. The strength of these
overtones affects our perception of the timbre or tone quality.

Our vocalizations operate by the same physics. We push air from our lungs at our vocal cords, which then open and close producing sounds, some of which are recognizable as musical notes. Depending on the configuration of the vocal tract, certain overtones will come through clearer than others (41). The relative strength or weakness of overtones issuing from a particular material (metal, wood, human tissue) is one of the key factors that make a C tone from a pot sound different from a C tone from a block of wood.

Timbre, writes Levitin, “is the most important and ecologically relevant feature of auditory events” (loc. 704). If I pluck a D string on a guitar, you will hear the fundamental — the D — and, less prominently, the overtones. These other tones will be higher than the D and related to it in specific multiples measured in Hertz (abbreviated as Hz) (loc. 756-841). Hertz are equivalent to the number of times a guitar string, for example, oscillates back and forth per second after being plucked. A string that oscillates 100 times per second has a frequency of 100 Hz. 100 oscillations or Hz would be the base note. The first overtone above that will be roughly an integer multiple of it: 2 x 100 Hz = 200 Hz. It will go up in 100s of Hz, with the next overtone at 300 Hz, 400 Hz, and so on. Each of these overtones will be less prominent than the fundamental, and together they will create the timbre that allows you to hear them as, say, a D note and not an F note.

As I wrote above, one of the things that makes a D played on a saxophone recognizably different from a D played on a piano is that, while the overtone series is roughly the same in
terms of Hz, the loudness of each overtone is different according to the materials\textsuperscript{37} that make up the instrument. So the third and fifth overtone of one instrument might be louder than the third and fifth of another (loc. 1233). This goes for voices, too. You can easily tell the difference between your mother’s and father’s voices based on the uniqueness of timbre — in other words the loudness and quietness of the overtone series particular to each of their voices. You can easily tell Michael Jackson’s voice from Paul McCartney’s, and McCartney’s version of “Yesterday” from someone else’s. Despite the uniqueness (timbre signature) of each version of a song, you know you are hearing a version of that same song and not a completely new one — your ability to create neural patterns that preserve pitch relations, tempos, and rhythms ensures this. You can change the singer, the tempo, the instrumentation and still recognize that you are hearing “Yesterday.” To a degree, you can also change the rhythm while preserving the pitch relations, but only so much before it becomes unrecognizable. You can slow the tempo, but only so much before the space between pitches and duration of each pitch (the rhythm) become too vast for the listener to be able to connect one pitch to another as a coherent melody. It is partly due to timbre that we can pick one voice out from others in a crowd, or zero in on one sound

\textsuperscript{37} The term used in auditory neuroscience for “materials” such as wood, metal, earth, plastic, etc., is \textit{substrate}: “. . . different substrates for sound propagation may be more or less stiff, or more or less heavy, than air, and these differences will affect the speed at which sound waves travel through that substrate” (Schnupp et al. 41). Understanding this principle is crucial for a sound designer and extremely helpful for co-devisers creating a performance design. Because sound is both all around us (sound waves bouncing off available materials/substrates at different frequencies) and directional (coming straight from a sound source), it matters which materials we populate a performance with and where we place them.
among many in a room full of competing sounds. The implications of this for a sound designer, is that she can tinker with timbre, along with volume and pitch, to make a sound stand out from a background of sounds, or, as Tam did in the opening sequence of *To Wear a Heart so White*, she can manipulate various sound sources in such a way that their timber ‘signatures’ are so similar they are hard to distinguish.

We are able to categorize the types of musical sounds we hear based on categories we have developed over time. If you have heard recordings of 1930s jazz ensembles in the past, you will be able to distinguish the style and era of those recordings from jazz that was recorded in the 1960s, partly based on a timbre signature that has to do with the instrumentation used, the recording technology (types of microphones used, for example), the types of rooms the recordings were made in, and so on (loc. 2393). A category will not necessarily remain static. If your definition of jazz is defined by the Big Band Swing of Benny Goodman, and then John Coltrane is introduced to you as jazz, you might update your category based on what the philosopher Wittgenstein called *family resemblance*: we put things in the same category if they share enough common features, but there is no single feature that absolutely puts them in that category (Levitin loc. 2151). And the category can change. For example, Goodman’s and Coltrane’s bands both play brass and percussion instruments, both have a foundation in blues structure, both use the syncopation that is characteristic of swing. Or you may drop Goodman from your category based on other considerations: the clarinet was no longer a common feature in jazz by the 1960s, jazz was no longer danceable, the harmonic range employed played by Coltrane and his contemporaries extended much farther from a given tonal center than did Goodman’s, and so on. In either case you will come to a particular sound event with a set of expectations.
When Levitin argues that genre and style are nothing other than personal expectation, he is, as a musician and as a theorist of neuroscience, also making the argument in terms of neural patterning. A listener will activate existing neural pathways to make sense of and categorize what she encounters. These formations will be multi-sensory. Each attendant will make a personal decision as to whether a show fits her idea of the genre, according to the principle of family resemblance. The parts that make up a musical composition can be temporarily isolated for purposes of creation and analysis, but even if we extract something as specific as a tone heard, subjectivity of categorization is inevitable. According to Schnupp et al. pitch is not exclusively a property of sound. While a musical instrument or computer program can produce a specific tone, how that tone is perceived as a specific pitch is a subjective judgment of the listener, who relates the tone to other sounds and decides it is of a higher or lower register (Schnupp et al. 94).

In the type of immersive performance I make and analyze, genre and style are that much harder to define. This is because a number of genres and styles are mixed, and because pointers such as character and narrative are less important considerations than space, landscape, and atmosphere. No two creations follow quite the same pattern or conform to an existing template. However, if you see enough of these shows you will start to notice common features, patterns, rhythms and tempos. Each is the consequence of the creative approach and theoretical concerns of the artists. For example, during the creation process of To Wear a Heart So White, director Steven Hill focused the group on having the building play the show, rather than the show playing the building. Space was at the forefront of our considerations in a number of ways, articulated as dramaturgical questions: 1) What space are we suggesting at a given moment? Is it a fictional space? Is the Russian Hall during a particular sequence supposed to evoke another space-time,
fictional or historical, or is it supposed to ‘be itself’? What part of the hall do we currently want
the audience to attend to? When should the space feel communal and co-created? When should
the audience feel like voyeurs? When should they forget themselves and get lost in a fictional
illusion? When should they be most aware of themselves as materially present? When are we
going too drawn into the narrative of Macbeth, or the congregational church space? When are we
spending too much time in the proscenium-arch, viewing experience? A group of artists
working together over a number of productions will likely start to develop an aesthetic
vocabulary that will, to a certain extent, produce a recognizable style. One of the key visual
factors that has recurred in different ways over the past four shows I have worked on with the
company is the frame. This is explored in detail in Chapters 5 and 6. Another consistent feature
is placing the audience within the performance apparatus so that things happen on all sides. And
there are recurring sound design features that grow out of this, such as: ambient vs. directional
sound, tonal vs. atonal, and deliberate confusion regarding whether objects are producing a
sound or whether a sampled, composed, or altered digital sound is mimicking the sound the
object would naturally make.

When considering acoustics, natural and designed, one must pay attention to how the
architectural features of a space enhance or suppress sound. Each new element introduced into
the space will alter acoustic dynamics to a small or large degree, including the introduction of
spectators, the clothing they wear, and the sounds they make. For Nancy Tam, sound designer
for To Wear a Heart so White and all Leaky Heaven/Fight With a Stick performances since
2013, the interest in a space is not limited to the architectural shell, but includes all things in it, as
well as people: “How do we mobilize people within the space? Do people need to be mobilized?
When I conjure different spaces and sound, I’m thinking about those things too.” Tam had
initially resisted director Steven Hill’s request to create something of a “dreamscape” for the opening. She felt that this was a cliché approach to justifying an abstraction:

   But then I kind of went with that as taking that meaning of the word, and what does that mean to me. Dream? More interesting is how we fall asleep, how we go from one state to another. Which is kind of what the whole show for me was about, how we go from really well-timed transitions to deliberately not well-timed transitions. And I thought about the feeling of being coddled, like a blanket, and like a pillow, like a soft pillow, and I thought I’m going to build something that has those sensibilities for me. (Tam)

   In composing for the opening section of To Wear a Heart, Tam chose to build an octophonic sound system to surround the audience: eight loudspeakers evenly spaced around the audience. Sound, like vision, occurs wherever you happen to be. Sound waves travel through air, with different levels of force and frequency (see below), and reflect off available surfaces. For an attendant, they converge where she happens to be located. The opening section was such that a design had to be created for individuals who first moved from the entrance to the altar, to whichever chair they chose, and then to whichever chair in whichever seating area they chose to occupy, seating areas that were spread widely across the hall. Thus the sound design had to work for a great many standing and seating positions. Attendants would always be facing some speakers while some were behind them or at oblique angles. There was no privileged listening location. Sounds issuing from a given speaker would travel both directly at a given attendant and also reflect off all surrounding surfaces and back at them. The materials/substrates of the hall, described above, lay somewhere on a line between highly resonant to not very resonant. Thus an ambient sound design was chosen, one that would take advantage of the standing and seating arrangement.
In the last chapter I referenced Gumbrecht’s theory of oscillation between presence-effects (meaning arising from materials and spatial relationships) and meaning-effects (meaning arising from semantic/linguistic content). In creating a sound design that works with the existing resonance capacities of the hall, Tam focuses on presence-effects. But in our work, we also deal with meaning-effects. We go between intense focus on materials to rethinking “themes.” Our intent was to destabilize the settler-colonist narrative in British Columbia (or rather, further destabilize it, as the process has been well underway for some time, and is picking up pace). One of the tactics for doing this was creating a church-like atmosphere that included an altar at which one lights a candle to a British explorer, rather than to a Christian icon. In placing the explorer in the position of sacred colonial deliverer of a promised land, the attendant is implicitly asked to think about her place in this official historical narrative. By superimposing the Christian church schema on the historical narrative, we were attempting to force a difficult blend of concepts (see Chapter 6 for a detailed explanation of conceptual blending and its application to Steppenwolf). We did this in several ways that amplified embodied engagement. Upon arriving at the Russian Hall the attendant had to walk a journey from the front of the building, around the back to a concrete staircase, up two stories to and through the back door, into a makeshift bar (the rehearsal studio), down an enclosed staircase, into the lobby, and through double-doors into the main hall. As she entered the main hall she encountered a space that was far larger than any of the interior spaces she had traversed so far. The acoustic environment of those spaces had been markedly different from the expanse of the hall — the relative ease of locating sound sources in the smaller spaces was replaced by auditory dispersal. The same was true of the visual environment, due to the way hazer mist and dim lighting obscured the shell of the room.

Part of the inspiration for this walk was David Wiles’ description of “the sacred way” in
ancient Greek theatre (Wiles 64-67). As an Athenian made his way from the agora to the theatre, he would travel a circuitous route known as the sacred way. He would pass sculptures of gods and ancestors. The twisty route was such that one could not look very far ahead or behind. While moving toward a destination one had to consider the stops along the way. For the Athenian the journey was one of re-affirming a cultural narrative. For To Wear a Heart so White we wanted to create a journey that threw all parts of our settler-colonist narrative into question. We wanted to do this in a way that was not so much about representing complications through protagonist and antagonist character conflict, but by making each spectator a protagonist attempting to negotiate a shifting perceptual experience. The spaces travelled through bodily were part of this negotiation. Thus the attendant, likely already aware of the contentious nature of the colonial narrative, makes her way, through the rooms, to the altar where she is confronted with a very stark and limited choice: not affirmation in the form of spiritual redemption, but a question — British naval explorer she will choose as her ancestor? Whether she chooses one or none, she is forced into a dialogue with an undeniable fact of her residency on unceded Indigenous territory. She is here, at the theatre, and in the city and country, as a consequence of European colonialism and the brutal encounter between disparate cultures.

For the artists to restate this historical fact within a theatre performance would be didactic. Since the political mission of Fight With a Stick is to address socio-cultural issues through perception and form, the meaning-effect — the “content” — is ultimately made subordinate to the presence-effect. In order to unsettle the attendant’s sense of surety, with regard to body-in-place/space, the procession described above was created. Any theatre performance is, even when a fictional elsewhere is invoked, an experience of the material theatre itself. Merleau-Ponty, a phenomenologist who studied neurobiology and is seen by some cognitive theorists such as
Kauffer and Chemero to be particularly relevant to studies of embodied cognition, argued that “space” becomes “place” through lived practice (Kauffer and Chemero 103-5). That is, a space becomes meaningful through habitual use. This is true for our daily journeys to work, a hike in the country, or a night at the theatre. Audiences that attend performances at the Russian Hall, and especially those that attend Leaky Heaven/Fight With a Stick performances, have made space into place through the lived experience of repeated attendance. On the one hand our audiences are accustomed to alterations of the scenographic configuration with each performance. On the other, they never know quite what to expect. It is never a matter of simply taking a seat among consistently fixed seating and looking in the direction they looked last time. In creating a version of the sacred way, we attempted to both affirm the attendants lived experience of a theatre place, and to re-make that experience.

Nancy Tam’s sound design contributed powerfully to the presence-effect during the opening of To Wear a Heart so White. Tam used recordings from three very different sources to achieve an ambiguous sound space. These were: Tibetan monks chanting, My Country by Czech composer Bedrich Smetana, and me reading the press release for the show. These three recordings were run through a software program called Granulator,38 which is a feature of Kenaxis, a program created by Vancouver software engineer, sound-designer, violinist, and composer Stefan Smulovitz. Granulator allows you to take a portion of a sound file and apply various parameters that alter things like the duration and pitch of the extract. Tam: “What happens is that it picks up bits and pieces of the [sound] files, and then I could say, ‘Oh I want at

38 For a demonstration go to: http://www.kenaxis.com/movies/Granulator.mov. The link works best with the search engine Google Chrome.
least three different bits to be playing at the same time, and I want them to be no longer than a thirtieth of a second.’ Just really short files” (Tam). The shortness and somewhat arbitrary selection of sound bits challenges the listener’s ability to discern a melodic pattern or harmonic continuity. The mixing of sources that are unrelated, tonally, confuses the acoustic environment even further. The timbre and tonal suggestion of one source clashes with another. “Yeah,” says Tam, “it is unsettling in a way because of the process of the treatment of the source, the granulation; because you’re picking little bits of recording. So literally, technically, that is what we heard.”

Another factor that made the experience spatially disorienting is that the blended sounds were made to ‘travel,’ through live mixing, from speaker to speaker around the hall. As Tam puts it, people tend to try to create a story out of what they hear. They also try to find the tonal center of a musical composition. Tam deliberately resisted this so that audience members would pay more attention to the spatial surroundings and to their own presence within it. This search for a stable, categorizable sonic atmosphere, and the blocking of that search, throws the attention of the attendant back on herself. Thus a potentially more conscious engagement with the performance can take place as the attendant gets to know the aesthetic language of the show.

Taking the lead from Hill, Tam calls this “teaching the grammar of the show” to the audience:

It’s spatialized in the hall so that when we walk in and are surrounded by this soundscape, it’s like your brain will try and follow the same pitches. We always try to find narratives. My hope was that you get disoriented because you’re hearing things from all over the place; even if you’re not conscious of this happening, your selective hearing is hopping all over the place and your attention is drawn from different places. Even if you’re not looking
you’re more aware of voices around you, activities around you. And that’s the kind of response I wanted to set the whole thing in. I think what Steven [Hill] would say — teaching the grammar of the show. So that was right off the bat. (Tam)

In *To Wear a Heart so White* the grammar is not primarily about language, character, or narrative. It is about the embodied cognition of spatio-acoustic relationships. A certain *church* genre, mixed with a *procession* genre (the sacred way), and further overlaid with an official historical narrative works with the notion of mixing together short sound bits from three sources. The clashing of spatial narratives is not as extreme as the clashing of recorded sources. Therefore the push-and-pull of recognizable narratives, in themselves complex but not wholly unrelated, with the absolute instability of auditory information, potentially creates an oscillation between moments of knowing and moments of not knowing, between genre-recognition and uncategorizable sound space.

As Levitin notes, genre is a matter of cultural convention, and not really a matter of objective physical properties of sound:

Perhaps the ultimate illusion in music is the illusion of structure and form. There is nothing in a sequence of notes themselves that creates the rich emotional associations we have with music, nothing about a scale, a chord, or a chord sequence that intrinsically causes us to expect a resolution. Our ability to make sense of music depends on our experience, and on neural structures that can learn and modify themselves with each new song we hear, and with each new listening to an old song. Our brains learn a kind of musical grammar that is specific to the music of our culture, just as we learn to speak the language of our culture. (loc. 1670).

When it comes to music and sound, structure and form are not *out there*, they are *in here.*
4.2 **Synaesthesia and multi-modal mapping**

In neuroscientific terms, the “grammar” would be a number of identifiable neural patterns — musical keys, meters, and rhythms that the listener can call up in order to categorize what she is hearing: “Ah, it’s waltz time” (three beats per measure), or “It’s straight time” (four beats per measure). These characteristics of music, and sound in general, have emotional resonance for us. Levitin writes of the manner in which a conductor’s movement stretches and compresses meter, and emphasizes or de-emphasizes dynamic “for emotional communication. Real conversations between people, real pleas of forgiveness, expressions of anger, courtship, storytelling, planning, and parenting don’t occur at the precise clips of a machine. To the extent that music is reflecting the dynamics of our emotional lives, and our interpersonal interactions, it needs to swell and contract, to speed up and slow down, to pause and reflect” (loc. 2626). “The Brain,” he writes, “needs to create a model of a constant pulse — a schema — so that we know when the musicians are deviating from it. This is similar to variations of a melody: We need to have a mental representation of a what the melody is in order to know — and appreciate — when the musician is taking liberties with it.”

Trying to navigate the opening of *To Wear a Heart so White*, a sound design with no tonal center and no obvious meter, presents different levels of challenge for different attendants. For someone who requires a high level of metric predictability and a clear sense of what key the music is in, entering into the show might be an experience devoid of pleasure. Some attendants, during talkbacks, described the experience of encountering the sound world as one of slight nausea (Leaky Heaven Talkback: *To Wear a Heart so White*). I felt the same way at first. It felt like the floor was rocking slightly. As I became accustomed to the sensation, the sonic
environment revealed more layers. I liken it to an aural version of watching the Northern Lights. During the one time I have seen the Northern Lights it looked to me as if the sky was made of translucent crepe paper ruffled gently by unseen hands. It wrinkled. Parts of it receded while other parts came forward. It kept changing. That is what Tam’s design felt like to me: like I was surrounded by wavy, wrinkling, sonic crepe paper. The nausea would have been the result of my trying to initially locate a meter, a rhythm, and a tonal center. But because there were competing meters, rhythms, and a lack of tonal center, it is likely that a number of neural patterns were in competition, making it difficult for me to find a dominant pattern for them.

Inevitably, however, the brain continues its search to make sense of the experience. Unconsciously, it provides me with the Northern Light schema — a visual schema that is also aural, or rather a cross-modal schema made up of visual and aural patterns, each contributing a partial representation. I remember lying on the grass on the slope of a mountain, watching, and listening to the lights. “Listening” to the lights? That is my memory of it. No one has recorded this phenomenon but many people have reported it. It is suspected that the swishing and crackling sounds people say they hear are produced by a “leakage” of electrical impulses from the nerves of the eye into the auditory cortex where the impulses are interpreted as sound — a kind of synesthesia. The theory of neural reuse, which has clinical research to support it, offers another explanation. The idea that specific regions of the brain are responsible for specific modes of sensory perception is currently being re-assessed. It is not that regions like the auditory cortex are no longer relevant, but neurons in these areas seem to be able to change their function and manner of firing. A neuron or group of neurons responsible for visual processing, for example, seem to be able to switch to auditory processing. A visual neural map can become a visual-auditory map, or visual-tactile-auditory map. In addition to this, areas from regions outside one
cortical area can be recruited to assist with processing in another cortical area. As Anderson, theorist of “action grounded cognition,” argues, the traditional idea of a one-to-one relationship between a brain area and a perceptual/psychological attribute does not sufficiently explain how neuronal activity works. In fact, it now seems that neurons are organized according to the required task at hand. “Coalitions” of neurons form and reform depending on whatever cognitive challenge an individual is presented with (Anderson After 49-52). Depending on the task, neurons in the occipital lobe, a region at the back of the brain that processes visual information, will cooperate with neurons in the sensorimotor region to work out a tactile task such as reading brail.

Regarding neural distribution, hearing, and cross-modal cooperation, Schnupp et al. concur: “The neural circuits that extract or convey information about the periodicity [a period of time demarcating one or more wavelengths] of a sound need not be the same as those that trigger the subjective sensation of a particular pitch” (116). A common phrase used among neuroscientists to describe both neural distribution and neural repurposing is, “Neurons that fire together, wire together.” This describes what is also commonly referred to as “neural plasticity,” an enduring change in how neurons connect to one another. Further to the issue of cross-modal processing, Schnupp et al. cautiously entertain the possibility, increasingly supported by

39 It is well understood that auditory processing of electrical signals, via nerve fibers, travels from inner ear, and through various areas of the brain stem before reaching the auditory cortex. But the idea of neural reuse changes the very function of neurons themselves. For a detailed discussion see Michael Anderson’s After Phrenology: Neural Reuse and the Interactive Brain and “Neural reuse: A fundamental organizational principle of the brain.”.
research, that sensory modalities simply cannot be fully separated, and are interdependent, going so far as to say that motor areas of the brain connected to physical action may be involved in tasks such as perceiving pitch:

. . . neural responses in the auditory pathway might never fully separate periodicity from other physical or perceptual qualities of a sound, such as intensity, timbre, or sound source direction. Such an ‘implicit’ representation would not necessarily make it impossible for other, not strictly auditory but rather cognitive or motor areas of the brain to deduce the pitch of a sound if the need arises (similar arguments have been made in the context of so-called motor theories of speech). (129)

This again fits with the embodied cognition argument that to perceive is to do. Regarding cross-modal coalitions, the authors go on to cite compelling research that affirms the manner in which sight guides hearing, and hearing guides sight:

. . . different sensory inputs are transformed by the SC [the Superior Colliculus, an area in the brain stem] into motor commands for controlling orienting movements of the eyes, head, and, in species where they are mobile, the external ears. Besides providing a common framework for sensorimotor integration, aligning the different sensory inputs allows interactions to take place between them, which give rise to enhanced responses to stimuli that are presented in close temporal and spatial proximity. (208-9)

The Superior Colliculus, referred to in the above quote, “is a multisensory structure, and the auditory representation is superimposed on maps of visual space and of the body surface that are also present there” (207). Contrary to older models of strictly task-specific brain regions, newer research describes highly distributed and multi-modal neuronal activity, seen increasingly as much more plastic, adaptable, and changeable than previously believed.
To bring this discussion back to the unsettling auditory experience in *To Wear a Heart so White*, I am suggesting that the degree to which an attendant is successful at stabilizing the situation for herself has to do with whether she has existing multi-modal neural patterns through which she can physically cognize what is on offer. This can happen to a greater or lesser degree for each individual. The Northern Lights schema may have given me a way of adjusting to the experience. But failing to fully to stabilize is not necessarily a bad thing. In fact, the very state of perceptually openness that we encourage through our scenography, depends on the attendant *not* being able to fully succeed. Openness to the extent of extreme disorientation will be too much for some people. For me, what started as an unsettling experience, a physical-aesthetic challenge of sorts, resolved into something familiar, aided by a memory of an exhilarating experience, seeing the Northern Lights.

I think Nancy Tam accomplished what she was after: sound was spatialized: “You hear the harp notes, which were really prominent and repeating and coming from your left, and then coming from behind you, and in front of you, and just popping everywhere, and you kind get this sense of ‘Oh it’s just everywhere’” (Tam). And it was disorienting: “Even though you’re not even listening to the content of it, you’re being led to pay attention to different parts of the room. And to introduce the space by disorienting the audience is one of my favourite ways of doing it.”

In the next two sections I will further describe the physics of sound propagation and its neural processing. Afterwards, I will summarize some of the tactics employed by Leaky Heaven, in the form of dramaturgical questions for the artist and scholar.

### 4.3 Mechanical and electrical propagation of sound

Sound has mass. Or rather *air* has mass. I think the layperson tends to think of sound as an
immaterial phenomenon travelling from its source through a substance-less ether to reach our ears. But air has mass and weight. Embodied cognition of sound is a result of your body interacting with the air around you. When I speak of stabilizing and destabilizing an attendant’s sense of emplacement in relation to existing and designed sound, I am speaking of affecting the body.

Schnupp et al. ask us to imagine sound travelling as numerous small packets of air, one pushing the next toward our ears. A sound wave is propagated in the following way:

1. Compression: When a thing is struck it vibrates and displaces neighboring air packets.
2. Forward displacement: Each air packet pushes neighboring air packets along.
3. Rarefaction: As one air packet compresses itself to push the next, the air behind it “stretches.”
4. Backward displacement: The stretched air is pushed back in the direction it came from (Schnupp et al. 40-1).

An everyday example the authors use to explain this is the uncorking of a bottle. Air in the neck of a bottle has mass. When the cork is pulled out, air is pulled out with it. This decreases pressure in the belly of the bottle. The lower pressure in the belly then allows for the greater weight of air outside the bottle to push into it (7-8). The bottle is a “resonant cavity” in which the displacement of air produces a sound we recognize as a pop. Our bodies work in a somewhat similar fashion; we too are resonant cavities. To produce pitched sound we tighten our vocal cords (tissue flaps) across the larynx, then “exhale to push air through the closed folds” (34).

“The vocal cords respond by snapping open and shut repeatedly in quick succession, producing a series of rapid clicks known as ‘glottal pulses.’ These glottal pulses then ‘ring’ through a series of resonant cavities, the vocal tract, which includes the throat, the mouth, and the nasal sinuses.”
Creating sound begins with pushing air (molecules), tissue, and slightly displacing cartilage and bone, in this fashion. To be clear, what I am calling a moving air mass is more specifically a sound wave moving through air masses. Individual molecules do not travel from a sound source (a material that vibrates) all the way to your ears. Rather one molecule is slightly displaced, displacing another molecule, displacing another molecule, and so on all the way to your ear. Soundwaves, bounce off all available surfaces, travel (through molecular displacement) to your outer ear, enter your ear canal at a certain angle and with a certain frequency, and travel along it to push against your ear drum. On the other side of the ear drum, further in, are three small bones. The displaced ear drum will push the first bone, which pushes the next, which pushes the next. There is a 20:1 ratio of force between what pushes against the larger surface of the first bone to what happens when the last smaller bone pushes against the next surface, a membrane known as the **oval window**. In other words, the force is multiplied by focusing it on a small point.

On the other side of the oval window is the **cochlea**, a liquid-filled chamber of the inner ear. Pressure waves now travel through this coiled, snail-like chamber. Running the length of the chamber is the basilar membrane. Different parts of this membrane are resonant to different frequencies, with the part of the membrane closest to the oval window responding to high frequencies, and the part that is furthest responding to low frequencies. The membrane is thus **tonotopically** ordered (Schnupp et al. 62): “. . . each point of the basilar membrane has its own ‘best frequency,’ a frequency that will make this point on the basilar membrane vibrate more than any other” (57). Sitting on the membrane is the **organ of corti**, which runs along the length of the basilar membrane. “Hair cells” within the organ of corti move up and down with the movement of the basilar membrane. The ends of these hairs (stereocilia) send signals to the auditory nerve fiber. Depending on where on the membrane these hair cells sit, they will transmit
different kinds of auditory information related to “the rhythm and the amplitude of the movement of the basilar membrane on which they sit” (65).  

At this point we are moving from the mechanical force of air pushing on air (molecule displacing molecule) — pushing on membrane and bone, pushing through water, etc., — to the transmission of electro-chemical energy through nerve cells (neurons). The auditory nerve, attached to the cochlea and picking up the signals from the organ of corti, transmits, through neural pathways, auditory information, first to and through numerous areas in the brain stem, some of which have been mentioned above, such as the superior colliculus, and eventually up into the auditory cortex (64-69). The auditory cortex, like the basilar membrane, is also organized according to auditory logic. Just as the basilar membrane responds to different frequencies (including overtones) along its length (but see footnote 40), the primary auditory cortex responds to the electrical impulses generated by those frequencies along its ‘length’:

40. There are controversies regarding how the basilar membrane and surrounding architecture of the inner ear receive frequencies and transmit them to the relevant nuclei and cortices of the brain. The “place theory” of hearing “posits that when the basilar membrane is stimulated by sound the brain looks for the highest peaks in the resonant vibrations and perceives those peaks as pitches and timbres” (Pritchard 45). The problem with this theory is that the length of the cochlea (when rolled out) is short relative to the wavelength of low frequencies. Also there are only so many pitches the average human is able to “resolve” (perceive as pitch) over this short length (45). A second theory, the “frequency or temporal theory,” suggests that hair cells in the organ of corti can respond (fire) “at rates that are related to the frequency of stimulation” (45). For example a frequency of 500 Hz would be matched by a neuron in the organ of corti firing 500 times per second. The problem with this theory is that a single neuron can only fire, recharge, and fire again to a maximum of 300 to 500 times per second. Humans can hear much higher frequencies than 500 Hz. To compensate for this the “volley principle” suggests that a group of neurons can fire in a “synchronized manner,” meaning that while one neuron is recharging, another neuron is firing. Thus there is a kind of relay occurring in which “neurons don’t all fire at the same time, but as a group they are sending out regular impulses at the beginning of each excitation” (45-46). Unfortunately the volley principle seems to capture excitations only up to about 500 Hz. Thus there is a synthesis of the place and frequency theories known as the “frequency-place theory.” The argument here is that the place theory (the first theory discussed above) will capture high frequencies, while the frequency theory will account for the capture of low frequencies. Both theories are “operative in the midrange of hearing” (46).
The auditory cortex, too, is subdivided into a number of separate fields, some of which show relatively clear tonotopic organization, and others less so. Apart from their tonotopy, different cortical fields are distinguished by their anatomical connection patterns (how strong a projection they receive from which thalamic nucleus, and which brain regions they predominantly project to), physiological criteria (whether neurons are tightly frequency tuned or not, respond at short latencies or not, etc.) or their content of certain cell-biological markers, such as the protein parvalbumin. (90)

What is of significance here, regarding embodied cognition, is that there is something of an analogic structure to the organization of sound in the cochlea and auditory cortex that reflects the structure of sound propagation in the world. Our interaction with the environment is one of structural simulation.

Finally, the path is not unidirectional. Just as individuals will tune their hearing to auditory surroundings by moving their head and body, and thus shifting how they receive sound waves, the internal auditory system is in a feedback loop with all of its parts. “There are […] countless neurons relaying information back down, from frontal cortex to auditory cortex, from auditory cortex to each subcortical processing level . . . all the way back down to the cochlea” (92). Thus, [the] anatomical arrangement indicates that auditory processing does not occur in a purely feedforward fashion. It can incorporate feedback loops on many levels, which make it possible to retune the system on the fly, right down to the level of the mechanics of the cochlea, to suit the particular demands the auditory system faces in different environments or circumstances. (92)

Given that sound is a physical force that both drives straight at an individual and also immerses her in reflected, ambient waves, a group of scenographically-minded devisers hoping
to work productively with acoustics, existing and designed, would do well to have a working knowledge of auditory science. If one thinks of sound as pressure waves pushed hard (through successive displacement) at, or caressing, the attendant, one may gain a deeper understanding of how scenographic choices will contribute to the attendant’s sense of emplacement or displacement. Add to this an understanding of the resonant qualities of a space and the reflective qualities of materials placed in the space, and one can add nuance to a sound design. Finally, knowing that hearing is never just hearing, and vision never just vision, and that each partakes of the other as well as of other sensory modalities that form “coalitions” of neuronal patterns to make sense of an experience — an atmosphere or genre that is itself multi-modal — one can begin to assemble more complex, perceptually adventurous, performance events.

*The symmetry of sound*

Another way of thinking about sonic destabilization and resolution is in terms of this symmetry. Countless studies have shown that the relative symmetry of our brains, divided into a left and right hemisphere, plays an important role in how we perceive the world. In an auditory context, sounds that enter our right ear, for example, travel as electrical signals to both the right and left auditory cortices of our brains. There is a strong tendency for sounds received in the right ear to be represented most strongly in the left auditory cortex and for sounds received in the left ear to be most strongly represented in the right cortex (Hugdahl 127). In addition, the left auditory region tends to interpret and process words better than the right region, while the right region tends to process musical sounds better (127). In fact, patients who have suffered damage to critical areas of the left auditory cortex can lose the ability to produce or understand speech (depending on the specific area of damage), but can still understand sound (121). There is some
overlap between what the two sides do, as well as critical differences. Due to hemispheric
symmetry and asymmetry, in combination with cross-modal neural maps, we are able to interpret
and *locate* where a sound is coming from. Not only are we able to locate that sound, we are able
to pick out particular sounds from dense aural environments (Teki 2).

Recent studies show that visual maps and auditory maps work together, but perhaps with a
slightly different emphasis, to locate sound. A visual map presents a “circumscribed” area, as
you would expect from a map (Lee and Groh 3). You could say the neurons create a kind of
connect-the-dots drawing that offers the general shape of what the eyes see. Lee and Groh argue
that when it comes to locating sound in space the superior colliculus — an area in which neurons
create visual spatial maps and in which it is believed auditory neurons create ‘topographies’ that
match “oculomotor” maps — contains neurons that have two different but mutually supportive
functions (2). The same neurons that at some moments fire for the purpose of creating visual
maps fire at other moments in response to auditory stimuli.\(^{41}\) When doing the latter, the firing
patterns do not necessarily match up tightly with the visual map created. Rather, they tend to fire
in clusters related to the “interaural axis” — that is, according to left-ear/right-ear symmetry —
and to the micro difference by which a particular sound reaches one ear before the other and
helps the hearer locate the direction and distance of a sound in space:

> Stimulus localization in the auditory system is possible because of the geometry of the
head and external ears. Key to this is the physical separation of the ears on either side of
the head. For sounds coming from the left or the right, the difference in path length to each
ear results in an interaural difference in the time of sound arrival, the magnitude of which

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\(^{41}\) This is perhaps in keeping with Anderson’s theory of neural reuse.
depends on the distance between the ears as well as the angel subtended by the source relative to the head. (Schnupp et al. 178).

The strength of a neuron firing in relation to points along the left-right axis creates an analogic structure, one that complements the visual map. 42

Using to the logic of symmetry, a sound designer can offer the reassurance of symmetrical sound space or she can offer the adventure of a shifting, asymmetrical environment. Distance and direction of sound contribute to the felt sense of a space: the sound is far or near, left or right.

Nancy Tam, using octophonic surround sound, toyed with the attendant’s sense of symmetry, introducing a degree of uncertainty for the audience members: exactly how were they supposed to feel about the environment they were entering? They would be taking a journey through several genres of performance and space, by turns comic, whimsical, ironic, dramatic, and tragic.

They would be on shifting ground for the seventy-five minute duration of the show. The sound design would continue to be a major factor in shaping the space of each genre. It would alternately offer the attendant a sense of stability and instability. The attendant would find herself in a the push-pull experience described by Home-Cook at the beginning of this chapter: Immersed in sound waves coming from unclear directions while reaching out to locate their sources. She may find herself unsure of other things too, such as the dimensions of the room.

42 The fact that hearing is dependent on head-position and ear symmetry is very much in line with Gibson’s argument, discussed in detail in the following chapters, that vision is a whole body perceptual act and not a simple matter of the physics of optics. From an embodied cognition perspective, hearing is also a whole body act in which ears must “stretch,” as Home-Cook puts it, to meet aural phenomena. A head must turn or tilt, on a neck which turns or tilts, on a body that moves in space.
4.4 Some dramaturgical questions for the artist and scholar inspired by sound design in

*To Wear a Heart so White*

Is sound at a given moment directional, ambient, or both?

At a given moment are you intending to emphasize one sensory modality, several, or make them all more or less equal?

How does the shell of the room amplify or suppress sounds?

What kinds of sounds do the surfaces/materials of the shell enhance or suppress?

Do you notice any existing frequencies, high, medium, or low?

Does the room have a buzz or hum? Do you want to mask these sounds, allow them to be noticed, or emphasize them?

Will you populate the room with materials that reflect sound, absorb sound, or both?

How will you use the materials you add to the space (including performers and attendants) to alter the way sound travels through the room?
Is the sound design, at a given section, intended to make the attendant feel emplaced, uncertain, decentered, stable, unstable, etc.?

Does the sound design emphasize pitch, timbre, tempo, volume, or rhythm? More than one of these? To what end?

When sound is directional, does it seem as if it is coming from the thing that is supposed to be making the sound, for example, a speaker, a human voice, or a set piece? Or is it directional but not connected to the apparent source?

When does the sound design seem have a spatial direction, moving from one location to another?

When does the sound design seem to have a temporal direction, moving from past to present, present to future, and from future to present or past?

Is it possible to separate the spatial direction of sound from the temporal direction? Do they have to go in the same direction or can they be at odds?

Does the sound design make the space seem smaller or larger, more dense or more expansive, thick or thin, polluted or airy?

Does the sound design make one part of the room more present than another?
Does the sound design make the room feel like it’s tilting one way or another, turning one way or another, changing size, density, or other?

At a given moment do the lights make the room “sound” louder or quieter, harder or softer?

Do the rhythm and tempo of the lighting changes reinforce or conflict with the rhythm and tempo of the sound changes?

Do the natural acoustics and sound design, at a given moment, add clarity to where things are in the room or obscure things?

Does the sound design represent something — a story, or something found in the world like birdsong or traffic, or is it in itself a phenomena of intense perceptual engagement, a multisensory or synaesthetic provocation that challenges the attendant’s perceptual skill?

Does the sound design reference one or several genres? To what extent does it resist categorization? To what extent does it embrace categorization?

Is the sound design helping the attendant forget where they are?

Is the sound design drawing the attendant’s focus to herself and her material surroundings?
Chapter 5: The perspective stage and sensorimotor schemas in *Steppenwolf*

5.1 Introduction

In this chapter I describe and analyze two important scenographic features of *Steppenwolf*: (1) lateral and rotational movement (actual and digital); (2) perspectival framing in the tradition of the Italianate stage. In the first sections, “The perspective stage and the significance of depth,” David Wiles’ historical analysis of the Italianate stage provides a model for understanding the intent of the *Steppenwolf* performance design. Wiles argues that the perspectival stage, due to its enduring familiarity, continues to be a meaningful spatial configuration for theatre audiences (Wiles 207-39). I apply the spatial logic of this model to *Steppenwolf*. Interlaced with this I develop Gibson’s theory of surface perception as it applies to the scenography of the Pacing scene from *Steppenwolf*. I go into detail regarding surface perception in general and the specific surfaces on offer in the Pacing scene. A further feature of significance in *Steppenwolf* is the manner in which lateral and rotational movement of stage elements played a specific perceptual game with the audience, and how this game was critical to exploiting the perspectival spatial schema of the Italianate stage. In a later section, “Metaphor theory, sensorimotor schemas, and the embodiment of spatial depth,” I use Lakoff and Johnson’s metaphor theory, grounded in cognitive neuroscience, to further explain how the attendant is able to embody the spatial design and why it is meaningful. Metaphors such as “the truth is revealed” and “I have grasped the truth” have relevance to perspectival scenography, are based on spatialized physical relationships

43 I applied aspects of this historical model, as scenographic adviser, to *To Wear a Heart so White*, and as co-director to both *Steppenwolf* and *Revolutions*. 

158
developed through one’s life, and are instantiated as neural patterns that allow the attendant to embody the performance design. At various points in the chapter I reference Laura Marks’ definitions of “optic” and “haptic” visuality to elucidate two contrasting perceptual modes that contribute to *Steppenwolf’s* sensory affects. For Marks “haptic visuality” means tactile understanding of analogue and digital surfaces in film and video, specifically the way textural appearance of these surfaces — celluloid and videotape — is amplified by various treatments. When contrasting *haptic* with *optic* visuality (Marks 131-32), the latter is traditionally thought of as distancing, offering “mastery” to the viewer and providing narrative clarity. Marks does not subscribe to a strict division between the haptic and the optic, but rather explores the relationship between them as *tendencies*. There are obvious correlations between Marks’ terminology and Manning and Massumi’s discussion of neurotypical and neurodiverse perception, Pallasmaa’s description of ocularcentric and haptic architecture, and Gibson’s critique of optical vision. In this chapter I begin to develop the notion of the *map of unknowing*, which is related to and grows out of the oscillations between haptic and optic, between sensorimotor access and denial, and, as will be fully developed in Chapter 7, between material (actual) and imagined (fictive), and through alienation techniques that make that which is visually perceptible strange by offering only a partial views and resisting completing an image.

### 5.2 The perspective stage and the significance of depth

Gibson considers the word “depth” an imprecise way of describing distant objects. We do not see depth any more than we see “space.” We see surfaces in the “terrestrial array,” some close and some far (Gibson 151-56). When we look at something far away on a horizontal plane, we might use the metaphor “look into the depth” instead of the literal “look at that faraway distant thing.”

5.2
But the metaphor has significance to the history of Western performance spaces. In the *Steppenwolf* design it is exploited as a familiar cultural frame. Since the invention of “natural” perspective drawing in the 15th century,44 and the subsequent transfer of its illusionistic principles to theatre architecture and scenography in the 16th century (Brockett et al. *Making* 64), that which lies at the vanishing point — often a doorway or portal of some kind — has signified an idealized world, a spiritual or inner “truth.” To be clear, I am not suggesting that the vanishing point was the only locus of significance on the perspective stage. Truth can descend from above in the form of a divine visitation, for example. The perspective stage can be manipulated so that revelation can occur at other physical locations. The vanishing point can simply be an anchor for a moment of significance taking place elsewhere on stage. Developments such as the *scena per angolo* or “angled scene” of 18th century design, with its multiple vanishing points, allowed greater complexity of spatial organization (Brockett et al. *Making* 132-33). I am simply following Wiles in noting that the single-point perspective stage is important and enduring as a spatial concept. A schema common to different types of picture frame stages, and even to many box sets, is of the stage as an interiority in relation to the auditorium. As I discuss later in the chapter, the *container* schema as it relates to the “interiority” of the traditional stage has sensorimotor significance for the attendant. There was nothing mathematically precise in the way we used the perspectival affordances of the Russian Hall in *Steppenwolf*. Rather, we relied on

44 As Gibson points out, “natural” perspective is anything but, and was originally referred to as “artificial” perspective (Gibson 70). It is artificial, in part, because it omits viewer motion and works only for one spectator, a spectator that is ideally one-eyed and seated in a perfect central viewing position (Brockett et al. *Making* 63).
general schematic principles described by Wiles, such as: forestage = banal materiality; midstage = immersion in perspectival illusion; and furthest backstage point = place of greatest significance.

From the Italianate theatre to the symbolist/naturalist theatre of Ibsen, and down to the present day in many cases, equating spatial depth with depth of meaning has been a powerful scenographic strategy. Wiles traces the origins of this practice all the way back to the allegory of Plato’s cave (in which shadows on a wall are mistaken for their true forms), the significance of the skene doors in classical Greek theatre (through which religious and dramatic sacrifice occurs), and the mysteries of Eleusis (in which spiritual revelation takes the form of a blinding light from a cave opening). He then shows that neoplatonist philosophy has influenced stage architecture and scenographic practice from antiquity to the present. Even in the performance practices of the current era, the geometrical inheritances of the circle, the picture frame, and the cube continue to influence much of contemporary performance design. These shapes were thought through in the design of To Wear a Heart so White, Steppenwolf, and Revolutions. The allegory of Plato’s Cave has obvious resonance for Steppenwolf: a group of citizens is transfixed by shadows on a cave wall; the shadows are created by figures crossing the light of a fire behind them; the citizens are unable to turn and look directly at the source of the shadows (Wiles 209-10). In Steppenwolf the attendants watch, in a mirror, reflections of figures moving behind them; most attendants do not turn to look directly at the source of reflection. In both of these spatial configurations, the cave and the Steppenwolf configuration, the implication is that the ‘real’ is not immediately accessible, but is mediated, and that what one sees is an illusion — a shadow of the real in Plato; a play of light on a mirror in Steppenwolf. A second implication is that in the right circumstances, truth can indeed be apprehended. An escapee from the cave (the current
parallel being the modern director) can return to show society the source of the shadows. The rock can be rolled away from the cave to reveal the true light. The doorway at the vanishing point can open.

The Italianate stage creates an illusion of distance. The vanishing point (as implied through scenic painting) seems to be much farther away than the flats at the back of the stage. This is accomplished by a mathematical arrangement of successive wing flats on either side of the stage, and by methods of painting that use colour and scale to make things look farther away than they are. Lighting, sound, and stage machinery are also used to assist the illusion.\footnote{See Brockett for detailed descriptions of renaissance staging (Brockett et al. \textit{Making}).} Of significance is the vanishing point. It has focal power and appears to be the deepest place in the stage picture. There is often a doorway or portal of some kind located here, and it is from within this portal that something representing a feeling of “truth” sometimes emerges. The forestage, on the other hand, tends to be where materialistic and banal human activities take place (Wiles 207). Thus, in the perspectival Italianate theatre there is a spatial and aesthetic/spiritual progression from the forestage to the vanishing point, from the banal to the ideal. The proscenium stage together with another critical feature, the curtain, also contributes to demarcating a boundary between the worlds of auditorium and stage. Through proscenium and curtain, the idea that the viewer is looking into a picture or through a window is strengthened. The curtain was invented by the Romans as a way to separate the \textit{cavea} (auditorium) from the stage, and subsequently, with the lowering of the curtain (or later with the raising or parting of the curtains), to dissolve that separation (212). Wiles writes,
The basic western device to create a theatre of dreams is the curtain which reveals and conceals, effecting a gap between the embodied human being in the here-and-now and the ‘heart’ which has its place elsewhere. The curtain creates the specter of a more profound truth behind it, which commonly extends from the truth of private emotion to a higher more spiritual reality. (209)

The importance of alternately looking into and being immersed in the container of the stage will be further described in the later parts of this chapter.

5.3 *Steppenwolf* and the Pacing scene

Having begun discussion of the Italianate stage, which I will return to below, I now ask the reader to shift focus for the time being. In this section I will describe the Pacing scene from *Steppenwolf* and explain some of its scenographic principles using Gibson’s ecological theory of visual perception. The relevance of this to the perspective stage schema will be made explicit, through the following sections. In *Steppenwolf* the attendants watch the performance through a mirror, not looking directly at the staging that occurs behind them:

\[46\]

Based on observation of the audience, but especially from post-show talks, we learned that some audience members never turned around, some occasionally turned around, and a very few watched much of the show looking directly at the stage instead of at the mirrors. The discussion of flatness and depth that is central to this chapter holds true even when an attendant looks directly at the stage. Looking at the mirror, however, strengthens the effect.
Figure 5 (Screen capture) A white vinyl cover rises on the mirrors to reveal the attendants’ reflections of themselves and of the space behind them during the opening sequence in Steppenwolf. (Side view; wide angle lens). *(Steppenwolf)*

Figure 6 (Screen capture) A few minutes later during the same sequence. (Upstage view; behind audience). *(Steppenwolf)*

The mirror acts as both screen-surface and window. It allows the artist an extra layer of framing, the ability to isolate objects in space with greater clarity and to make them disappear into the
background with greater ease. It can be used to confuse the attendant’s perception of distance, to blur two- and three-dimensional space, to confuse the attendant’s sense of sensorimotor access to potential pathways and obstacles, and to conflate digital projection with three-dimensional objects and performers. Through these techniques, various oscillations between perceptual states are induced.

The mirrors reach a height of eight feet and a width of thirty-two feet. Looking into them attendants are able to see themselves and whatever unfolds on the three successive stage decks behind them. There are important surfaces in play that, in combination with other factors, give the scenography its unique character. The long mirror is significant but other surfaces including cardboard flats, a person-sized cardboard box, the black proscenium of the old stage, red velvet stage drapes, beige cotton stage drapes, pink nylon fabric stretched across a house-like structure, the white back wall of the stage, performers, and objects are also critical.

_The role of the mirror in the “Pacing” scene_

The attendant sits in chair looking at a mirror that stretches to the left and right, occupying some or all of her peripheral vision. It is dark so she cannot see above the mirror. When she is lit directly, or when there is enough ambient light, she can see her own reflection and the reflection of those seated around her. She can also see the reflection of whatever is taking place on the stages behind her. Often that is all she can see. At about 22:00 into the show, the reflection in the mirror is of a man pacing back and forth on the apron of the stage, just downstage of red velvet drapes:
The man appears to be further back than anything she has seen so far. Earlier, the first elements presented to her — floating laptop screens — seemed to be right behind her. After that, a scene in which a man was pushed on a dolly across the stage in front of two adjacent living room sets seemed further back. The current figure seems even further away. At one edge of the attendant’s peripheral vision is some kind of booth with a window through which another man can be seen reading from a book. The distance of the booth has remained constant. She can hear this man’s amplified voice from time to time. The man pacing back and forth in the distance might be a video projection — it is not clear. On further inspection there appears to be someone pushing a box that the video is projected onto. But that is not clear either. Actually the man pushing might
also be a video projection and the man pacing might be real. Or maybe the are both projections. The curtains behind them might be opening. Yes, they seem to be opening and closing now as both the pacing and pushing figures move left and right. Sometimes the image of the pacing man seems to slip off the box, so it cannot be a projection can it? Or it may be that when the image slips off it is landing on another surface, not far behind the box. There might be another man further back, also pacing across the stage. He seems to be a double of the first pacing man. At first he seems to be keeping pace with and staying close to the first pacing man, but then he gets out of sync. It is unclear whether he is a projection or is real.

Is there a second set of curtains opening and closing? Yes there seems to be. Or are these curtains also projections? It is unclear how far back the second pacing man is. At times he seems to be in front of the second set of curtains, at other times behind them. There is amplified sound. The attendant might also be hearing the sound of the curtains on their tracks and the sound of something rolling on the stage. The sounds are not clearly connected to what she is seeing, and it is hard to tell the difference between amplified and non-amplified sound and therefore hard to specify how far away the things she is seeing are and how far from each other they are. There are moments of relative clarity, and then things blend again.47

47 The scene can be viewed on YouTube at https://www.youtube.com/watch?v=OFQVcOJXB-Q — or type in “Steppenwolf (full length) – Fight With a Stick Performance,” starting at 22:20 and ending at 26:10. For a better image, I recommend you use a computer with a large screen with access to a robust internet signal. I also recommend using headphones or playing the video through a capable audio system in order to appreciate the sound design.
The scene described above is two-dimensional — in that the audience sees it on the surface of a mirror and a mirror surface is flat. The attendants know there is some kind of three-dimensional activity occurring behind them, but if they look only ahead of themselves, at the mirror, they see only the two-dimensional reflection. This flattening helps the artists create the scene’s perceptual uncertainty. Parjad Sharifi, the lighting designer, has lit the scene with only a single frontal projector. Using the software program *Isadora* and the video content of the pacing man, created by video artist Josh Hite, Sharifi has projected a video of the red velvet curtains onto the actual red velvet curtains. The single light source, shining as it does from the back of House Center directly onto the curtains, has a flattening effect. There is no sculptural side or back lighting to bring out the contours of the architecture or to make the human figures stand out from the background. Together with the fact that most of the light and content that is projected is of a red hue, the projection further undermines the three-dimensionality of the scene. Simply, the red hue creates a dim light that makes it hard to pick out details that would suggest three dimensionality. The ratio of the projection of the man with the white shirt pacing in front of the red drapes is one-to-one. Therefore the size of the pacing man as video projection is the same size he would be if he were pacing there in the flesh. The projected velvet drapes are the same size as the actual drapes.

The single radiant light source, the projector, sends rays of light to the stage. Each of the surfaces on stage absorb a certain amount of that light and also reflect a certain amount back at the other surfaces in the hall, including the mirror the audience is looking at. Most of the surfaces on stage will further diminish the available light by absorbing much of it. The red velvet curtains
are not very reflective. The black proscenium arch is not very reflective. Nor are the red overalls worn by the pushing figure (Josh Hite) or the black pants of the pacing man (Steven Hill). Nor is the cardboard box covered as it is in brown wood-grain wallpaper. The second set of curtains — beige and of a smoother texture than the velvet curtains — are a little more reflective, which is helpful since they might otherwise be almost invisible. The white back wall of the stage, when it is revealed, is white and very reflective but has been muted by the red hue of the projector light. The facial and hand skin of the actors is not very reflective and offers only small surfaces. Absorption of light rays means that fewer light rays bounce off the surfaces back to the mirror at which the audience is looking, and therefore the rays reflecting off the mirror, and that converge at the various points where each spectator’s eyes are situated in space, carry what might be called low visual information about what is on the stage behind the spectators (there is also a loss of a few percentage points of intensity when the photons strike the glass of the mirror at the intersection of air and glass) (Biello).

All in all the scenographic surfaces, together with the available intensity and hue of light, offer the audience a scene in which it is hard to tell the distance between one thing and another or to pick one out one surface from another. It is not impossible, and this is a crucial: the attendant must have glimmers of the depth, of shapes, of possible pathways through or around things, in order for the perceptual game being played in this scene to work. She must be able to at least guess at the affordances the scene offers in terms of sensorimotor access. I will get back to this point below.

While the surfaces described are not highly reflective, they still reflect light. The choice of lighting and surface materials has reinforced the two dimensionality of the reflection. However, the attendant knows that the source of the reflection, the staging behind her, cannot be
two dimensional. She has already seen enough of the stage when she entered the Hall to know this. Equally important is the way in which mirrors create the illusion of distance. If you stand two feet away from a mirror and observe your reflection, the reflection will appear to be four feet away. Even though mirrors are flat, they give the illusion of having depth and revealing distance. Also, because of the angle at which light travels to the mirror and then to your eye, something that is behind you and a little to the right will appear in a mirror as in front of you and a little to the right. More to the point, something that is one-hundred feet this side of a mirror will appear to be one-hundred feet the other side of a mirror. If you are standing next to an object that is one-hundred feet this side of a mirror, the “virtual” object, the reflection, will appear to be two-hundred feet away. If you are only fifty-feet away and the actual object is still one-hundred feet away, the virtual object will appear to be one-hundred and fifty feet away from you. The closer you get to the mirror, the closer the virtual image will seem to you, but never closer than the distance to the actual object (you would have to have your eyeball at the surface of the mirror to do this, at which point the image would be obscured by your head and the virtual image of your head). Thus the stage seen in the mirror during the Pacing scene appears to be further than the actual stage. This is another factor that contributes to the flattening of the image. An already flat-seeming visual perception is given that much more flatness by making it seem further away: the further away things are the harder it is to distinguish details. Things far away, like mountains, look flatter than they are.

Therefore, the mirror in Steppenwolf aids the perceptual quality of the Pacing scene by helping to flatten an already flattened image, while at the same time offering the illusion of depth and distance. That actual flatness and the illusion of depth contradict one another is part of the mechanics of how this scene works, as will be further explained below.
5.4 Perception of surfaces and Gibson’s theory of affordances

In *The Ecological Approach to Visual Perception* Gibson catalogues types of surfaces and how surfaces are perceived by humans and other animals. How surfaces structure light and how our visual perception of surfaces creates affordances for movement and other types of sensory engagement is of relevance to this and the following chapters. I will go over some of Gibson’s points and then explain how his theory of surfaces relates to sensorimotor perception and how sensorimotor access plays a vital part in the success of the Pacing scene.

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48 As discussed earlier, by “ecological” Gibson means that we perceive things at the animal level as opposed to the micro- or macroscopic level. We don’t perceive photons or cosmic rays — we perceive surfaces. We do not handle molecules or quanta in a way that we can perceive without the help of microscopes or colliders, we touch surfaces. Thus we perceive *ecologically*. Gibson does not dispute the physics of optical physics but he does argue that optical mechanics are only a small part of how animals see. While the optics of how radiant light rays (light from a source such as the sun or a light bulb) can enter the eye directly and of how ambient light rays (reflected light) enter the eye after bouncing off of surfaces are indisputable at this point, he argues that visual perception involves the whole body coupled with its surroundings — the eye rotates in the head which swivels on the neck which moves in coordination with the rest of the spine which shifts with movements of torso, hips, legs, and feet — and all of that is supported by the earth or something that is supported by the earth, such as a floor in a building; the body adjusts to the material factors of its surroundings in order to see what it sees. He calls this a visual “system.” Gibson is critical of some of the laboratory findings in which a person’s head is fixed in place, often with one eye closed. The seeing animal doesn’t experience such constraints in everyday visual perception.
There are two key “ecological” factors that the human animal must always contend with: medium and surface. The surface of most importance is the earth. It is stable and enduring, and supports our activity. The medium we usually move through is the air around us. Together, earth and air offer an “absolute axis of up and down” (Gibson 18-19). Surface, writes Gibson, is “where most of the action is” (23). It is what “touches the animal,” as opposed to the interior of a substance. It is where “vibrations of the substances are transmitted into the medium” — by which he means not just sound waves but also light and scent (the decomposition of surfaces is how odours are released to travel through the medium). Among Gibson’s catalogue of surface characteristics, what he calls the “ecological laws of surfaces,” the following are most relevant to this case study.

“4. Any surface has a characteristic texture, depending on the composition of the substance. It generally has both a layout texture and a pigment texture” (24). Gibson notes layout and pigment, and later texture, as complementary or blended. At the ecological level we perceive these things as one. A particular surface has an overall characteristic that we see as unified. Therefore the red of a velvet curtain is inseparable perceptually from the texture of the curtain.

“5. Any surface has a characteristic shape, or large-scale layout.” The shape of a surface is important because, as I will explain in more detail later, surfaces reflect light that has the shape of the surface. One surface can be distinguished from another due to its shape and the difference of intensity of light each reflects. In full light the Pacing man can be easily distinguished from the background because the shape of his body is projected, as light, to the viewer’s eyes. When the lighting is dim, the edges of the man will blend with the surfaces of the background making it harder to pick him out.
The next three, 6-8, can be taken together; I have already discussed how the projection surfaces in the Pacing scene absorb and reflect light: “6. Any surface may be strongly or weakly illuminated, in light or in shade. 7. An illuminated surface may absorb either much or little of the illumination falling on it. 8. A surface has a characteristic reflectance, depending on the substance.

Number 9 offers a slightly more precise definition of how colour is an outcome of wavelength of light and type of surface: “9. A surface has a characteristic distribution of the reflectance ratios of the different wavelengths of the light, depending on the substance. This property is what I will call its color, in the sense that different distributions constitute different colors.”

Gibson calls the surfaces you can see “projected” (78). Light strikes a surface and bounces back at you in the shape of that surface. If the surface is partly “occluded” by another surface, then the part of the occluded surface that you cannot see is “unprojected” (in the Pacing” scene, for example, the surface of the cardboard box occludes parts of the drapes). It is still available to you as an affordance: although you cannot immediately see it, you might adjust your view by moving to one side or the other, or you might and go around the occluding surface to see the occluded surface. Projected and unprojected are terms used instead of visible and invisible in order to serve Gibson’s idea of “seeing in the round” (75-78). The reason a surface is called unprojected is that if the observer moves, or if the occluding surface is removed, the unprojected surface can become projected. What is happening is that ambient light rays (rays that bounce off surfaces around you) converge at whatever location you currently occupy; when you move to a different location, different ambient rays converge where your eyes are and thus you are afforded new unoccluded, newly projected surfaces, and further pathways for, or obstacles to, movement.
Such potential acknowledges that the surface layout before an individual, “cluttered” as it is with “the furniture of the earth” — things, obstacles — affords access to the animal due to the animal’s capacity for locomotion. You may not be able to see the other side of that table but you know you can move around to it.

Sensorimotor perception serves action. It is goal oriented perception. We look at a terrestrial layout in order to plot a potential pathway through the “furniture of the earth.” We therefore embody space, or more specifically, “place” as a terrestrial layout of affordances. This helps explain Gibson’s preference for ecological perception over traditional notions of visual optics. The physics of how photons enter the eye, move through the fluid of the eyeball, strike the fovea at the back of the inner eyeball and send electrical signals to the visual cortex offers only a partial understanding of what seeing is. Seeing is part of a complex physical action in which the eye rotates in the head which swivels on the neck which conforms to the spine, which sits on a moving hip girdle on top of legs that are attached to feet which rest on or move over the ground. The eyes together, and then together with the head, neck and body make up a “perceptual system” that is more than just photons striking photo-receptors (53). The surface layout one encounters offers affordances for sight, but also for movement, and for other types of engagement: “The medium [air] permits unimpeded locomotion from place to place, and it also permits the seeing, smelling, and hearing of the substances at all places. Locomotion and behavior are continuously controlled by the activities of seeing, smelling, and hearing, together with touching” (32). This coupling of a locomotive subject with a terrestrial layout of surfaces is a fact of ecological perception and therefore must be a fact of performance design.

A locomotive animal moves through a layout of surfaces — this describes, at a base level, the elements of scenography. Performance makers compose, we arrange things to be seen, heard,
and felt in a particular sequence. We put things next to each other, reveal one thing after the other, put one thing in the way of another thing, and then get that thing out of the way of yet another thing. We also act on things in various ways. We cover performers in clothes, paint things, shove things, roll them, pick them up and drop them, bang them together. We bombard things with light, often light that has been filtered through a diffusing medium like a lens, coloured gel, opaque glass, or gas. We propel sound waves through a space at various intensities with various oscillations — slow long waves or fast short waves. We change the way things feel by doing this. With the right ingredients and enough time we can change the physical composition of a thing: metal can be doused in acid, a candle wick can burn and melt the wax, paper and wood can be burned or be soaked in liquid. We can have a performer use so much physical energy that water excretes through his pores. His clothes get wet and stick to him. This composing of things creates affordances for the attendant, the potential for movement, for grasping, for seeing, smelling, and hearing. Sensorimotor neural maps are activated for the purpose of understanding such potential. This is how the attendant embodies performance space.

So if we accept that sensorimotor perception is a way of perceiving-for-action, and that the field of this action is Gibson’s layout of surfaces, we further our understanding how an attendant embodies scenography. She looks at the layout and feels the potential for action — for moving to and around things, grasping things, feeling textures, and so on. If we literally shed more light on the Pacing scene, she would be able to identify affordances with confidence. She would be able to see that she can climb onto the stage, move around the cardboard box (now clearly seen as a screen for a video projection of a man pacing), around the man pushing the box (now clearly understood as an actual person and not a projection), feel the velvet curtains, part them, and walk to the next set of curtains avoiding the second pacing man (now clearly understood as an actual
person), and walk up to touch the back wall of the stage. She embody all of this without actually doing it. However the scene is not brightly lit. Due to the scenographic composition, including the dim lighting, her ability to clearly understand the affordances on offer is compromised. It is unclear which parts of what she is seeing are three dimensional and which parts are two dimensional projections.

To summarize the factors that contribute to this tension, those that reinforce the perception of flatness are:

- The low intensity and colour (red wave length) of light from the projector striking the surfaces on the stage, and the resulting low level of reflected (ambient) light.
- The high level of light absorption of most of the surfaces the radiant/source light reaches, and therefore the relative paucity of ambient/reflected light that travels first to the mirror and then to the eyes of the attendant.
- The confusion that arises due to projecting a video of the pacing figure and drapes onto the actual drapes at a one-to-one ratio.
- The resulting confusion of actual distances to the various surfaces on stage due to the lack of precise definition of shapes or “projected” surfaces, which includes the blurring between the edge of one surface and another.
- The fact that the mirror is a flat surface providing only a flat image.
- The lack of clear acoustic signals/sound waves that might offer clues as to distance.
- The denial of clear and definitive sensorimotor clues that would allow the attendant certainty of existing pathways and obstacles.
- Lack of prior knowledge of the actual distances to the surfaces behind the first set of curtains onstage.
The factors that contradict the perception of flatness and offer clues to depth are:

- The amount of radiant light (from projector) light that at times reveals information regarding the distance between one surface and another, fleeting as this information may be.

- The illusion that the virtual image of the stage — the reflection in the mirror — is actually at a certain distance behind the mirror, and is therefore a reflection of something that has actual depth.

- Any non-amplified sounds coming from the stage that the attendant might be able to separate from amplified sounds coming through the speakers; these might help her locate objects in space, such as the wheels of the rolling platform on the stage or the sound of the curtain rails as the drapes are continually opened and closed.

- Any visual and auditory clues as to the actual distances of one surface in relation to another surface that might offer glimpses of physical affordances/access to the stage areas.

- Inference of distance based on any prior knowledge of this particular stage or of similar stages.

In effect the scenography is seen on the one hand as one big flat surface — an obstacle without pathways, and on the other as a terrestrial layout with surfaces around which one can move. There is a start-stop action regarding the firing up of sensorimotor neural patterns; or to put it another way there is an oscillation of access and denial of access; or to put it yet another way the physical affordances are glimpsed but not definitive, creating doubt as to whether they are actual affordances or just illusions of affordances. Thus an oscillation of perception occurs in which the attendant swings between seeing the staging as a flat screen and seeing the staging as having depth. Undecidability prevails. The attendant fires up patterns for the one and the other.

The success of the scenography relies on the attendant’s ability to cognize bodily, and also on
her inability to fully cognize. Cognition can only be partial. Full identification and categorization is suspended, and this allows the attendant to remain in a prolonged a state of openness and wonder at what she is encountering. Thus, embodied cognition in partnership with embodied uncertainty combines to create a state of perceptual openness. (I will develop this further as the hypothesis of a map of unknowing in Chapter 7).

5.5 Lateral and rotational movement; the vanishing point

In Steppenwolf, both mirror frame and proscenium frame reinforce the idea of looking through a window into another world — we look into the frame/container of the mirror, which offers the frame/container of the stage, which later reveals even more frames/containers. Applying the same principle Wiles described earlier regarding the device of the curtain in Western theatre, we use the curtain to suggest a threshold, a revealing of a deeper layer of mystery — that which lies behind the curtain; and we take advantage of the vanishing point to give significance to that which emerges from the deepest part of the “cave” — a small door at the back of the stage. (We also put the audience in the conflicted position of looking into, while being part of, that world, (a point I will return to later). Significantly, the grand and mid-stage drapes reveal further depths of the stage. These features, together with digital projections and moving figures, are employed to confuse or accentuate the perception of available depth. Through a number of scenes that successively occur further and further from the audience, the show achieves its most distant point in space at the 29:00 mark and then reverses direction, coming closer again. This sequential revealing of greater and greater distance is accomplished simply by focusing light only on objects at the desired depth – first deck, then second deck, and so on. The opening of the small door in the back wall of the stage, the furthest point possible, is given power due to the consistent
use of lateral movement on stage for the first 27:00, followed by a sudden shift to rotational movement, for the first time, prior to its opening. Up to the 27:00 mark, the performance features almost exclusively lateral movement on stage. This pattern occurs first directly behind the audience, then moves away to the first deck, then to the second deck, then to the apron of the proscenium stage, then to the middle of the stage, and then to the back wall. During each of these scenes the audience has watched set pieces and performers move from left-to-right or right-to-left within a fairly shallow plane — laptops floating in a few feet of depth directly behind the audience;
Figure 8 (Screen capture) Laptops (with details of the stage when lit) moving laterally from left-to-right or right-to-left directly behind the audience. (*Steppenwolf*)

a statue-like performer wheeled on a cart in front of two living room flats within eight feet of depth on the first and second decks;

Figure 9 (Screen capture) Statue-like figure (Steven Hill), a middle-aged man in dressing gown, pushed on a cart by another performer (Nneka Croal) across the first deck. At right is the narrator in the booth (me). The domestic room set is on the second deck. (*Steppenwolf*)
a box on end with a projection of a man walking (the Pacing scene), rolled back and forth within about three feet of depth on the forestage, and so on.

At 27:10, rotational movement is introduced for the first time: a digital image of the back wall projected onto the back wall begins to spin, while an actual house-like structure on wheels spins with it.

Figure 10 (Screen capture) A digital projection of an image of the cosmos is rotated while an actual house-like structure is simultaneously rotated. *(Steppenwolf)*

This is followed by the opening of the small door in the back wall of the stage, approximating the Italianate vanishing point *portal*. A bright light shines through the portal, momentarily blinding the audience, then briefly reveals the surfaces of the proscenium stage for the first time.
Figure 11 (Screen capture) After positioning the house structure against the back wall of the stage, a performer (Sean Marshall Jr.) opens the small door in the back stage wall. A bright light shines through, illuminating the surfaces of the stage. *(Steppenwolf)*

A mysterious figure emerges and speaks with authority, a different kind of authority than the previous speaker (the narrator in the booth). For the first time, a figure moves toward the audience rather than away from it. The performer, together with other scenographic elements, digital and actual, reverses the spatial direction and momentum of the show.

At the climax of rotational vertigo the door has opened, a light has shone on the world of the Russian Hall giving it visual stability, a figure of mystery and authority has emerged, and the spatial direction of the show has been reversed. This stability will quickly be troubled. In addition to the lateral movement of the show, the low height of the set has kept the eye of the attendant on a horizontal plane, something that is about to change as digital imagery and more expansive lighting draws the eye upwards. But for the moment, the opening of the door, the flash
of light, the visual clarity of the stage surfaces, and the emergence and authoritative vocal timbre of a new figure on stage have inserted a significant pause.

The pause, which allows temporary focus on the portal, is significant for two reasons. First, in Western theatre we have come to associate this point, or some approximation of it, with truth. Even in the late 19th century naturalist/symbolist theatre of a playwright like Ibsen, psychological truth is spatially situated in the depths of the stage. In his discussion of Antoine’s production of *The Wild Duck*, performed in 1891, Wiles writes,

> When we look more closely at high naturalism, we find that Platonist viewing has by no means disappeared. Amongst Antoine’s most celebrated productions were two plays of Ibsen, *Ghosts* (1890, written 1881) and *The Wild Duck* (1891, written 1884). Despite the solid box set, and electric light capable of revealing the physical authenticity of props, the theme of both plays relates to the inner world of the cavern that opens up at the back of the stage, the space where ghosts return and the wild duck is shot. In both plays the main box set represents at once the false façade of bourgeois society, and the front which an individual puts before the world, whilst perspectival depth reveals inner truth. Antoine’s set for *The Wild Duck* reveals, despite solid timber structures and studied asymmetry, a triangular form that leads the eye back to the mysterious half-lit inner room. (Wiles 231)

Wiles continues, making the link to Italianate scenography explicit:

*The Wild Duck* is a meditation on Platonist notions of truth. […] The mystic garret behind Ibsen’s box set, constantly changing according to the light, is a home-made fantasy world, an attempt to recreate the Scandinavian forests where human beings were once happy before being alienated from their natural selves by industrialization. On another level, the garret represents the soul of the innocent heroine, housing the wounded wild duck that
symbolizes her inner self. Through a space of nature and innocence, the garret is also associated with the violence of the hunter. Ibsen’s technique in *Ghosts* was similar: the perspectival vista with its stormy fjord and burning orphanage evokes the sexual guilt inherited by the protagonist, a guilt that is cleared on death to reveal a sunlit snowscape. The work of Ibsen the naturalist was shaped by a romantic quest for self, and for a spiritual truth that lies in the interior of the individual. The traditional techniques of *theatre a l’italienne* remained his only recourse. (231-32)

Elsewhere Wiles uses an example that brings us a little closer to the present day. Bali Ha’I, in Rodgers and Hammerstein’s *South Pacific*, is represented as “two breast like volcanoes” that, following Euclidean geometrical principles, are “dead center, framed by trees, beyond the long beach, a sense of the sea and infinite skies created by the cyclorama” (207). The forestage “represents the banality of everyday life,” while “the space behind the tabs becomes the space of a dream” (207).

Antoine’s box set, the proscenium stage of a popular musical, and Italianate scenic design maintain points of contact that are relevant to the spatial configuration created in *Steppenwolf*, with its stage door of “deeper” meaning. The Russian Hall is a cube that has another cube, the proscenium stage, inside of it. Even though the audience is placed within the performance apparatus, through the mirror it has the same view of the proscenium stage that a conventionally placed auditorium or box set audience would have. The performance area in the main hall, which the audience occupies along with the mirrors, some floor space, and two stage decks, is actually much larger than the proscenium stage. The attendant can feel herself within the hall as if within
a cubic volume. The old stage, in contrast, lends itself more to being felt as a picture one looks at or into. In either case the spatial logic of the Italianate stage, with its progression from mundane to mysterious, is preserved.

Wiles writes that on the one hand “the ‘fourth wall’ of an enclosed cube” may reveal “a potentially useful mirror” of the “real life lived by the audience,” and “on the other hand, the rock blocking the mouth of the cave may be rolled away, to reveal the distant prospect of a world more real” (211; italics original). Here Wiles is referring to the Eleusinian mysteries in which Athenian citizens travelled by night to a religious site where they were blinded by a dazzling light from a cave, as well as to the significance of the perspectival vanishing point. “The first proposition,” writes Wiles, referring to naturalist performance in a box set, “turns upon a materialist philosophy of life, the second,” referring to perspectival illusionism, “upon a spiritual and idealist philosophy” (211). In the example of Ibsen there is a kind of fusing of the two. The proscenium and the forced perspective are gone, but the Euclidean triangle remains as a felt schema. The ideal is no longer one of a society that celebrates the divinity of a monarch, but of the repressed truth of individual psychology. Values have shifted but the geometry remains. This is true of Steppenwolf, too. In sourcing scenographic history and practice, the point of the

49 Peter Dickinson, one of my committee members, added in his notes, “I think this is amplified by having the audience sit in rows on low benches, which amplifies the hall’s volumetric space.” This is in my opinion an accurate observation. In fact, the original intent was to have the audience on the floor to further increase the volumetric effect. Requirements of the our presenter, the PuSh Festival, for a house capacity of over 100 forced us to use benches, in order to squeeze more people in. This had the unfortunate consequence of creating poor sightlines for some attendants.
triangle remains a powerful focalizer. It can be described as a neural pattern shared by theatre artist and attendant, a map internalized through repeated exposure to Western theatre staging. “South Pacific,” concludes Wiles, “is a fine specimen of Neo-Platonist theatre, with its representation of a banal, meaningless and alienated life on the forestage, and a dream of true love, true freedom realized by the proscenium, dimmers and cyclorama” (210).

Herman Hesse’s novel was not the initial impetus for the creation of our stage production, but its language style, images, and themes gradually impressed themselves onto the performance design. We had no desire to render a literal, psychological-realist adaptation. We were not interested in having the audience watch reconstructions of scenes from the book. As discussed in the previous chapter, Fight With a Stick tends to think of a show in terms of a succession of spatial constructions. Each construction is considered in terms of genre, affect, and atmosphere. For Steppenwolf we tried to immerse the audience in spatialized affects of the novel. For example, rather than presenting the causal progression of the early part of the novel in terms of character, plot points, and dialogue, we picked out qualities of speech, the atmosphere of a room described, the texture of a potted plant, and the monotonous feeling of Harry Haller’s aimless wanderings and restless pacing. To create the affect of Haller’s room — a half-man, half-wolf’s renegade room that, as a room, was in a dialectical relationship to the civilized cleanliness of the rest of the house — I suggested we put two domestic-interior sets next to each other. In this context there was the temporal monotony of Haller’s everyday existence to consider. For this reason I proposed we switch between the two sets in a repetitive tick-tock rhythm, with light and sound clicking first on the one side, then the other.
Sound designer Nancy Tam then created a more interesting, less metronomic alternation than what I had suggested, deepening the layers of monotony and alienation, and adding a sense
of impending catastrophe. Set and costume designer Natalie Purschwitz created two sets that mirrored one another (seen above), with small details, such as the fur-lined chair and lamp on one side, that cleverly troubled the symmetry while maintaining the idea of two worlds — superficially different but dangerously similar — reflecting one another. This scene, the “Tick Tock Room” as we referred to it, was staged in the equivalent of the banal, materialistic territory of the Italianate forestage. Following the Tick Tock Room came the banal but mesmerizing repetitiveness of the Pacing scene — further back but still in front of the grand drapes and proscenium.

Following the logic of the Italianate stage, the Pacing scene, situated near to the audience as opposed to in the spatial depths associated with spiritual truth, is on the threshold between banal and profound. In the novel, Harry Haller makes his first acquaintance with the “Magic Theatre” during his aimless daily wander, after which he meets Hermine, the androgyne who will give new meaning to his life. As the performance moves deeper upstage, the banal gives way to the perplexing. The show’s earlier settings had offered object clarity: first the attendant’s sight of herself in the mirror; then laptop screens floating in the dark — little windows of light, drifting pictures; then a man in a booth reading a book; then two domestic sets, one next to the other; then a man, frozen like a diorama dummy, pushed on a cart across the deck by a woman. The lateral movement remained a constant even as the scenes crept further away. It is an easy pattern for the audience to take on, one that should allow a sense of predictability. The variation of having the side-to-side movement recede should add interest, as well as a slight updating of the instantiated pattern. The Pacing scene maintains the pattern but also offers the first phase of perceptual confusion. It becomes a portal to further confusion — to the coming of Hermine, the Fancy Dress Ball, and the Magic Theatre. The blending of surfaces in this scene removes the
attendant’s ability to pick out one object from another, separate one surface from the next, and have clarity regarding distance and sensorimotor access. We are approaching the mystery of the “House” scene.

I will pause, though, for a further historical example by Wiles that illustrates a thread of continuity between seemingly different theatre spaces and genres over the centuries. This continuity is evident in the spatial progression I have been describing in Steppenwolf. In drawing out this example I want to further strengthen my claims that the spatial configuration of Steppenwolf has historical precedent, is powerfully instantiated in the attendant’s body, and is activated as a schema consciously and unconsciously by theatre makers for the reason that it has been internalized by theatre audiences for generations. (This is not to say that audiences do not experience many other types of spatial designs, but it is easy to find a show, in any city, that exploits perspectival precedent in some way).

Wiles’ analysis of Antoine’s productions of Ibsen shows that the Euclidean triangle maintains its usefulness even in the fourth-wall box set. He describes an earlier production that took place in a very different type of theatre: Beethoven’s opera Fidelio in the year 1814. Fidelio espouses a romantic aesthetic supposedly in opposition to neo-classical and renaissance forms, but continues to rely on perspectival precedent. Wiles argues that Fidelio is neatly divided, by acts, into classical and romantic dramaturgical aesthetics: “The first act, set in a well-lit courtyard, is shaped by the genre of bourgeois comedy. A group of prisoners emerge from their cells into the spring sunlight, evoking the liberation of the Bastille. The liberation portrayed in Act I is socio-political, and the audience’s mode of viewing is detached and ironic” (Wiles 227-28). For the spectator, “the space of the stage” in Act I is “material and other” (228). It offers clarity and objective distance, akin to what Laura Marks calls “optic visuality”: the viewer has
mastery over what she sees. This is the material world of the forestage. As I have noted above, the early sequences in *Steppenwolf* offer such object clarity. If anything, the *objectness* of things seen is intensified by the mirror which, due to its flatness, allows the artist, with the help of light and sound, to isolate objects, clarifying their *this* and *thatness*. The text spoken by the man in the booth clarifies the meaning of what is seen: a direct attack on the audience for its materialistic, bourgeois values. Everything up to the Pacing scene is a kind of “Act I,” in keeping with the idea of a forestage of banal materiality.

Act II of *Fidelio* includes a process of immersion for the audience: “The second act, however, is effectively a reworking of the Orpheus myth. The heroine dressed as a man, charms her way into the underworld of the dungeon. Dimly seen through a grill at the point of perspective, the heroine realizes the hero’s dream of a rescuing angel” (Wiles 228). Unlikely as it seems at first, there are remarkable parallels between the story structure and staging of Act II of *Fidelio* and *Steppenwolf*. Harry Haller is a man who has become so lost he may be dying, even though he has no immediate terminal condition. He is at an existential dead end. He encounters an androgynous figure, Hermine, who gives him a new lease on life and a new bohemian social world in which to live. The spectators at the Russian Hall have been put in the spatially conflicted position of audience and chorus. In the mirror they see an audience, themselves, looking at the stage from the traditional position of the auditorium. They are able to see themselves and all stage action “objectively.” However, they are sitting in the place of the chorus, which traditionally represents the *polis*. They become more intensely object *and* subject. Through the text spoken they are both addressee and addressor. They sit in judgment while being judged. They are given a figure and a setting to associate with Haller — the narrator in the booth, the statue-like actor in a nightgown, and the domestic sets. That this is Haller is never made
explicit. All that is required is to understand the figure as middle-aged, existentially frozen, and somehow associated with the dreariness of the Tick Tock Room. The man in the booth also seems to be speaking as Haller, although this too is never made explicit. Prior to Nneka Croal’s emergence through the door as Hermine, the audience experiences twenty-seven minutes of increasingly immersive identification with Haller — not so much identification with the character of Haller, which has been distributed across performance elements such as voice, body, projection, and set piece, but with the affective journey of Haller, a movement from object clarity to haptic suspension.

In *Fidelio*, dim lighting and set painting assist such a journey: “The liberation that takes place in Act II is not political but personal, a union of two hearts. The spectator is no longer allowed a stance of detachment, but is drawn into the space of a dream. Dim lighting ensures that the audience will be in no position to judge the quality of the scene-painting, and costuming, but allows a complete merging of the starving hero with the environment he inhabits” (228). Dim light is a key factor in obscuring the edges between surfaces. Together with the flattening effect of the mirror, the distance of the stage, the conflation of digital and actual surfaces, and the resulting confusion of sensorimotor access, the attendant-as-wanderer finds herself “merging,” as Wiles puts it, with “the environment.” The space of the stage has become “an extension of the consciousness of the viewer” (228).

This merging with the environment/scenography is perhaps akin to what Manning and Massumi call “an environmental mode of awareness” (Manning and Massumi 6; italics original). The attendant is immersed in a field of things that have not resolved as individuated, cannot be extracted from the whole, and are “not yet defined as *this* or *that*” (4; italics original). The artist can reverse engineer this process, at first offering clarity of *this* and *that* and subsequently
scrambling the perceptual clues. This occurs in the Pacing scene and the rotational scene described above, when the audience is presented with what appears to be the solidity of the back wall of the stage only to have this shift out of place. Regardless of how one enters into the immersive state, the “predominant quality” is “of the compositional field as a whole” (5). There is “uncertainty in the aroundness” as the authors put it (Manning and Massumi’s text abounds with apt phrases). The neurotypical tendency of the attendant will be to extract an object, a sentence spoken, or a sound from the background. The scenographic composition, favouring neurodiverse perception, will encourage her to remain in the “field” as long as possible. Neurotypicals are able to do this because, in fact, they are also neurodiverse: “The difference is the speed of subtraction from the total field” (9). They have a hard time slowing down enough to take in the field as such. Lehmann argues that slowing the tempo is one of the distinguishing features of much postdramatic theatre. Either the tempo of the performance is slow or the performance acts on the audience in such a way that their processes are calmed. Manning and Massumi write,

Under certain circumstances neurotypicals themselves experience a predominance of environmental awareness. It is rarely focused on, though, appearing as an interlude between more substantial feeling-affordances. When environmental awareness does resurface, it is without the fully bloomed objects and overshadowing subjects, as autistics describe. But there is still a degree of difference between this and other modes of existence on the wider spectrum of neurodiversity . . . Even when they are immersed in a . . . relational field, affordances already agitate, but are not yet objectified. (9)
The authors describe the very tension I have tried to specify: the neurotypical attendant naturally seeks affordances but the performance design blocks her. The contradiction cannot be sustained and the attendant is released into what the authors call “the field effect” described above (9).

Manning and Massumi use an example of surfing the rush hour crowd as a way to illustrate an everyday shift from neurotypical to neurodiverse perception. As you negotiate the ebb and flow of the crowd, you look for openings. “Each opening,” they write, “is a field effect. It is an artifact of the moving bodies around you, factoring in their relative speeds, and their rates of acceleration and deceleration as their paths move around each other and around obstacles” (9). The opening is not simply a gap:

- It is the appearance of the field’s relationality from a particular angle . . . The opening is how the field appears as an affordance for you getting-ahead . . . Wait and the opening closes. Its perception and your moving into it must be one. There is no time to reflect, no time to focus, assess, and choose. If you focus on one body over another, you see one body then another—and not the opening in the field of movement they share. You have to soften your focus, letting the field’s changing configuration dilate to fill experience. You have to let what is normally your peripheral vision take over, attending to everything in the “same way.” (9-10)

The “Pacing” scene can be described in similar terms. The attendant looks for access through a shifting array of surfaces. A man walks left and right, a second man walks left and right behind him. A box rolls left and right. A set of drapes opens and closes. A second set of drapes opens and closes. It is hard to tell what is in front of what. The entire array is shuttering open and closed. Some things seem graspable, some do not. Things that seemed graspable one second, seem to be projections the next. Things that seem to be projection one second seem to be solid
the next. It is all happening in front of the attendant (in the mirror). It is all happening behind her
(on stage). It is in front and behind, and she is inside it. She has to give up the struggle, give in,
open up, and go for the ride. Neural pathways are attempted and abandoned, traded for one
another. Maps of knowing give way to maps of unknowing. The map of unknowing offers

topography without direction.

Returning to *Steppenwolf*: Sensorimotor confusion gives way to momentary clarity. The
white back wall of the stage is lit brightly. The digital and actual pacing men have disappeared.
The curtains have stopped moving and are fully open.

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Figure 14 (Screen capture) On the left — What seems to be just the white back wall of the stage is revealed.
On the right — The wall seems to move to the left and right. It turns out that a 1:1 image of the wall has been
projected onto it. The attendant now sees two walls, one stationary and one moving laterally. (*Steppenwolf*)

This turns out to be a trick. What the audience sees is a projection of the back wall onto itself at a
1:1 ratio. They see the wall *and* a projection of the wall. The projection starts to slide left and
right, picking up the lateral movement again. Thus, the wall itself seems to be moving. After
several lateral shifts, an actual house-like structure wrapped in transparent pink fabric begins to move with it. Suddenly the white wall seems to rotate. The house rotates with it. Audience members at the talkbacks described the effect variously as “mind-bending,” “disorienting,” “stunning,” “nausea-inducing,” “I didn’t know what was happening,” and so on (Leaky Heaven Talkbacks: Steppenwolf). Critics reacted in the same fashion: “It’s mind-bending and a bit stomach churning” (Vrettakos). The sudden switch from lateral to rotational movement comes as a total surprise. The digital rotation of the wall, when it reaches 90° — perpendicular to the back wall — changes into a picture-plane of the cosmos. The image continues to flip between white wall and cosmos. The house continues to rotate. It picks up the digital projection (the pink fabric sides of the house become projection screens for the white wall and cosmos), reinforcing the feeling that the digital image is actually a three-dimensional plane rotating in space. This vertiginous movement continues for a few minutes, completely disorienting the viewers, until the house comes to rest against the back wall, the digital projection disappears, and the door opens.

A light shines from within, illuminating the surfaces of the stage and parts of the hall, and for a few moments there is a sense of solidity to the scene. A voice is heard, a new voice. A figure then emerges from the small door. The gender is unclear. Some audience members at the talkbacks thought, because of the timbre of Nneka Croal’s voice and her “unisex” costume, that the figure was a man (Leaky Heaven Talkbacks: Steppenwolf). This is Hermine, the character that becomes, for Haller, a metaphorical portal to the Magic Theatre. She advances through the house using, for the first time in the show, third person narration, and telling of her first meeting with Haller. Like the cross-dressed “rescuing angel” of Fidelio, Hermine will deliver Haller, and by extension the attendant-as-journeyer, from existential crisis. In Fidelio “the final sequence restores the daylight, before the sign of a royal statue, and completes the characteristic cycle of
neo-platonist and romantic drama: a descent into the world of darkness, dreams and glimpsed perfection, followed by a return to normality and order” (228). The details and political intent are different in *Steppenwolf*, but the general schema is the same: descent into darkness, followed by hallucinatory otherworld, followed by a return to the stability of optical visuality.

In another historical example, Monteverdi’s operatic treatment of the Orpheus myth (the 1607 version and the first Italian opera exported to France), the importance of the vanishing point is made even more explicit: Orpheus “crosses the symbolic barrier of the Styx, and enters the cavern. At the vanishing point of the cavern he finds the woman who represents the ‘soul of my soul,’ his ‘heart upon the altar’” (217-18).

The more things change the more they stay the same? Or is it just that in pushing the boundaries of theatre one must understand the boundaries being pushed? Why would a company like Fight With a Stick, which specializes in experimental, immersive performance and innovative scenography, return to something as old-fashioned as Italianate staging? Joseph Svoboda, the theatre figure most closely associated with the term *scenography*, wrote, “I’ve always been an advocate of the proscenium stage because it is the most theatrical space available; moreover, the routine transformation of theatre into mere spectacle isn’t readily possible in it” (qtd. in Wiles 238). Wiles clarifies:

By the end of the twentieth century, a new respect for the *theatre à l’italienne* was apparent amongst theatre practitioners. Faith in eternal progress had been discredited, and the desire to discard the past was replaced by a desire to play upon the memories embedded in architectural forms. The *theatre à l’italienne* was seen to have stood the test of time. Brecht, for example, had developed his dramaturgy in a *theatre à l’italienne* in socialist...
East Berlin without any hint of anxiety. Bourgeois architecture allowed him the better to challenge bourgeois values. (238)

*Steppenwolf* uses the familiar schema of perspectival theatre to challenge its assumptions. The moment of Hermine’s emergence from the portal is given import by exploiting the instantiated pattern of the triangle. This is of course not the only spatial schema referenced in the design. *Steppenwolf* does not end with the rolling away of the Eleusinian rock and the revelation of the mystery. It is a bait-and-switch strategy. Having satisfied the traditional dramaturgical itch, in a sense affirming the patron’s romantic sense of personal liberation, which Wiles writes is the “only kind of liberation that the *theatre à l’italienne* admits,” and suggests is “the inescapable logic of Plato’s cave” (228), *Steppenwolf* erases this image of truth with its next spatial move. I will get to this in the next chapter on the Carnival scene. For now, having made the historical argument for the importance of perspectival spatiality in *Steppenwolf*, I would like to return to the sensorimotor logic of this schema, using metaphor theory grounded in cognitive neuroscience to further describe how the attendant embodies this particular performance design.

5.6 Metaphor theory, sensorimotor schemas, and the embodiment of spatial depth

“We typically conceptualize the nonphysical *in terms* of the physical,” write Lakoff and Johnson in *Metaphors We Live By* (Lakoff and Johnson *Metaphors* 59; italics original).\(^{50}\) Using their

\(^{50}\) *Metaphors We Live By* was written in 1980 without the insights of neuroscience. In 1999 the two authors returned to the subject armed with the findings of cognitive neuroscience in *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. With or without neuroscience the conclusions are the same. Therefore, I will freely reference examples from both books.
method I can outline the attendant’s experience at a theatre that has a cube-like volume, including a proscenium stage, this way:

1. The attendant looks at the stage — This describes the “spatial domain” and is not a metaphor.
2. The attendant looks into another world — This describes the “social domain” and is a container metaphor; the cube of the stage is seen as a contained volume.
3. The attendant falls into the depths of Steppenwolf — This describes the “emotional domain” and is also a container metaphor; the cube of the stage is felt as a contained volume with a top and bottom.

For Lakoff and Johnson, metaphors are conflations of the “spatial domain,” called the “sensorimotor domain” in their later work, and the subjective emotional domain: “For example, for an infant, the subjective experience of affection is typically correlated with the sensory experience of warmth, the warmth of being held” (Lakoff and Johnson Philosophy 46). These associations occur automatically in infancy. Later, we learn to differentiate between domains, “but the cross-domain associations persist. These persisting associations are the mappings of conceptual metaphor that will lead the same infant, later in life, to speak of ‘a warm smile’, ‘a big problem’, and ‘a close friend’” (46). The authors call these “experientially grounded mappings” (47). In the following example the sensorimotor source domain is mapped onto the subjective target domain as “More Is Up” becomes “Prices are high” (47). This is schematized as:

\[ \text{More Is Up} \]

Subjective Judgment: Quantity
Sensorimotor Domain: Vertical Orientation

Example: “Prices are high.”

Primary Experience: Observing the rise and fall of levels of piles and fluids as more is added or subtracted. (51)

Time as a moving object can be schematized as:

*Time is Motion*

Subjective Judgment: The passage of time

Sensorimotor Domain: Motion

Example: “Time flies.”

Primary Experience: Experiencing the passage of time as one moves or observes motion. (52)

The perspectival spatial configuration, with its revelatory aperture at the point of the triangle, seems to privilege seeing. As I have argued, with reference to Gibson in particular, vision is a whole body system. We can speak of types of visuality, some that tend toward what Marks calls *optical visuality* and others toward *haptic visuality*. Both are necessarily embodied (the optical is still an embodied experience — it could not be otherwise), but can be described as different qualities of vision. As I have shown in this chapter, *Steppenwolf* first offers an intense type of optical visuality before creating the textural conditions for a decidedly haptic visuality. The spatial progression is from object-focused materiality in the early scenes, to the textural density in the Pacing scene, then through logic-defying spatial rotation, and then to the emergence of
“truth” or “salvation” from within the stage wall door. Another of Lakoff and Johnson’s “representative primary metaphors” is:

Knowing is Seeing

Subjective Judgment: Knowledge
Sensorimotor Domain: Vision
Example: “I see what you mean.”
Primary Experience: Getting information through vision. (54)

Given that Italianate scenic logic reveals “truth,” ideal or inner, we might rephrase this schema with:

Truth is Seeing

Subjective Judgment: Beholding truth
Sensorimotor Domain: Vision
Example: “The truth is revealed.”
Primary Experience: Getting information through vision.

There are other overlapping spatial metaphors (Lakoff and Johnson Metaphors 97-105) crucial to understanding the attendant’s embodiment of the performance design. An Italianate stage and a space like the Russian Hall can be thought of as containers. Both auditorium and the stage are within the container. The proscenium frame divides the space, creating two containers. The audience sits in one container (the hall), looking into the other (the stage within the hall).
Whether we describe the proscenium stage as a picture or window, we usually say that we look into the picture or window. “Even where there is no natural physical boundary that can be viewed as defining a container,” write Lakoff and Johnson, “we impose boundaries—marking off a territory so that it has an inside and a bounding surface—whether a wall, a fence, or an abstract line or plane” (29). Even a “visual field” becomes a container:

We conceptualize our visual field as a container and conceptualize what we see as being inside it. Even the term ‘visual field’ suggests this … when you look at some territory (land, floor space, etc.), your field of vision defines a boundary of the territory, namely the part you can see. Given that a bounded physical space is a CONTAINER and that our field of vision correlates with that bounded physical space, the metaphorical concept VISUAL FIELDS ARE CONTAINERS emerges naturally. Thus we can say:

The ship is coming into view.

I have him in sight.

I can’t see him—the tree is in the way.

He’s out of sight now.

That’s in the center of my field of vision.

There’s nothing in sight.

I can’t get all of the ships in sight at once. (30; uppercase text and italics original)

We can make sense of these metaphors because they are grounded in everyday spatial experience. Coordinates like In-Out, important to the container schema in the Steppenwolf example, but also Up-Down, Front-Back, and Near-Far “are relevant to our continual everyday bodily functioning, and this gives them priority over other possible structuring of space — for us.
In other words, the structure of our spatial concepts emerges from our constant spatial experience, that is, our interaction with the physical environment” (56-57). From simpler spatial metaphors we create overlapping or complex cross-domain metaphors, but at bottom are these primary metaphors — subjective judgments — strongly connected to sensorimotor experience. Your ability to understand what I just wrote — “at bottom are these primary metaphors” — while fairly complex, still depends on connecting the metaphor “at bottom” to a sensorimotor schema: complex metaphors have layers; the layer at the bottom supports the layers on top of it.

Spatial relationships are not things in and of themselves in the way that objects are. “Near” and “far” denote distance but we need objects placed in the “near” and “far” to make sense of distance (Lakoff and Johnson *Philosophy* 30-31). The tangibility of objects reveals spatial relationships, which in turn create metaphors. Spatial relationships make the metaphors sensible. We develop a physical *vocabulary* for most of these spatial relationships beginning in infancy. A container schema is fairly self-evident; it has an inside, a boundary, and an outside: “This is a gestalt structure, in the sense that the parts make no sense without the whole . . . A container schema, like any other image schema, is conceptual. Such a container schema can, however, be physically instantiated, either as a concrete object, like a room or a cup, or as a bounded region in space, like a basketball court or a football field (32).” Container schemas are also cross-modal:

We can impose a conceptual container schema on a visual scene. We can impose a container schema on something we hear, as when we conceptually separate out one part of a piece of music from another. We can also impose container schemas on motor movements, as when a baseball coach breaks down a batter’s swing into component parts and discusses what goes on “inside” each part. (32)
In the case of the House scene in *Steppenwolf* the attendant looks into the proscenium stage in the way of looking into a container. The container has a top, sides, depth, and a bottom. The perspectival stage is constructed for this purpose: spatial depth is equated with depth of meaning. So in addition to the *Truth is Seeing* schema noted above, we have:

*Truth is Touching*

Subjective Judgment: Finding truth

Sensorimotor Domain: Touch

Example: “I have grasped the truth.”

Primary Experience: Reaching into a container to get something.

The moment of truth, in the show, occurs only during a brief few moments of visual clarity. Before this the attendant must go through the immersive experience of falling into, drowning in, sinking into, being immersed in, being submerged in, being enveloped by, absorbed into — any or several of these metaphors will work — the Pacing scene and ensuing Rotational scene. As in *Fidelio*, when the hero (and by extension the audience) merges with the environment, the Pacing scene has created an immersive field of texture within the proscenium frame. The stage is a container that sits within the container of the mirror frame. We might think of the shallow visual plane created by the collapsing of depth in the Pacing scene as the surface of water, the subsequent rotational action as occurring beneath the surface of the water, and the opening of the door as the finding of a precious object in the depths of the water. Where the Pacing and Rotation scenes confuse or obstruct sensorimotor access to physical affordances, the ensuing clarity of surfaces provided by the light shining through the door makes these affordances...
temporarily obvious. The cloudiness of the water, so to speak, has cleared, providing visual and physical relief. The new object emerging from the door can be seized upon, and separated from its surroundings. The performer who opened the door is also clearly discernible. The house structure is clear. The textural hiatus that Marks speaks of — the lack of total clarity of object that forces us to linger in the texture — has passed. Our “neurotypical” urges are temporarily satisfied. We can see the path to the stage, into or around the house structure, and we can potentially take hold of the curtains or the performers, or press against the back wall of the stage.

Physical access suggests another important image schema to complement those discussed so far. The source-path-goal schema is explicitly one of the sensorimotor feelings of movement. It has the following features:

A trajector that moves
A source location (starting point)
A goal, that is, an intended destination of the trajector
A route from the source to the goal
The actual trajectory of motion
The position of the trajector at a given time
The direction of the trajector at that time
The actual final location of the trajector, which may or may not be the intended
destination. (Lakoff and Johnson Philosophy 33)

In the Pacing scene the attempted completion of this schema would have been persistently frustrated. But with temporary clarity provided by a radiant light source from within the doorway, the attendant can trace a path through the “terrestrial array.” She can see the *this* and *that* of her surroundings, and the way one surface sits next to or in front of another. The material truth, the physical truth, of the situation is obvious. Through complex, overlapping sensorimotor metaphors, physical truth becomes spiritual or psychological truth. The logic of the perspectival stage has shown her exactly where to look for this truth: there, in the deepest part of the container, at the furthest point, at the bottom of the pool. For a moment she can take hold of the figure emerging. Lakoff and Johnson:

> Each complex metaphor is [...] built up out of primary metaphors, and each primary metaphor is embodied in three ways: (1) It is embodied through bodily experience in the world, which pairs sensorimotor experience with subjective experience. (2) The source-domain logic arises from the inferential structure of the sensorimotor system. And (3) it is instantiated neurally in the synaptic weights associated with neural connections.

*(Philosophy 73)*

By “synaptic weights” the authors are referring to different strengths of electrical charge between one neuron, or group of neurons, and another. I discussed this in the previous chapter, when referencing tonotopic (auditory) maps. There is both a topographical logic to neural patterns — how they analogically preserve spatial relationships of what is perceived — and the logic of synaptic weight. Instantiation occurs through repetition of a pattern (which is an action, a
witnessing of an action, or a memory of an action) or through the strength of an electrical charge
at various nodes (also action, witnessing, and memory), and probably a combination of both.

As discussed in the last chapter, we, the artists of Fight With a Stick, rely on the
attendants’ instantiated patterns. If they did not have these patterns there would be nothing to
play with, disrupt, or re-form. The same goes for our use of the Italianate perspective stage as a
spatial pattern, the familiarity of which we can rely on, challenge, and remake.

Having discussed how we destabilized the attendant’s sense of emplacement through
auditory and spatial design in Chapter 4, and exploited the tradition of Italianate staging and the
attendant’s perception of two- and three-dimensional space in this chapter, I will explore
attendant embodiment of the performance design through another perceptual game, conceptual
blending, in the next chapter. From the Pacing scene through the House scene, Fight With a Stick
created conditions that emphasized haptic visuality and neurodiverse perception. In the next
scene to be explored, the Carnival scene, the audience is offered visual clarity but asked to use
familiar patterns to construct a picture that isn’t there.

Here I offer again a summary of concepts and a number of dramaturgical questions based
on this chapter:

5.7 Dramaturgical questions regarding perception, sensorimotor affordance, image
schemas, and perceptual affect, based on Steppenwolf:

Does a scene strive for object clarity or are the spatial relationships between objects deliberately
obscured?
How would you describe the textures of what you see? Does looking at them evoke feelings of touch?

Do you feel that you, as an attendant, can easily move through the landscape you have created? Where are the obstacles to movement? Where are the pathways of least resistance?

Do the pathways and obstacles encourage different rates of movement? When does it feel like you can move slowly, medium-speed, or fast?

Does the lighting, sound design, or textures, densities, and shapes of objects alter your perception of the rate of movement?

Can you make a pathway seem slippery, bumpy, gelatinous, intermittent, and so on, by changing light colour and intensity, object texture, size, and shape, or timbre, pitch, volume, or rhythm of sound?

Are there predominant directions of movement? When, in what directions, and for how long? What happens when you change the duration, direction, or tempo of movement patterns?

Does a given scene represent an elsewhere or othertime, or is the attendant’s attention supposed to be on the here-and-now of scenographic relationships? Is there an oscillation between representation and presentation? Do you wish the attendant to be aware or unaware of the oscillation?
When are you intending to emphasize one sensory affect? When two or more? Is there a “journey” through sensory modalities?

Who, at a given moment, is the “protagonist” — the actor or attendant?

When is a nonhuman, such as a set piece, sound, or light, the main actant, or protagonist? When is a nonhuman the antagonist?

Does a scene have one point of view or several?

Are the points of view created by one artist “writing” several points of view, or are have they emerged from argument and discussion among the devisers? Do you wish to synthesize the various points of view or allow them to remain non-synthetic and dialogic?

Are the points of view represented solely by actors, or are they also represented by other scenographic elements such as rates of movement, tempo, lights, sound, textures and densities of materials, and so on?

How would you describe the performance venue in terms of felt form — a cube, a sphere, a tube, a corridor, a low place, pressurized, etc.?

- Does the feeling of this space change during the performance? How does it transform from one felt place to another?
- Can you map out the spaces and the transitions from one to the next?

Even in a conventional theatre no two seating locations are the same. There is no ideal center for attending.

- Occupy as many locations as possible in order to experience the truth of this.
- Are you comfortable with the inherent dialogism of this situation?
- Or do you want to encourage a common looking/hearing location? How can you do this?

Consider the following:

- “Miniaturize” the performing area by having the audience sit far away.
  - Use a mirror to create the illusion of greater distance (a mirror generally doubles distance, perceptually, of whatever is seen in it).
- Limit the size of the audience so that the performance can be focused on a small viewing area.
- Flatten what is seen using digital imagery that offers roughly the same view to all, as long as the audience is not too close or too far to either side of the surface projected onto.

Is there an area of revelation in the performance space?

- Does it move?
- Does it disappear and reappear elsewhere, or does it transition from one area to another?
- If the latter, how does it transition, at what tempo, etc.?
  - How does light, sound, object assist this?
  - How does it impede the transition?
Are the scenographic elements working in a coordinated fashion or is the relationship between them *agonistic* or dialogic?

A performance is always in dialogue, consciously or unconsciously, with performances, genres, artistic disciplines, that have gone before. What genres, etc., is your performance most obviously in dialogue with?

Are there predominant spatial schemas and metaphors you can draw from and exploit?

- Will these be widely familiar?
- Or will you have to “instantiate” them, establish familiarity, within your performance?
- How long will this take?
- Can you assist the attendant with other familiar handles/schemas?
  
  - Example: although *Steppenwolf* had no obvious characters or plot, it exploited two familiar things — looking at yourself in the mirror (something everyone is immediately and intimately familiar with), and the Italianate perspectival stage (a common spatial schema in theatre).
Chapter 6: Conceptual Blending in the Carnival scene from *Steppenwolf*: integration, oscillation, and imagination

6.1 Introduction

In this chapter I discuss in detail Fauconnier and Turner’s theory of conceptual blending as it applies to the Carnival scene in *Steppenwolf*. Again, the intent is to zero in on a short section of the performance in order to unpack a scenographic construction, and to offer insights into attendant-scenography relationships through a theory of embodied cognition. While *Steppenwolf* had an overall scenographic logic, each part played a specific perceptual game with the audience. In the Carnival sequence the game was based on the attendant’s skill at calling up window and frame schemas and applying the logic of these to the scene, even when provided with only the suggestion of a window. At the end of the chapter I will again summarize key points and offer a list of dramaturgical questions and exercises.

Conceptual blending is a useful tool for explaining the actual-fictive dialectic that plays out in almost every theatre performance to some degree. In the actual-fictive binary the actual represents the material circumstances of a performance: actors, auditorium, stage architecture, props, lights, etc. The fictive represents that which is referenced: character, story, and imagined elsewhere. Even when performers play “themselves” on stage, the actual-fictive binary comes into play. The performer is always playing an edited, selective version of themselves — a persona. Theatre performances like *Steppenwolf*, while shifting the emphasis from performer to

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51 It can be argued that performance art, particularly earlier body-based performance art, offers a way out of the binary (see Bishop or Goldberg for histories of performance art and the relationship
between visual arts and theatre). In many of these performances, the artists actually inflict tortures on their bodies — they pierce, cut, shoot, deprive, surgically alter, and starve themselves. In theatre, actors usually only pretend to do such things. I remain doubtful as to whether the persona is erased in performance art. I am very skeptical of the notion of an “authentic” self. Chris Burden’s famous *Shoot*, in which a friend shoots him in the arm with a .22 calibre rifle, was performed for a camera; Marina Abramovic’s *Lips of Thomas*, in which she cuts a pentagram into her abdomen, crushes a wine glass with her hand, and lies on a block of ice, was performed for a live audience. In both of these cases there seems to be an element of composing oneself for the viewer. On the other hand, Joseph Beuys’ *I Like America and America Likes Me*, an eight-day durational piece in which the artist confined himself to a room with a wild coyote, was performed partly for a gallery audience but also continued beyond viewing hours as an existential exercise for the artist (and the coyote?). In any case, I would concede that many of these performances tilt toward the actual, due to the intensity of the actions on the performer body and the intensity of affect inducement on the spectators.

In object-oriented performance such as *Steppenwolf*, the *actual-fictive* binary still holds. Let us say you make a performance that features a table or a block of granite. Either is likely to produce associations for the attendant. The table may invoke the period in which the style of table was made, or, if it is a dining room table, memories of dinners with family or friends. The block of granite may call up instances of encountering granite — a big rock encountered at the beach or on a hike, or a kitchen counter-top made of granite. On some level the signifier-signified binary of semiotic theory comes into play. The actual has material presence while referencing a type, a memory, or an imagined elsewhere. Just as the performance artist tilts toward the actual through intensity of performance, the theatre artist can tilt attention toward the material through *defamiliarization* — putting an object in a context it is not normally seen in, severing it, in a sense, from its usual associations. In this way the attendant’s relationship to the object is refreshed.
attendant, and from character psychology to object affect, still depend on the tension of the actual-fictive binary. The binary is a dialectic due to an affective oscillation in which the attendant perceptually shuttles between the material and the imagined, resulting in the production of something other than the binary — a synthesis that is a blend of actual and fictive.

When we apply the theory of conceptual blending to theatre, actual and fictive become two mental “input spaces.” Useful elements from each input space are selected, usually unconsciously, and combined in the “blended” space to create novel thought. Thus, actor holding pillow over other actor’s face in the Actual Space, and Othello suffocating Desdemona in the Fictive Space, become “I am watching a murder take place” in the Blend Space. In the Carnival scene, actors moving in slow motion with props past the frame of a brass coat rack in the Actual Space, and bohemian masquers at a Fancy Dress Ball in the Fictive Space, become “I am outside looking through a window at a Fancy Dress Ball” in the blended space (this is just one possible interpretation; the example is explained in detail below). Conceptual blending’s “mental spaces” are analogous to neural coalitions. Each space can be interpreted as a neural map, with other neural maps nested inside it, so to speak — patterns of neural firing connected to other patterns of neural firing, each pattern connected to a sensory mode working in concert with other sensory modes. There are obvious correlations with the image schemas of metaphor theory discussed in the previous chapter: sensorimotor domains are mapped onto emotional or social domains to create gestalt understandings of an experience. Each “domain” can be broken down and renewed. She is able to see things about it she did not see before, or had not considered due to unconscious habit.
into a conceptual blending “mental space” and blended together to provide new insight or novel experience.

Unlike the previous chapter in which the proscenium frame was described as a spatial configuration with deep roots in the history of Italianate scenography, frames and windows in this chapter will be explored as co-creations in a perceptual game played by artists and audience together, games that do not necessarily require a reference to scenographic history. Scenographic history will be discussed as inspirational sources for the artists, specifically tableaux vivants and the cinematic frame.

6.2 Carnival scene sources — tableaux vivants and frames

There were four main sources of inspiration during the creation of the Carnival scene: (1) the company’s interest in object affect; (2) tableaux vivants; (3) a three minute segment from Meredith Monk’s film *The Book of Days*; (4) the “Fancy Dress Ball” section from Hesse’s novel. The first three sources are closely related. I have already discussed our interest in treating all performance elements, human and nonhuman, as affective “things,” as plastic elements with which to compose a scene. With the intensifying, isolating, and flattening effect of the mirror, we tried to foreground the affective power of whatever was seen on the glass. The second source, the tableaux vivants — which can also be related to museum dioramas — represents our interest in how these types of settings make human and nonhuman elements available for intense observation. Immobile or relatively immobile people are rendered *thing-like* when put next to
non-moving objects. A detail of clothing can have as much interest as a face or a phonograph.\textsuperscript{52} In the Carnival scene, slow-motion actors echo the affective intent of the tableau vivant. Traditionally, tableaux vivants (living pictures) are either pantomimes or non-moving three-dimensional “images” that portray, for moral instruction, an allegory or moral episode, often with biblical reference (Brockett and Hildy 101; Fisher 28).

Some of the earlier known versions are from medieval and early renaissance pageants or processions. These were of the pantomime variety. A royal entourage would follow the course of a procession, passing one or several tableaux, which often presented, through pantomime, an allegory intended to instruct the ruler on how to fairly govern his or her subjects (Brockett and Hildy 101). Meredith Monk may have been referencing this history in \textit{The Book of Days}: the film takes place in an unspecified European medieval walled city. A modern era “populist form” of the tableau vivant can be traced to the late 18\textsuperscript{th} century performances of Emma Hamilton,

\textsuperscript{52} In \textit{Revolutions} (2016), the show my company made the year after \textit{Steppenwolf}, we went further into amplifying \textit{nonhuman} affect. For example, during the first seven minutes of the show the audience’s attention is directed to a century-old metal bedframe upon which a heap of white sheets, intricately folded, shifts and moves very slowly, to the accompaniment of a sound score that slowly rises in pitch and intensity. Although this was not apparent to many attendants (Leaky Heaven \textit{Talkbacks: Revolutions}), performer Delia Brett is hidden beneath the mound of sheets, and is responsible for activating them. The tempo of movement was set, and the folds in the sheets were carefully arranged. One small stage light was fastened to the bed frame to accentuate the peaks and valleys of the folds. Otherwise, the combined human-nonhuman affects were left to their own emergence. Similar tactics were employed throughout the show with other materials, including detritus found on the beach, giant blocks of styrofoam, and specially constructed 8’x8’ wooden walls on casters.
“whose ‘attitudes’ mimetically enacted the poses of classical statuary that were being excavated at the time” (Fisher 28). The tableau vivant took two dominant forms in mid-19th century America: amateur and domestic theatre, and “erotic vaudeville” (28). In the latter, “elaborate mise-en-scenes,” often directed by women, featured “participants who would mold their postures, holding their expressions from two to twenty minutes.” Monk’s film episode offered the Steppenwolf devisers a particular tempo (slow) and framing device (a filmic frame, but one you can see outside of — thus a frame within a frame), while the idea of the erotic vaudeville tableau was similar in spirit to our intent, in that it flips the moral orientation of earlier tableaux: biblical allegory is replaced by an allegory of sexual license, fluid identity, and human and nonhuman allegiances. This is in keeping with the section of Herman Hesse’s novel referenced in the Carnival scene.

Fisher argues that there is a continuity from older tableaux vivants and “contemporary performance works,” through “the dimensions of living display as vehicles of affect, aspiration, and sensorial engagement” (28). In her analysis, the tableau vivant, particularly the forms in which it has survived, is less about moral instruction through representation, and more about “haptic” (her word) and sensorimotor perception (my words):

Just as the haptic sense is engaged when the body is in motion, so too it is operative when the body is still. On the one hand, proprioception, an aspect of the haptic faculty, discerns spatial depth and the arrangements of objects. On the other hand, kinaesthetic awareness, another aspect of the haptic, gives a reflection of bodily comportment. (29)

As has been argued throughout this dissertation, sensorimotor neural patterning (in Fisher’s appropriate terms, “proprioception” and “kinaesthetic awareness”) is fundamental to how the attendant engages with, in this chapter’s case study, the pantomimic tableau of the Carnival
scene. The scene is played out, not as a freeze frame, but as a slow-moving image. Slow motion is a common performance tactic in theatre and dance for making human action look uncanny, mechanical, or crudely biological. Action in theatre is usually connected to human will: at least since Stanislavski, and probably going back to Zola (although with Zola human will is also a consequence of socio-economic determinism), character intention has been considered the result of human desire. In *Steppenwolf* human and object are put on a more equal footing, with the human taking on object-like status, and the object becoming an actant. The object-like status of things in tableaux vivants or museum dioramas, and the related slowing down of movement, are two important aesthetic principles employed throughout *Steppenwolf* (the human diorama element also was used in the earlier Tick Tock Room sequence with the statue-like man), and especially in the Carnival scene.

The third source of inspiration, tightly connected to the previous source and already discussed in the previous paragraph, was the three-minute sequence from Monk’s film, *The Book of Days*, in which figures out of a medieval pageant or carnival enter and exit the shot like puppets on a puppet stage.\(^{53}\) The literal depth-of-field in the shot (the actual distance between foreground and background as opposed to depth of lens focus) is quite shallow. The figures usually face front, and the image is composed for an exclusively frontal view. At the end of the sequence the camera pans out to show areas outside the original shot so that the viewer can see how the “illusion” of the stage picture was created. A little prior to this, fake snow has been

\(^{53}\) The sequence can be watched on YouTube at [https://www.youtube.com/watch?v=nMFLct2laqw](https://www.youtube.com/watch?v=nMFLct2laqw) or by entering “Meredith Monk – Book of Days (1988)” (Simonetta Vespucci; uploaded on Oct 7, 2008) into the YouTube search box.
sprinkled over the performers. The viewer can now see that this was done by someone on a ladder, out of shot. At the bottom of the zoomed-out screen we see a few spectators. Of course, this is just another game, a new frame containing the old frame, drawing our attention to the construction of the scene and of the entire film. This idea is important to our conception of the Carnival scene. The attendants could easily see what we put inside and outside our frame, and yet the frame schema, a neural pattern, encouraged them to prioritize what was “inside” and make what was “outside” less important.

The final source of inspiration was the Fancy Dress Ball section from Hesse’s novel. Our stage production, from the opening moments, followed the broad movements of the novel (a source that came only part way through the development process). In our construction of the performance, we were now at the point where Harry Haller attends the ball. Harry’s attitude to the ball is conflicted. The masquers and revels are at times alienating, and at others enticing. There is an undertone of both seduction and threat. To Harry, a metaphorical half-man, half-wolf, perpetually on the outskirts of social convention, the masquers are other. He himself is other to conventional bourgeois society, but in the manner of a wild lone wolf managing the outward appearance of respectability. The masquers are other because they occupy a bohemian fringe. A moment arrives when Harry, despite his misanthropic tendencies, becomes a fully immersed participant in their world. The novel has several narrative frames: first the author Herman Hesse’s introduction; then his third-person narration; then, within the narrative, the
nephew of Harry Haller’s landlady; then the autobiographical sections by Haller; and finally, nested inside all this, the “Treatise on the Steppenwolf” by an anonymous writer.\(^5\)

### 6.3 The Carnival scene

Exploiting the narrator frames, we provided a number of visual frames (mirror, proscenium, curtains, door, house, etc.) through which to view the unfolding events. Besides the concrete visual frames, there were light and sound “frames” (colour of light, sound design, rhythm of light, and sound cues). In the Carnival scene a brass coat rack becomes a central feature. It is placed on the second stage deck, flanked by cardboard flats onto which images of red velvet curtains are projected, and backed by the actual red curtains of the proscenium stage.

\(^5\) This framing can be expanded further to include the lurid cover of the paperback edition our company used, the publisher’s notes, the foreword written by Hesse decades after the original publication, and so on. Each of these was considered in the construction of the stage production.
Figure 15 (Screen capture) The Carnival scene. A brass coat rack occupies center stage of the second deck. An image of red velvet curtains is projected onto the area outside the rack, including onto four cardboard flats. The area inside the frame of the costume rack is lit with white light from the projector, giving that which is inside the frame object-clarity and focus. Surfaces outside the frame, lit only by the dim red light of the projector, appear flat and hard to distinguish. Performers in the red areas blend with one another and with other surfaces. (Left to right: Nazli Akhtar, Sean Marshall Jr., Alex Lazaridis Ferguson, Nneka Croal, Brette Little, Anais West). (Steppenwolf)\textsuperscript{55}

The performers move in slow-motion between areas, stage right and left of the coat rack, and the area within the brass frame. The areas outside the frame receive dim red light, while the area within the frame receives bright white light. Thus, as a performer moves from outside to inside the frame, they also transition from \textit{blending with surroundings} to \textit{being clearly separated from}

\textsuperscript{55} The Carnival scene can be watched on YouTube at: https://www.youtube.com/watch?v=OFQVeOJXB-Q or by typing in “Steppenwolf (full-length) – Fight With a Stick Performance.” The scene begins at around 37:00.
surroundings. This tends to make the spectator pay more attention to what occurs inside the frame. In effect, the spectator is invited to play a game in which she can always see the entire actor body or object, but can create a visual distinction between the white and red areas. Even though the entire image — body, object, visual ensemble — is always visible, the frame edges, emphasized by the radical difference in colour and light intensity, create a field in which those parts of the performers’ bodies that are lit by white light are interpreted as part of the picture, and those parts lit by red light are ignored or seen as less important. Of course, there is nothing other than the flimsy coat rack and differently lit areas to suggest that the spectator must complete the game by looking inside, not outside. Nevertheless, test audiences understood the game almost immediately and tended to create a picture frame or window (Leaky Heaven Talkbacks: Steppenwolf).

This makes sense in cognitive terms. A picture frame is something we are all accustomed to viewing. In a gallery or home setting we understand that what is inside the frame is ‘the artwork’ and what is outside is not. Picture frame is a sensorimotor metaphor for which we have created neural patterns. Having been acculturated to do so, it is probably automatic for most people in our society to activate the picture frame pattern when looking at the tableau vivant described above. They will automatically also use image schemas that have to do with inside and outside to understand what they are looking at. There will likely be a sense of satisfaction in being able to activate and fulfill these image schemas. The complication of having activity outside the frame that is contiguous with what is inside the frame provides tension. Inside and outside in this case are not very stable categories. On the one hand the spectator activates a picture frame or window schema to make sense of what she is seeing, and on the other the contiguity of action with what is occurring outside the frame competes with this schema. That
this cannot be fully resolved is what makes the perceptual game of the scene work. There will be an oscillation between inside-the-frame and outside-the-frame.

There will also be an oscillation between actual and fictive, between the materiality of performers, things, and coat rack, and the fiction of Hesse’s Fancy Dress Ball. And of course, the spectator will watch all this with her back to it. She looks into a thirty-two foot wide, eight-foot high mirror that behaves very much like a picture frame, window, or movie screen. So there is already a picture frame schema in play. The costume rack becomes a picture frame within a picture frame. In this configuration there may be additional conflicting signals regarding what is most important to look at. The spectator sees herself and fellow spectators in the mirror (in the picture frame). She might focus on her own image within the frame, or she might take cues from a fellow spectator’s direction of gaze. Because she is not directly lit, her reflection will vary between clearly visible and not visible. The playful music and action of the Carnival scene might relax her into the game. On the other hand this playfulness is in contrast with previous sections of the performance that were underscored by darker existential provocations spoken by the man in the booth. Therefore, she may regard the shift in tone with suspicion. The theory of conceptual blending provides a model for further understanding the oscillations of attention described above.

6.4 Conceptual Blending

The theory of conceptual blending dovetails rather neatly with the actual-fictive dialectic that is basic to theatre. Fauconnier and Turner (Henceforth F&T) characterize their theory as “double-scope” (v): at the rudimentary level it can be characterized as two mental input spaces, each containing different features, combining to create a new blended “output” space. The two input
spaces also draw generic schemas from yet another space, the “Generic Space.” Thus, *Frame* in the Generic Space can become *Window frame* in one input space and *Picture frame* in the other. *Window frame* and *Picture frame* can be compressed into a new identity, *window frame*, in the Blend Space. Together the four spaces are called an “integration network” (xvi; see figure below for a diagram of the basic integration network). In the Carnival scene one input space might contain the *actual* material features of a performance (actors, costumes), and the other the imagined *fictive* features the performance references (characters, clothing). Selected features from each input space are projected to the blended space to create something that is dependent on, but different from, the two input spaces. Conceptual blending describes the mostly unconscious process by which we imaginatively combine immediate perceptions and past cognition (memories) to produce novel thought.
Figure 16 The simplest form of an integration network. It represents four “mental spaces.” Mental spaces “are small conceptual packets constructed as we think and talk, for purposes of local understanding and action.” (102)

Compression and oscillation

The _actual-fictive_ binary has become axiomatic in theatre. We take for granted that an attendant can blend a materially present actor (the flesh and blood before her) with a materially absent fictional character (words written on a page) to create the impression of a character like Othello. We also take for granted that the attendant is able to become immersed in the impression of Othello while knowing all the while that the Othello she and the theatre artists have collaboratively conjured is just an actor in a costume. In the Carnival scene we take for granted that the attendant will be able to see a window or picture frame while knowing there is no window, picture frame, or picture — just a coat rack and light. In the terms of conceptual
blending we can say that the attendant is able to recruit materially present facts from one input space (actors, costume rack, stage decks) and features from a window schema in another input space to create the blended result, *I am looking through a window*, while knowing she is not looking through a window. Due to the fact that she continues to reference the input spaces that resulted in the blend, she does not completely lose sight of the inputs. She consciously and unconsciously takes part in the illusion-making.

How is this possible? How can it be that the mere suggestion of a window can result in the impression of a window? It is because meaning is not exclusively constructed by the thing itself, but in the neural activation of window patterns “prompted” by the suggestion of a window. The affects created by the artists in their selection and composition of things, and in their augmentations through further affects (sound, colour, etc.), prompt the attendant to assign the meaning “window” to the complex of affects. To borrow an example used by F&T, we assign the meaning “baby” to a digital image of a baby — which is actually a vast number of pixels that have nothing to do with a baby — because we have learned to correlate pixels with an actual baby (5, 8). *Digital image* in one input space and *actual baby* in another are compressed into a single identity in the blended space. In the Carnival scene the attendant “integrates” *window* schema with costume rack and lighting affects to be able to play the perceptual game on offer. F&T call this “perceptual binding”:

*We are disposed to construct objects and preserve identities, so that although we hold and move and see and feel “the wine bottle” in many different situations, we effortlessly and unconsciously bind together all these events as involving a single wine bottle. Conversely, we are equally able to use the very same perceptual evidence to distinguish “two” “wine bottles,” to all appearances identical and yet not the “same” object.* (12)
The Carnival scene relies on the attendant’s ability to easily integrate different things — a window and a costume rack — as a single identity. This is a more challenging identity integration than understanding two temporally separated bottles, one a memory and the other a materially present bottle, as one bottle. But the principle is the same: two different things are compressed into a single identity. Significantly, the Carnival scene integrates identity while, at the same time, resisting integration: the attendant’s unconscious ability to create an integration is relied on, but also challenged by having things that are outside the window frame, and that would be out-of-view if one were looking at a real window fixed in a wall, remain in view, albeit with a diminished focal status due to dim red light. The oscillation between actual coat rack and imagined window never ceases, and this gives the scene dynamic interest.

Disanalogy

At first it would seem that mental input spaces must be analogous, that what occurs in one input space must find a similar counterpart in the other input space, and that blended together these create a new thing or idea in the output space. This is partly true. A window in one input space has enough in common with a coat rack (they both have rectangular frames) to be blended together in the output space. However, F&T stress that what they call “disanalogy” is also important: “Identity and analogy theory typically focus on compatibilities between mental spaces simultaneously connected, but blending is equally driven by incompatibilities. Often the point of the blend is not to obscure incompatibilities but, in a fashion, to have at once something and its opposite” (29). In some ways a window and a coat rack are compatible — both have rectangular frames; in others they are incompatible — one has glass and is normally set in a wall, the other has no glass, is mobile, and is supported by wheels. Thus, they are disanalogous. Disanalogy is
dependent on analogy. Two things that are similar-but-different are put together. The Pacific and Atlantic oceans are disanalogous: both are massive bodies of salt water, but have different shapes and geographical locations (99). A brick and an ocean are not disanalogous because they share nothing in common. Neurobiologists have shown that people find it much easier to talk about the differences between two similar things than between two things that have nothing in common (99). The dictionary on my MacBook describes analogy as “a thing that is comparable to something else in significant respects: works of art were seen as an analogy for works of nature.” “Works” are analogous to other “works.” One work explains the other work. An example of a disanalogy would be the relation between two dress shirts of different cut and colour. The differences in cut and colour provide a “clash” in the input spaces. Blending two similar but clashing shirts creates a novel shirt in the output space. It would probably be impossible to blend an ocean and a brick. They wouldn’t compress into one unique identity. On the other hand blending the Pacific Ocean with a brick that has the shape of the Pacific Ocean might be possible. It is the shape of the ocean that becomes the organizing principle.

This bears out in the Carnival scene where two different kinds of frames are compressed. Windows are usually set in walls. The Carnival stage “window,” i.e., the coat rack, is not set in a wall. There is no wall in that input space. The idea of a window, set in a wall, through which one looks in at the Fancy Dress Ball, only exists in the blend. Red-lit wall and white-lit window only exist in the blend. They don’t have to find cross-mapping “matches” in the input spaces. The attendant finds the resulting blend stimulating and novel because she is still in contact with the inputs. There is an oscillation between blend and inputs, and between input and input.
Counterfactuals

A further feature of many blends is the idea of the “counterfactual.” A counterfactual is an alternative scenario that gives the current scenario meaning. To illustrate the idea of the counterfactual, F&T use the idea of the “safe beach.” In order for “safe beach” to have meaning, one has to entertain its counterfactual, “unsafe beach,” or what the authors call a “danger frame” (25), a fictional scenario that gives the factual scenario a particular meaning. In the “safe beach” scenario, the word “safe” acts as a prompt that references or imports the danger frame. If a child is playing with a ball by the shore at the beach, we might say the beach is safe, meaning the water is shallow, the current predictable, visibility good, a lifeguard present, and there are no predators (sharks in the water, human lurkers hidden behind trees). Without a counterfactual scenario in which the water is deep, the current unpredictable, our view of the child obscured by bushes and dunes that might conceal a human predator, no lifeguard, and sharks and man-o-war jellyfishes lurking beneath the surface of the water, the factual “safe” beach has no meaning. In addition to the traditional actual-fictive binary, when discussing cultural “frames” imported to the blend the binary factual-counterfactual is also useful. Counterfactual frames do not usually appear directly in the spaces of a basic integration network, but are “imported,” and work in the background, or alongside the network. F&T describe how a “debate” frame is implicitly employed when a 21st century professor sets up a hypothetical argument between himself and Emmanuel Kant (60). Although the two philosophers lived centuries apart and speak different languages, the listeners have no problem understanding the blend of times, spaces, and languages because the debate frame is an implicitly understood cultural template.

As with the term “safe” in “safe beach,” words often prompt counterfactuals. However, it is possible, as in the Carnival scene, for non-linguistic prompts to invoke a counterfactual frame.
I am suggesting that a *window* schema is prompted by the coat rack. Not the presence of the coat rack alone, but the way it is used as a frame and window by the artists: the performers treat it as both a picture frame and a window, and the lighting designer gives it window-like status by lighting the figures within the frame vividly while obscuring the action outside the frame with dim red light. There is no window on stage. The coat rack acts as a prompt for *there is a window on stage.*

A “prompt,” whether a word, phrase, or nonlinguistic gesture, is a neural activation that sets in motion further neural activations. These are not random. Successful integration networks, those that offer insight and global understanding, are the result of purposeful blends that serve a context. Not random — but neither are they predictable. “The brain is a highly connected and interconnected organ, but the activation of those connections are constantly shifting…” write F&T.  

The fact that two neurons are connected in the brain does not necessarily mean they will be coactivated … What counts […] will depend absolutely on what is currently activated in the brain. Some of these activations come from real-world forces that impinge upon us, others from what people say to us, others from bodily states like weariness or arousal, and many others from internal configuration of our brains acquired through personal biography, culture, and, ultimately, from biological evolution. But much of the shifting activation is the work of the imagination striving to find appropriate integrations. (22)

In constructing the Carnival scene, a scenographic experiment within the larger scenographic experiment of *Steppenwolf,* the artists compose the parts in the hope of some level of integration.

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56 This is another way of speaking of neural reuse, discussed in Chapter 3.
of predictability of neural activation in our audience. We hope our prompts will trigger “appropriate integrations,” familiar schemas such as window and wall, and familiar cultural frames such as going to a party and looking through a window. If these are put into play and blended, then we have a perceptual game on our hands.

The following diagrams will help to clarify conceptual blending and the features of the integration network. These follow the model of diagrams used in Fauconnier and Turner. Below is a Basic Integration Network (repeated for ease of reference). This is the simplest form of Integration Network. It represents four “mental spaces.” Mental spaces “are small conceptual packets constructed as we think and talk, for purposes of local understanding and action” (102):

Figure 17 Basic integration network.
The Carnival scene network

The next diagram shows only the Generic Space and two input spaces I have named “Actual” Space and Fictive Space. The Actual Space is the material on-stage reality the audience looks at. The Fictive Space is the imagined world of the Fancy Dress Ball in the novel. Here we can see that Frame in the Generic Space becomes Coat rack in the Actual Space and Window in the Fictive Space (window into the ball room). This side becomes Foreground in the Actual Space — that which is downstage of the coat rack; This side becomes Outside in the Fictive Space — as in outside the ball looking in through the window. That side becomes Background in the Actual Space — that which is upstage of the coat rack; That side becomes Inside in the fictive space — the ball in progress. Social Group becomes Actors in the Actual space, and Masquers in the Fictive Space.

Figure 18 Three of the mental spaces of the Carnival integration network. Generic Space at the top; two input spaces at the bottom.
In the above diagram all features of the Generic Space are accounted for in the inputs. Features in one input space have cross-space matches in the other input space. In the next diagram, below, the cross-space matches are indicated by solid black horizontal lines. We can also see that each input is projected to the bottom Blend Space. They are blended to create unique identities. Thus, *Coat rack* in the “Actual” Space and *Window* in the Fictive space are blended to create *Window* in the blended space. (Note: Although *Window* in the input space and *Window* in the blended space have the same name, the blended window is not identical to the input window. It has been altered through compression with *Coat rack*). *Foreground* and *Outside* become *Carnival exterior*. *Background* and *Inside* become *Carnival interior*. *Actors* and *Masquers* become *Masquers*. The resulting blend can be articulated as, “I am outside the ball looking through a window at masquers inside the ball.”
Figure 19 An integration network with matches and compressions.

The features of two different “spaces,” one actual (stage space) and one fictional (the ball in the novel), are compressed or fused into a set of new identities (48). The matching elements are also disanalogies or “clashes”: they are similar-but-different. Actors and characters are similar-but-different. They are both “people” (one actual, one fictive) but they are different in specific ways. One is materially present; the other is imagined but dependent on the materially present actor. The performer is present and ontologically coherent but has undertaken different
roles and functions throughout the show; the fictional “person” does not radically change character but takes on different functions in relation to the main character in the novel.

A greater clash can be observed between Coat Rack and Window. The coat rack is just a rectangular structure on wheels. A window has a frame and glass and is usually set in a wall or door. The only commonality between rack and window is that each has a frame, or rather the coat rack is a frame-like structure, and the window has a frame. However, the frame is very important. We do not call a rectangular piece of glass a window, but if someone held up a rectangular piece of glass set in an aluminum or wooden frame and called it a window we likely would not question it. If one were to hold up an aluminum window frame without glass in it, we might call it a window or we might call it a window frame. Its status as a window is now in doubt. If we look at a wall with a rectangular opening in it, about window-size, with or without a frame, we would have no trouble calling it a window. The tension between the coat rack and these window schemas, several of which are employed (aluminum frame as window, aluminum frame with glass as window, window in wall without glass, window in wall with glass), is

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As I have briefly noted and will expand upon below, an integration network almost always depends on previous integration networks and cultural frames. “Person” in the Fictive Space requires a previous blend in which words on a page (descriptions of a character) are blended with the reader’s prior knowledge of real people and other fictional characters to create a person that is disanalogous with the actor “person” in the Actual Space. Thus, the materially present actor is blended with an imagined person/character. The person/character can also be a schema of a person, more or less abstract depending on the amount of descriptive information brought to the current blend.
resolved due to the particular way the performers relate to the coat rack (they treat it like a window) and the way the lighting designer separates it from the surrounding area.

Selective projection

This is, however, never fully resolved. Although a window is usually set in a wall, there is no wall present on stage in the Carnival scene. The coat rack is an independent feature standing not far from four unconnected cardboard flats that have red drapes projected onto them. There is no wall in the Actual Space. There is, however, a wall in the Fictive Space: the observer looks through a window at the Fancy Dress Ball. The window is set in a wall that is part of the building that houses the ball. Wall in the Fictive Space has no disanalogy (no match) in the Actual Space. There is no feature in the Actual Space to combine with, to compress into a new identity. Wall is simply projected to the blended space and becomes part of the blended gestalt, *I am outside the ball looking through a window at masquers inside the ball*. In an integration network, elements of each input space are selectively projected to the blended space depending on the purpose of the blend (71-72).

Some elements do not serve the purpose of the blend and are not projected. Some have no match in the corresponding input space but serve the blend and are projected to it. The diagram below from F&T illustrates this. It is a basic integration network that shows projection lines from the Generic Space to the input spaces, matches between elements in the inputs, and projections to the Blend Space. The square in the Blend Space represents the “emergent structure” (44). The emergent structure in the Carnival blend is *I am outside the ball looking through a window at masquers inside the ball*. Note that some black dots in an input lack a counterpart in the other input, are not projected from the Generic Space, and do not project to the Blend Space. Each
input space below has one dot that has no counterpart but projects to the blend and becomes part of the emergent structure. I am suggesting that *Wall*, as I have described it, has no counterpart but is projected to and becomes part of the emergent structure in the blend.

![Image](https://example.com/image.png)

**Figure 20** An integration network showing the “emergent structure” within the square. Some features (black dots) of the inputs are projected to the Blend and some are not. (F&T 46)

But what kind of wall is it? One that is perceptually unstable. Figures move across the red-lit area and come fully into focus only when they enter the white-lit area within the coat rack. If the frame is perceived as a window, the red-lit area is the wall. But it is a wall you can see through — a transparent or translucent wall, a wall made of something like very thick glass, or perhaps a kind of wall you can see infra-red heat patterns through. It is there and not there. If there is a party going on that you can only see through a window, then there must be a wall in
which the window is set, a wall you cannot see through. But there is no wall on stage or in the Actual Space, only in the Fictive Space.

**Other Carnival blends**

If we back up to the input spaces, we can find an alternative way of describing the wall as part of the blend, one that may seem to contradict the first blend. I will show that this need not be so.

We do not see through walls, so *Wall* in the Fictive Space is implicitly opaque. However, the fictive wall can itself be the blend of a previous integration network. In such a network *Wall* would be in the Generic Space — a non-specific wall (blends can operate at any level of specificity, from the very vague and abstract to the very particular and concrete) (103). One input space might feature *Opaque wall*, matched in the other by *Transparent wall*. The two can be compressed into a new identity in the Blended Space as *Transparent wall*. This can operate in the background of the Carnival integration network, as can other integration networks.

*Transparent wall* is also named *Transparent wall* in the blend, but the blend *wall* is not identical to the input *wall*. It is a new thing, a wall that is transparent, like coloured glass, but can also take on some of the attributes of an opaque wall. In this case it is a perceptual barrier, not a physical one. In fact it is a non-barrier agreed upon by all participants of the performance to act as a conceptual barrier. (Just above I gave *Transparent wall* the descriptor “coloured glass.” You can see how this could present yet another way of describing the Carnival scene: the wall is actually a coloured glass wall with a clear glass “window” in it.)

There is another, obvious way to describe the Carnival scene. Rather than using wall and window schemas, we can describe the grouping of actors and props as appearing between parted curtains. Red velvet drapes have been projected onto four cardboard flats on either side of the
coat rack. The two outer flats are downstage of the two inner flats. Thus, the performers seem to be moving slowly between two drawn downstage drapes, in front of two mid-stage drapes, which are downstage of the fully drawn actual stage drapes in the background.

Figure 21 (Screen shot) The Carnival scene. Digital images of red velvet curtains are projected onto four cardboard flats, left and right of the coat rack. The actual red velvet curtains are visible directly behind the performers. (Steppenwolf)

In this version the coat rack is simply a coat rack, a frame there for the sake of having one. This idea is reinforced by the man holding a picture frame to his face in the background.

And there are other versions that can be constructed. Several can be in play at the same time. When Fischer-Lichte, Gumbrecht, Pallasmaa, and Marks speak of “oscillation,” they tend to mean a pendulum-like swinging between one type of perception and another. For Fischer-Lichte the oscillation is between actual and fictive. For Gumbrecht it is between presence and meaning effects. For Pallasmaa and Marks it is between optic and haptic visuality. But a pendulum, depending on the type, can also swing between multiple points, as Foucault’s pendulum does when it travels around the compass points, or change its rate of oscillation, as a
double pendulum does. I am suggesting that the term oscillation can pertain to the spectator shifting between several kinds of perceptions, and between several integration networks (I doubt any of the authors just mentioned would take issue with this). A skilled attendant can make such shifts, either due to natural disposition or through the practice of having seen a great variety of contemporary theatre performances. A less skilled attendant might find even the basic actual-fictive oscillation challenging at times. As I said above, an integration network is normally informed by other integration networks. Window and parted curtain can both operate side by side. Wall and no-wall, or wall and translucent wall, can operate together. An attendant can oscillate between them.

Cultural frames

The network in the diagram above also works because it imports what the authors call “frames” and “sub-frames” — “entrenched mental spaces that we can activate all at once” (103). One entrenched sub-frame employed, a network of neural connections that have been instantiated in the attendant over a lifetime and that will likely be imported to the above network, is looking through a window. When we say a mental space is “framed,” we mean a “mental packet” we already know about is recruited (102). An example: “A mental space in which Julie purchases coffee at Peet’s coffee shop has individual elements that are framed as commercial transaction, as well as by the sub frame — highly important for Julie — of buying coffee at Peet’s” (102). In the Carnival scene the attendant, even though she is not looking through a window, will use the entrenched frame — looking through a window — to help her play the perceptual game. Another possible familiar frame employed is going to a party. Yet another frame that comes into play and does not have to be “invented anew” (72) is attending a performance. These are examples of
cultural templates that pre-exist the current event and give meaningful structure to it: “The creative part comes in running the blend for the specific case. In cultural practices, the culture may already have run a blend to a great level of specificity for specific inputs, so that the entire integration network is available, with all of its projections and elaborations” (72) (The Italianate stage discussed in the previous chapter would be such an example). Integration networks recruit other, pre-existing integration networks. Parts of a network are usually integration networks themselves.

*Mirror networks, vital relations, and part-whole inference*

The diagram above represents a type of integration network called a “mirror network” (122-26). In a mirror network there are no clashes in the Generic Space. There are disanalogies or clashes in the input spaces. Disanalogy is a “vital relation,” one of many F&T describe, including Change, Identity, Time, Space, Cause-Effect, Part-Whole, Representation, Role, Analogy, Property, Similarity, Category, Intentionality, and Uniqueness (101). In addition to those I’ve already covered (Disanalogy, Analogy, and Space), I will discuss the Part-Whole vital relation as it applies to the Carnival scene. That which appears in the frame of the coat rack is intended to represent the Fancy Dress Ball section of Hesse’s novel, or create a number of affects related to it. Clearly, a handful of people and a few props are not the whole of the ball, just the part that is visible in the frame. Thus, in the Actual Space there are a few actors and props, while in the Fictive Space there is an entire ball. These can be compressed into a single identity in the Blended Space as *Fancy Dress Ball*. One “part” — a few actors and props — is combined with another part — a *ball* schema (a place and time where individuals come together in costume to
drink, dance, and flirt) to create a “whole”: *Fancy Dress Ball*. An example of the Part-Whole vital relation is offered by F&T:

> We point to a picture of a face and say “That’s Jane Doe,” not “That’s the face of Jane Doe.” We have constructed a network mapping the individual to the picture of what seems to us her most salient part, her face. In the blend, the face is projected from one input and the whole person is projected from the other. In the blend, face and person are fused: The face is the personal identity. The part-whole connection between the face and person in the input spaces becomes uniqueness in the blend. (96)

One reason this blend is so automatic is because it is a “neurobiological fact that faces are, through face recognition, the most salient part of the body for the purpose of maintaining identity” (97). A cognitive theory known as “perceptual inference” also addresses this somewhat automatic tendency to compress part and whole into a unique identity, a workable shorthand that allows us to fuse a picture and a person or a frame and a window. “During perception,” writes Barsalou, “states of perceptual systems become stored in memory (e.g., for vision and audition).” Similar stimuli perceived later trigger these memories, simulating the perceptual states they contain. As these simulations become active, they produce perceptual inferences that go beyond [immediately] perceived stimuli in useful ways” (Barsalou 624). The coat rack and the manner in which it is treated by actors and lighting designer prompt a perceptual state — seeing through a window. The window is a “perceptual inference” that goes beyond the immediately perceived stimulus. We fill in gaps or complete patterns based on knowledge built

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58 A “state” is the combined cross-modal neural patterns that fire in concert during an act of perception. Neural networks in various parts of the brain fire in a coordinated way to create a state.
up in the past. We will use “auditory knowledge” to supply a missing phoneme in a person’s speech, to complete and make sense of it, or, one could say, to make it conform to our expectations (624). If taught to associate a particular shape, such as a square, with a particular colour, we will tend to assign to the square shape the colour we originally associated with it, even when we are presented with a different sample of the shape, one that has a different shade or hue of the colour. For example, we will perceive a red square to be darker red if we originally learned to associate the square shape with the darker red (624). We will tend to see a banana as yellow even when it is more grey than yellow. Regarding the connection between the part-whole vital relation and short and long-term memories that allow for perceptual inference, F & T write, elements in mental spaces correspond to activated neuronal assemblies and linking between elements corresponds to some kind of neurobiological binding, such as co-activation. On this view, mental spaces operate in working memory but are built up partly by activating structures available from long-term memory. Mental spaces are interconnected in working memory, can be modified dynamically as thought and discourse unfold, and can be used generally to model dynamic mappings in thought and language.

(102)

In order to make the discussion of conceptual blending clear, I have so far avoided talking in any detail about sensorimotor access and embodiment in this chapter, but it is important to remember that the “conceptual packets”/mental spaces F&T describe, as well as working and long-term memory, are sensible, body-felt experiences that arise from environment-subject coupling. The environment provides opportunities for perception. We categorize these opportunities according to instantiated neural patterns built up over time. As in the discussion of sound in Chapter 4, conceptual blending does not provide a simple “feedforward” system. It is
not just a matter of an environmental stimulus acting on our eyes, ears, and skin, which in turn send electrical signals to our brains for the processing of representations of the world. Neural patterns form, reform, collaborate with other patterns, send information back down through a system which includes a body moving through space seeking engagement with phenomena; back and forth like this, environment and self working with and through one another. This is true of the integration network described in this chapter. The Blend Space, a neural coalition, is a consequence of the Generic and Integration spaces, other neural coalitions, but it also feeds back into and modifies them. If an attendant gets any joy out of the perceptual game of the Carnival scene, it is because she has a felt sense of the coat rack before her, the window of her imagination/memory, can feel physical access to the material factors before her (looking through a coat rack), and, as in the Pacing scene, can enjoy the confusion that arises when these phenomena are blended with her imaginative constructions (being blocked by, or seeing through a wall). The Carnival scene bets on the attendant’s somewhat unconscious neural activations and her conscious participation: “As long as our perceptual and sensory systems are working properly,” write F&T,

... it is almost impossible for consciousness to see outside the blend of cause and effect. In other cases, such as rituals [following anthropologist Victor Turner, we might add theatre as one of these rituals] and ads, it is easier to separate cause and effect consciously … How thoroughly our conscious apprehension is limited to the blend depends on the kind of activity that blending serves. In the case of sensation and perception, our conscious experience comes entirely from the blend — we “live in the blend,” so to speak. In other activities, conscious apprehension has more leeway to go back and forth, to “live in the full integration network.” (83)
By “live in the full integration network,” F&T mean being able to reference the inputs and take part in the illusion/blend of the Carnival scene while being fully aware of the inputs that made the blend possible. Any theatre performance takes advantage of the attendant’s tendency to oscillate between knowing and unknowing, between actual and fictive, and between Input Space and Blended Space.

**Neural interference**

There is something further to say about oscillation in terms of neural activity. Why must there be oscillation between perceptual states at all? Why not immediate, stable, and enduring compatibility? The answer seems again to be connected to the concept of neural reuse: it is efficient for the brain to use its resources for more than one thing. Brain tissue, as Anderson puts it, is “expensive” to use — neural “reuse is a fundamental evolutionary strategy for getting maximal functional flexibility out of scarce and expensive neural resources” (Anderson *After* 30). It would be a waste of brain matter to have individual brain regions dedicated to single sensory modalities and single perceptual tasks. It is much more efficient to use the same system, or parts of the same system, for a number of tasks (46). If I may be allowed to use an imperfect analogy: Imagine if you had to have a different hand for different tasks, one for grabbing things, one for hitting, and one for caressing — a counterfactual that suggests evolutionary adaptation has resulted in a single hand that can accomplish a variety of actions. Because the brain must also martial its resources efficiently, one processing cortex can be co-opted by another, and one group of neurons can accomplish more than one type of activity. So far so good regarding neural reuse. But why the oscillations? Why do they occur, and how do artists, consciously or unconsciously, take advantage of them to open the attendant up to new perceptual insights?
In Louder Than Words: The New Science of How the Mind Makes Meaning, linguist and cognitive neuroscientist Benjamin Bergen explains how “interferences” or compatibilities occur when someone attempts to use the same brain region for more than one task at the same time. If, for example, you are asked to imagine the letter ‘I’ while looking at the letter ‘I’ on a computer screen, and if the ‘I’ of your imagination is very similar in shape and size to the ‘I’ on the screen, your perception of the ‘I’ will be “enhanced” (Bergen 28). If, however, you are asked to imagine the letter ‘H’ when you are looking at the ‘I’ on screen, there will be interference: the visual processing area of the brain, occupied imagining the letter ‘H’, will be unavailable for immediate processing of the ‘I’. It will be harder and take longer to see the ‘I’ while imagining the ‘H’ at the same time.

To put this in theatre terms, there will be a conflict between the actual and the fictive. Actor Jane and character Desdemona do not immediately blend as the new identity, Desdemona. Attention will oscillate between the one and the other. If you have a very clear picture of Desdemona that conflicts with actor Jane before you, it may take time to create the blended identity. Time is an issue. Introducing Jane and Desdemona as one, immediately, may intensify the interference. Contextual prompts such as the narrative, what other characters say about actor Jane/Desdemona, how Jane carries herself, the complicity of fellow audience members in accepting the conflation of Jane with Desdemona, and even promotional images that clearly show Jane in the role of Desdemona, will assist the blend.59 Playing the game of perceiving a

59 Another fairly common example from theatre is when several actors play the same character over the course of a show. Verbal and visual prompts are required to assist the attendant in blending each new actor with the single character. It will be easier to do with some actors than with others, depending on
coat rack as a window in the Carnival scene is assisted by prompts such as the manner in which the actors enter the frame and look out at the audience, the lighting states, and so on. These prompts assist the blend. The attendant integrates input spaces, not all at once but in stages, to create the identity window.

It may be that the same brain region used for visual imagination and visual perception, unsure at first which neural patterns to activate or whether to privilege imagining or perceiving, now skillfully shifts between the one and the other at a seamless rate, or somehow fuses imagination/memory and immediate external perception. In this case the process of oscillation moves toward identity integration. The Carnival scene, however, refuses to fully submit to this process. To do so would bring closure to the perceptual game, and thus give the attendant nothing further to investigate. Therefore, peripheral action continues outside the frame, reminding the attendant that the window is not a window. Or rather continuing to give mixed signals about the ontological status of the “window.” While an imagined letter ‘I’ and an actual letter ‘I’ on a computer screen are close enough to be quickly integrated, many things are not so seamlessly put together.

how the attendant constructs the character, in her mind, and on how difficult it is to either accumulate several actors as the same character over time, or shed the character of the actor that is passing the character to the next actor. Caryl Churchill’s Cloud Nine provides some enjoyable challenges in this regard. Not only is the attendant asked to blend one actor with two characters or more; the characters are supposed to be different versions of the same person, but living a century apart. The worlds of the first act and second act are also temporally separate, and the stage design normally reflects this. The playwright asks for a great deal of identity compression in this play.
An artist can exploit the tension between perceptual interference and compatibility using the principle of disanalogy. Bergen shows that it is difficult for someone to imagine, say, their lover while they are looking at their lover. This is because a single visual processing area of the brain tries to both imagine/remember and perceive at the same time. It is easier to imagine a cosmonaut in a space suit while looking at your lover. It is even easier if you picture the cosmonaut in one location, a little to the left, while looking at your lover in another, a little to right. If things perceived and imagined are virtually identical, and in virtually the same location, a blend can occur without much interference, or the things can be similar-but-different-enough to create intense oscillation, or they can be more-different-than-similar enough to allow for easy switching between the one and the other, or they can be so utterly different that integration is impossible. Imagining and perceiving, due to neural reuse of the same brain region, can work seamlessly together or they can interfere with one another.

This goes for other sensory modalities. Imagining while perceiving motion sets up the same potential tensions. If you are listening to a hockey game on the radio while driving, particularly if you have played hockey and have strong sensorimotor patterns that will be triggered when the announcer describes the game, your reaction time to sudden events occurring before you on the road will be slower (Bergen 155-57). Neurally simulating hockey motions while performing driving motions can cause a delay in driving reactions. Restricting an attendant to a chair at a show can actually help her simulate the action onstage, leaving her relatively free of interference that would be caused if she were performing the actions herself. The Carnival scene unfolds in slow motion. If the attendant were on her feet performing other actions at a faster or slower tempo, this would interfere with her ability to simulate the motion of the scene. Being still assists simulation and integration.
There are, however, ways to disrupt this, and intensify the oscillation between perceiving and simulating (I have replaced imagination with this word in order to specifically address the simulation of motion). In my company’s 2016 show Revolutions, the audience sits before a very slow-moving scene in which most of the visual elements remain static for the first ten minutes or so, and appear to be static for much longer. All that is seen at first are a table and slowly moving sheets on a bed. Actor Sean Marshal Jr. then enters, sits at the table, takes off his glasses, watches a hand emerge from the sheets, goes to the washroom to retrieve toilet paper, offers it to the hand, and so on. Part way through this scene, unbeknown to the attendants, the riser on which their chairs are placed has begun to move backward, away from the scene, so slowly that it does not consciously register for a very long time. The motion they consciously perceive — a very static scene in which all elements seem to be in clearly in their places — is at odds with the movement they are unconsciously experiencing. Visual, auditory, tactile (they can feel the chairs under their bottoms and their feet on the plywood), and olfactory signals indicate they should be on a stable, unmoving platform. Their internal organs tell them otherwise, but with a “voice” so subtle other sensory voices are shouting it down. The two review excerpts below describe this well:

For some time I’ve been feeling mildly disoriented. I notice the bed has moved away from me. When did this happen? I realize with astonishment that it’s the audience platform that’s been moving—backwards, inch by inch. (Vrettakos Radically)

At the talkback following the performance, several of my fellow spectators commented on experiencing feelings of nausea, which was their first sensory clue that something uncanny was going on; in my case, I admit to cottoning on to the visual trick very slowly—though when I finally realized what was happening it was one of the most astonishingly rewarding
experiences in the theatre I have had for a long time, a live embodied version of a cinematic zoom out that happens so subtly and incrementally as to make you both doubt and become more hyper-attuned to your senses in relation to your immediate physical environment. (Dickinson *Revolutions*)

*Revolutions* offers a clear sensorimotor example of how neural reuse can result in interference between vision and motion. This is because what is sometimes referred to as the visuomotor system is trying to accomplish a task that requires collaboration of visual and motor processing at the same time. In the above example, the attendant at first cannot integrate the action he is simulating with the motion he is feeling. He simulates what he sees on a neuromuscular level while, at the same time, interoceptive signals from within his body are urging him to pay attention to a phenomenon of backward movement he cannot make sense of. Eventually the clues stack up and he can revise the blend, *I am sitting on a chair on a fixed riser in a small room watching a man at a table reading to a sick person in bed, to, I am being carried away from a scene that is decomposing at the end of a long tunnel that is getting longer.*

While the Carnival scene does not move the attendant through space, it should be remembered that the action is seen in a mirror. The action has gotten closer to the attendant over the last couple of scenes; closer to the front of her in the mirror, and closer to the back of her in actuality. She has had to integrate *the scene ahead is coming closer to the front of me with the scene behind is coming closer to the back of me,* and because she has not lost contact with the inputs, she feels the oscillation between them and the Blend space. She may also feel that she is being squeezed between two scenes pressing on both the front and back of her. When the retreating/advancing overall movement of *Steppenwolf* pauses for the Carnival scene, she can relax into simulating the slow tempo of the actors’ movement while trying to integrate *coat rack*
with *window* — using visuomotor patterns to take, through various scenographic prompts, the suggestion of a window, and “make” a window, a window that is there and not there

### 6.5 Dramaturgical questions and exercises based on conceptual blending, neural interference, and attendant oscillation in the Carnival scene:

At a given moment are you encouraging the attendant to focus on the material circumstances before her or an imagined elsewhere?

On a chart, create two input spaces, one *actual* and one *fictive*. Create generic and blend spaces.

- Fill the spaces in with things, ideas, affects, etc., that you have been discussing.
  - Are there matches between input spaces, things that are disanalogies?
  - Is there a way to increase or decrease the “clash” between matches?
  - Do the matches reference elements in the generic space?
  - Do they project to the blend space as newly compressed identities?

Is there a cultural frame, such as *debate* or *party*, that you are relying on and importing to the integration network for further reference?

At a given moment are you emphasizing a particular sensory modality?

- Can you create interference by playing another sensory modality against it?

- Play with the following:
  - Perform an action.
- Use lights and sound to reinforce the action.
- Begin to play against the action by having the lights and sound contrast intent, mood, tempo, or rhythm.
- What is it like when the contrast is small? When it is large?
- Try different colour and intensity of light.
- Try different genres of music.
- Introduce ambient sound.
  - Play between ambient and directional sound.
- Use diegetic sound
  - Amplify the actions on stage with local microphones.
  - Record the sounds on stage and introduce them at higher or lower volumes than the actual sounds.
    - Change the location of the recorded sounds:
      - Have them come from where the sounds *should be* produced.
      - Have them come from other locations.

What is the minimum part of a thing or affect required to “prompt” or suggest a whole thing?

- Choose an actual object (put this in one input space).
- Choose an imagined object (put this in another input space).
- How little of the actual object is needed to prompt the attendant to “see” the imagined object?
- Other prompts that might help:
- Choose a sound, diegetic or otherwise (put in one input space).
- Choose a mood, feeling, or atmosphere (put in other input space).
- How little of the sound is needed to prompt the mood, feeling, or atmosphere?
- Other prompts that might help:
  - Light.
  - Object textures and placement.
  - Movement of things.
  - Performer action.

Choose a verbal prompt such as *Alison is a middle-aged Filipino-Canadian Activist*. Explore interference and oscillation in the following ways:

- Have a middle-aged Filipino-Canadian occupy the performance area after or before the prompt is spoken.
- Have a twenty-year old Filipino-Canadian do this.
- Have a white middle-aged woman do this.
- Have a white elderly man do this.
- Have vase with flowers do this.
- Have a cabinet do this.
- Change the word “activist” to “conservationist,” then to “oil executive,” then to “biologist,” then “barista,” and so on.
- Change “is” to “was” or “will be.”
- Add “hurrying to a meeting,” or “relaxing in the sun,” “swimming with dolphins,” “starting up her helicopter,” “putting on her hazmat suit.”
- Mix and match the above.
- Have the performer move or not move.
- Change the direction and quality of movement.
- Continue in this manner.
- Which of your above experiments create the most challenge in being able to integrate the verbal prompt with the stage action? Which make it most easy?
- Can you switch back and forth from easy integration to challenging integration? In other words can you create an interference or oscillation?

Choose a passage from novel that interests you. Ignore the story. Identify object affect or atmospheres in the text. Try to create an affect based on the affect’s using objects, lights, sound, and performers as objects.
Chapter 7: Affordances, the disruption of pattern completion, and maps of unknowing in Societas Rafaello Sanzio’s *P.#06 Paris*

### 7.1 Introduction

In this case study I apply several of the concepts previously discussed — Gibson’s theory of affordances, further expanded upon in this chapter, Noë’s theory of *perceptual presence*, also expanded upon, and neural mapping — to a segment of *P.#06 Paris*, by director Romeo Castellucci and his company Societas Rafaello Sanzio. I argue that defamiliarization of scenographic elements is achieved through manipulation of visuomotor perception in the following ways: (1) By relying on the attendant’s sensorimotor and haptic understanding of distance, height, surface, and *enclosure*, while at the same time disturbing that understanding through juxtapositions that create particular spatial tensions; (2) by offering the attendant the potential of pattern completion, and then disrupting his ability complete the pattern. Finally, I return to theories of sensorimotor oscillation, including neural interference, and to the existential philosophy of Emmanuel Levinas to discuss the idea of a map of *unknowing*. Disruption of neural pattern fulfillment can lead to the altering of old patterns and the construction of new ones. In connection with this I suggest the possibility of a pattern that remains incomplete but active, one that resists, as the Castellucci example will show, the attendant’s desire for pattern fulfillment. I offer the paradox of a neural map that “represents” instability. I look to Levinas’ idea of the “trauma of astonishment” as a way to further theorize incompleteness. For Levinas the encounter with the *other* displaces one’s subjectivity and makes that displacement a processual fact of intersubjectivity.
Disrupting an attendant’s ability to fully form a neural pattern or to absolutely categorize phenomena has been discussed in different ways in this dissertation. In Chapter 4, I explored how Nancy Tam and the Leaky Heaven devisers designed an aural environment for the purpose of challenging the attendant’s sense of *emplacement* in space. In Chapter 5, I explained how, in the Pacing scene, conflation of digital with actual surfaces, and two-dimensional with three-dimensional space, induced cognitive dissonance in the attendant and led to an exciting, but hard-to-categorize sensory experience. In the previous chapter I discussed oscillation in terms of conceptual blending, neural interference, and neural reuse. These ideas are implicitly taken forward into this chapter. The object-focus of this chapter, however, ups the ante. The *actual-fictive* binary discussed in the last chapter becomes more intense. Castellucci’s manner of heightening the oscillation between the *actual* and *fictive*, and his way of focusing attention on that which is materially present, creates greater challenges for the attendant, and is instructive for the artist.

This is the first time in this dissertation I focus on another artist’s work. Seeing Castellucci’s *Hey Girl!* in 2008 was a life-altering event for me. The work somehow encapsulated everything I love about art and theatre. At the same time it expanded and redefined theatre for me. It became clear that if I wanted to have any part in ambitious theatrical developments of this nature, I needed to learn more about every aspect of creating a performance, especially the technical aspects. In order to do this, I felt I had to develop a scenographer’s mind. It also became clear that Castellucci had drawn on recent practices and longer histories of various artistic disciplines in a way that went much deeper than many directors who called their approaches interdisciplinary did. This spurred me to learn more about as many art forms as possible, from architecture to installation art to environmental sound design.
to contemporary dance, land art, contemporary music, and more. One of the reasons I took a teaching job in a collaborative interdisciplinary performing arts program was that I wanted to learn more about the absurd number of art forms the board of directors expected me to teach. Initially, because of Castellucci’s impact, I had to reassess what “interdisciplinary” really meant — not necessarily what Castellucci meant, but what I thought it meant, and how I might manifest interdisciplinarity — or perhaps the better term is transdisciplinarity — in my own professional creation process. This has been discussed in the methodology chapter. Suffice to say that exposure to Castellucci made me question everything. This chapter represents me at my most analytical when it comes to his work.

The chapter could have come at the beginning of the dissertation, but that would have been misleading. Subsequent chapters would have been read through the filter of P.#06 Paris. Castellucci’s work did not provide me with an aesthetic to borrow from. It alerted me to what I should be paying attention to if I wanted to escape the habitual, and genuinely develop myself as a theatre artist. In this chapter I take the role of student, scholar-analyst, and fellow (much less experienced) artist. I rely on my own subjective experiences as an attendant at Societas Rafaello Sanzio’s live performances, which, since 2008, I have seen in Vancouver, Los Angeles, Montreal, and Paris, and as a viewer of numerous digital recordings of the company’s shows. Although I have taken notes, sometimes during, but usually after these performances, and although I have attended two of the shows as a paid reviewer, I cannot pretend to some abstract objective viewing position. After almost a decade of casually attending or rigorously studying the work, it is hard for me to look at a live Castellucci performance without referencing his other shows, live or recorded. They become part of a whole. I believe this is a benefit to the dissertation. Like his other fans, I have learned something of the grammar of his work, become
familiar with his style, and developed skill in allowing myself to submit to the sometimes very visceral, sometimes very thoughtful perceptual ride he offers. Perceptual skill, in other words neural maps that allow me to cognize what I attend to, is not a prerequisite, but something one develops during the performances (or does not). As discussed in the methodology chapter, and in keeping with the practice research approach, I allow my subjective embodied viewing experience to inform theory and let the theory refine my subjective approach.

I have zeroed in on a very particular part of the scenography in this case study, more so than in the previous case studies, a part that seized my attention both for what it was in itself and because I recognized it as a scenographic tactic employed in other Castellucci works. I wanted to know why these moments were so vivid for me, so puzzling, and so compelling. I wanted know how they worked. I felt that if I could gain some insight into this, I could improve my own work as a performance maker. I have chosen a digital recording rather than one of the live performances for two reasons. First, it offers a very clear example of the scenographic tactic I am discussing. The manner in which the familiar is made uncanny is similar in many ways to what I have observed throughout the artist’s work. But the particular handling of it here clarifies, for me, why the scenography works so well. Second, because it is a recording I can play it back as many times as I like and analyze it further. There is a huge difference, of course, between the sensorium of a live performance and the sensorium of the living room where I often watched the videos. I am well aware that a digital recording is mediatized in a way that a live performance is not, and that I am experiencing something very different on screen than what I would experience live. However, having seen Castellucci’s work live so many times, and in so many different kinds of venues, from a conventional theatre in Los Angeles to an airplane-hangar-sized hall in Paris, I feel I can meaningfully translate between media. I have been watching recordings of
theatre, including archival recordings, for decades, and am well able to understand a scenographic situation, even when working off a video alone. I have also built up skill in this area by regularly reviewing my own work through archival video. In the same way that I can, due to the years I have spent on TV and film sets as an actor, watch a movie and construct the off-screen world of technicians, sound and light crews, etc., I can translate between live and digital performance milieux. Finally, that the video can be linked to and watched by the reader adds a further benefit. I could have chosen an example from a live performance but, as I have said, the *P.#06 Paris* example illustrates my argument with great clarity.

7.2 *P.#06 Paris, surface perception, affordances*

Consider a horse. Or rather, half a horse.

*P.#06 Paris* is part of Societas Rafaello Sanzio’s eleven-part cycle, *Tragedia Endogonidia*. Each part takes place in a different European city, with the exception of parts one and eleven, which take place at the company’s home base in Cesena, Italy. The cycle is an investigation into the pre-Classical roots of tragedy, but this is not particularly relevant to the current analysis. In the section of *P.#06 Paris* I am exploring, a white horse backs into the performing area through a stage-left door. The horse enters only as far as its mid-section and then stops. Front legs, neck, and head remain out of view. A little downstage of the horse, an actor representing Jesus stands before a small Greek sphynx. After a bit, Jesus walks away from the area, and the sphynx is removed from the stage, leaving me to attend to the half-horse.
It stays in view for some time. I wait for the rest of the horse to appear. It remains, insistently, a half-horse. Because it is a living horse and moves, *when* it moves, as I would expect it to move, I assume there is indeed a front end to the animal. Cognitive theorist Alva Noë’s concept of *perceptual presence* assures me of this. Something — an object, quality, or situation — has perceptual presence when a subject has sensorimotor access to it (Noë *Varieties* 26). I do not have to be able to see the whole horse in order to understand that there is more to it than just its back end. That I have potential physical access to the parts I cannot see is a given. Gibson concurs. In his theory of affordances he argues that “one can perceive surfaces that are temporarily out of sight”: it is the subject’s potential for “locomotion” that makes this evident (Gibson 76). It would be possible, though against theatre protocol, for an attendant in the theatre to get up and walk around the horse. Even though she cannot see the upstage side of the horse, it
is accessible. Even though the front end of the horse is out of view, currently unprojected as Gibson puts it — meaning the light rays that bounce off its upstage side do not currently reach her eyes, and are therefore not visible to her (see Chapter 5) — it must have a front end. Due to small movements the horse makes, the downstage edge of the arched aperture occludes or reveals a few centimeters more or less of the horse’s midsection.

At the same time, the small movements cause the edges of the horse’s surfaces to occlude or reveal a little more or less of the wall and floor upstage of the animal. An attendant could adjust her eyes, head, neck, and body to discover just a little more or less of the horse. When the horse first enters, light is briefly projected onto the arched doorway and onto the floor around the horse. The light reflecting off these surfaces gives her enough visual information to realize the floor must extend, at least a little way, into the dark aperture. However, because it is so dark, the aperture acts as a hole (Gibson 34). There is no visual information coming from the unlit aperture, beyond the first few centimeters. In Gibson’s terminology a hole has no projecting features; it does not reveal distance or the shape of anything inside the hole. It is something of a negative space. The significance of this to the attendant’s embodied perception of the horse will become apparent later. When the horse first appears, the attendant will naturally expect a whole horse, or will fill in with her imagination the parts of the horse that are not visible. It is due to the way Castellucci further defamiliarizes the animal that what at first seems certain — that there is a whole animal there — becomes perceptually ambiguous. It should also seem obvious that there is some kind of enclosure, a room or hallway on the other side of the aperture. However, as time passes, the enclosure seems to be just a hole, a void from which a strange half-horse has emerged.
Gibson describes light as *structured* or *unstructured* (73, 85-92). Radiant light, light from a source such as the sun or a light bulb, hits a surface; rays of light bounce off the surface and then off further surfaces, creating ambient light. My current location will be a point of convergence for these reflected rays, one point of convergence among an infinite number of possible points. The light on the surface of the wall in front of the horse reflects light, and that light is perceived as *structured*. It has, or reveals, the shape of the surface of the wall. The shape is revealed due to a number of factors, including brightness or dimness of the surface relative to surrounding surfaces, and the particular texture-colour combination of the surface. The same goes for the floor, the wall behind the horse, and the surfaces of the horse itself. Each of these surfaces *projects* a shape and angle of shape to where the attendant is located. In other words, light rays that are reflected off the visible part of the horse or wall speedily arrive at the attendant’s viewing location as a projected surface with a certain shape. The parts of the horse she cannot see at the moment — its upstage side and the half that is still on the other side of the archway — are *unprojected*. They are currently out of view. There are also no surfaces revealed from the dark area within the aperture. Therefore, it is a *hole*; it is *unstructured*.

To make the idea of unstructured light clear, Gibson asks the reader to imagine herself inside “a translucent shell . . . illuminated from the outside” (52). The diffusing substance of the shell “would transmit light but not structure.” The diffused light carries no information other than intensity and the colour of the shell walls. No surfaces are revealed. There are only light rays bouncing around inside an enclosure that has no internal features, and walls that are too opaque to reveal shapes outside of it. This is unstructured ambient light. When you look at the branches of a tree against a perfectly blue, cloudless sky, the areas between branches or leaf surfaces fail to reveal shapes (106). They are just areas of featureless blue. They are holes. It is
the branches and leaves that provide structured light. So looking at Castellucci’s horse and
doorway, from a performance design perspective, there are surfaces of wall, floor, and horse, and
a hole against which these surfaces stand out. It is a hole because, like a cloudless blue sky, the
darkness offers no structured features.

It might, however, not be a hole, or not exactly a hole. It might be a partial enclosure.
What is the difference and why does it matter? A partial enclosure in Gibson’s terminology is a
concavity in which all the surfaces face inward; together they only partially enclose the medium
we usually move through — air; also there is a way in and out (34). This would fit the
description of a room with at least one door, or of a hallway in which at least one entrance, at one
end of the hallway or somewhere along its length, is open. Besides our immediate general
suspicion that there should be such an enclosure from which the horse emerged, there are also
auditory clues that might suggest this. When the horse first enters, its shoed hooves clatter loudly
on the concrete floor. The attendant will be able to determine where the clattering comes from
due the very slight difference in time it takes sound waves to reach her right and left ears (see
Chapter 4); if the front hooves, out-of-view inside the aperture, are responsible for some of the
clattering, sound waves that escape the enclosure and eventually reach her will provide clues as
to the size of the enclosure and the materials it is made of (wood, concrete, drywall, marble).
Although that which is visually behind the aperture wall is not projected as structured light,
other sensory modalities — in this case sound — will provide clues that suggest the aperture is
an opening to an enclosure of some kind, and not just a hole. But the artist has deliberately left
the situation ambiguous. On the one hand there is the suggestion that the half-horse has emerged
from a dark void. On the other the horse’s slight movements show there is at least a little bit
more than what is in view, probably an entire horse, and that there must be at least a bit more
floor on the other side of the aperture. And, of course, the horse breathes; which surely settles the argument —this is a complete living horse.

This ambiguity between *hole* and *partial enclosure* is expressed as neural patterns played off against one another. Visual information is unsettled. Auditory information works for and against resolution, agreeing with and disagreeing with visual affordances. The element *hole* in one input space and the element *partial enclosure* in the other are at odds, but potentially *compressible* (see previous chapter on conceptual blending) into a single identity. Whether they will remains uncertain. This goes for the animal body. Is the matter regarding the wholeness of the horse settled? Is the attendant’s initial attempt to categorize the horse using instantiated neural maps for horse successful? Do *actual* front-half horse and *imagined* back-half horse compress into whole horse? We will see that the longer the partial, incomplete horse lingers, the more the attempt to compress half and whole horse identity fails, increasing the strangeness of the image and giving way to a pattern that is new and un-completeable. Much of this rests on the attendant’s sensorimotor potential for moving to and around the horse, and includes potentially being able to physically touch the animal.

Slipping myself now into the role of attendant (as if I were watching the show live), and drawing from my viewing of the video of *P.#06 Paris* together with my experiences of watching Castellucci’s work live, I know that the parts of the horse I cannot see are still *perceptually present* and available to me: I might walk onto the stage and discover the parts I cannot currently see or touch. I might then see, touch, hear (the horse’s movement and breathing), smell, and (if I were so inclined) taste the horse. Gibson explains that we see not only specific surfaces, we see the terrestrial layout (Gibson 76-86). Unlike the Cartesian picture-in-the-head version of seeing, in which we see, with our *mind’s eye*, a picture in our mind that mediates reality, theorists of
action-grounded embodied cognition argue that we directly comprehend the visual array because we have an embodied sense of what it means to move in it. For Gibson this means having the physical understanding that we are supported by the earth and are able to move around or over obstacles presented to us as surfaces.

What is important here regarding performance design is to consider that a scenography offers the attendant possibilities for movement and physical interaction even when she is restricted to a seat and cannot travel into the situation. It is the sensorimotor possibility of getting up and walking onto the stage and into a performance situation that allows her to make meaning of the space. This is how we make sense of spaces every day. I walk down a street. As I move along the sidewalk I look into a space between two buildings and see a courtyard with a garden in it. I do not have to enter the space between the buildings to understand the distance between me and the courtyard, or the feeling of the narrowness between the buildings, or the height of the narrow space, or the fact that there is a courtyard with a garden that can be entered and moved about in. I simply take it as an affordance. Using my personal sense of scale and distance, which is based on my history of bodily interactions with these and other spatial situations, and on my current skill at understanding the perceptual presence of the spatial situation, especially the potentialities for entering and moving through the space, I make sense of my environment.

“The sense we attribute to our lived experience of the world,” write neurologist Vittorio Gallese and architect Allesandro Gattara, “is grounded in the affect-laden relational quality of our body’s action potentialities, enabled by the way they are mapped in our brains” (Gallese and Gattara 167; italics original). It is in using our personal sense of scale and movement in relationship to environment that qualities of place and potentials for movement emerge. For example, in the scenario I just described one’s sense of verticality and horizontality, when
looking at the courtyard through the narrow space between buildings, will produce particular feelings of stability or instability. “Investigating bodily feelings, self-identification and self-location with respect to the architectonic unity or form and space of the observer may be confronted with architecture as an extension of the bodily volume,” write Blanke et al.; “the experience of a narrow room increases the somatosensory sensation of verticality, ‘thus enhancing bodily stability,’ while conversely, a large room elicits ‘a destabilizing effect for the missing cue in peripersonal space [space that very near to the subject] provoking an illusory backwards momentum” (Blanke et al. qtd. in Gallese and Gattara 176). (This is the argument I made in Chapter 4 regarding how the sound and lighting design took advantage of the size of the Russian Hall to destabilize the attendant).

Pallasmaa offers yet another example regarding taking the measure of a space using our bodies: “I confront the city with my body; my legs measure the length of the arcade and the width of the square; my gaze unconsciously projects my body onto the façade of the cathedral, where it roams over the moldings and contours, sensing the size of recesses and projections; my body weight meets the mass of the cathedral door, and my hand grasps the door pull as I enter the dark void behind” (Pallasmaa Eyes loc. 878). The performance designer, thinking this way, can exploit the spatial complexities on offer in almost any performance situation. Noë’s theory of actionism, as well as various theories of embodied simulation (including Barsalou throughout, and Gallese and Gattara above) explain how, through constant and automatic probing of any situation, the situation becomes available to us. I project myself, kinesthetically, into spaces.

Good. But: if the artist creates a show that does more than offer sensorimotor comfort and surety, that artist is messing with the attendant’s kinesthetic neural maps. He will create interferences — situations that rely on the spectator’s attempts to neurally simulate movement.
and touch, while disturbing her ability to fully simulate — thus taking the traditional idea of defamiliarization to a deep, whole body level. At first, all is well with my understanding of the horse and its surroundings. Auditory and visual information, together, allow me to understand that the aperture is not just a hole, but a partial enclosure. But the longer the horse remains there, not emerging and therefore not revealing its entirety, the weirder it and the hole look.

Castellucci frustrates my desire to see the entire horse. I await its emergence. It fails to emerge. Despite the rational conclusion that I must be seeing what is part of a whole horse, the back end becomes a phenomenon unto itself. Questions flicker around the edges of my mind such as, “What is a horse without its head? Is this a horse? Is it a being of only buttocks and legs? Does a back-half horse have agency?” I become fascinated with this half-being. This is a very deliberate provocation on Castellucci’s part, and typical of how he deploys animals on stage. Animals and children are put on stage because they are out of place in what is an adult theatre environment. It is precisely because they do not belong that their presence makes us more aware of ourselves and the physical structures of the theatre: “Every animal brings back to the spectator a consciousness of the material,” says Castellucci (Castellucci et al. 209). This is true for me, with the strange consequence I have been describing. I become hyper-aware of the horse, but less as an animal with agency, and more for its textural surface qualities — which become actants themselves. As performance theorist Nicholas Ridout adds, when an animal on stage is not performing within the frame of the circus act or in the familiar role of pet, it raises more questions than answers. The animal does not seem capable of representing its own interests in the theatrical context: “[It] shouldn’t be there because it doesn’t know what to do there, is not capable of performing theatrically by engaging a human audience in experimental thinking about the conditions of their own humanity” (qtd. in Florencio 120). Animals and young children draw
attention, for Castellucci, to the material circumstances of the stage; they do this by triggering the attendant’s whole-body responses: “There is an animal level to what goes on that passes through a haptic relation, a relation to surface, and that reveals the scenography as an environment” (Castellucci 209).

Putting animals or very young children on stage, as Castellucci does, intensifies the haptic encounter. A being on stage that is alien to theatre culture makes it hard to take the material manifestations of that culture for granted. We tend to notice surfaces and have a more conscious relationship with them. Our sense of narrative or rhythmic continuity is disrupted by this awareness. This in turn implies a further dramaturgical strategy for engaging the attendant — the suspension of our sense of the forward movement of time. About ten minutes into BR.#05 Brussels, another show in the Tragedia Endogonidia cycle, the curtain rises to reveal an infant in the center of a faux marble stage. “The baby,” says Castellucci, “was magical, she had the ability to suspend time. The show stopped. As if there was no more show. Everything was suspended. Who is that? Who are we? It was like looking into a fire. It was like being bewitched. Nothing happening. Everything floating” (Castellucci et al. 209).
This parallels my experience of the half-horse. Due to years of watching plot and character driven plays, movies, and TV shows, I have a ‘what’s next?’ impulse that, here, gets blocked by the lack of story development. The absence of narrative progression forces me to become aware of that which is before me and not changing on a macro-level. I begin to settle into the relative stasis, and to notice the surfaces. I notice micro-changes. I stop looking for action and start observing behaviour — the behaviour of light on surfaces, the small movements of the horse and its breathing, the behaviour of sound as it reverberates off the surfaces around me, and so on.  

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The emphasis on the behaviour of “things” over constructions of the psychological cause-and-effect of character and plot development is something that theatre artists and scholars are increasingly investigating. One influence for such investigations is Deleuze and Guattari’s *A Thousand Plateaus*, in which the idea of nonhuman expressivity is theorized. All things, animal and non-animal, exhibit behaviours which can be seen as expressions of their form and content, one might say of their *tendencies*.  

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Ridout, in response to Castellucci, describes the way a different animal in another of the *Tragedia Endogonidia* shows, *L. #09 London*, achieves for him a similar heightened awareness of surroundings: “When the cats begin to explore the environment, and in the process they arrive at the glass at the front of the stage [plate glass acts as a downstage scrim] or else they exit the stage altogether, there is a process — for us in the audience — of a certain revelation of the nature of the environment in which the animals are placed” (Ridout qtd. in Castellucci et al. 209). “. . . Yes,” replies Castellucci, “every animal brings back to the spectator a consciousness of the material.” So not only does Castellucci draw attention to the surfaces of the horse, through disruption of the ‘what’s next’; the horse throws my awareness back onto myself and onto the material surfaces that surround it and me. The intense focus given to the back half of the horse severs it from the front half. Visually, it becomes a thing of bluish white flesh, shimmering and rippling, against a featureless black hole. So despite the auditory information that I heard when the horse’s hooves initially clattered around behind the aperture, suggesting an enclosure, the extended stillness, intense visual focus, and lack of further clattering encourage me to treat the enclosure as a hole, a void, a negative space cut around the half-horse. Sensory modalities of seeing and hearing have been played against each other. In the terms of conceptual blending, *enclosure* and *hole* have either failed to compress as one identity, or they have compressed as *hole* or *negative space*. Neural interference can also be recruited to explain what is happening,

A crystal exhibits a behaviour when it refracts prismatic light; weather systems exhibit behaviour when, for example, hot and cold fronts collide and produce hurricanes. The way a surface absorbs or reflects light can be considered one of its behaviours or tendencies. For a fuller discussion of human and nonhuman “expression,” see Deleuze and Guattari, and Jane Bennett.
especially if we expand our sensory thinking to include sensorimotor perception. One system, or several systems working in concert, are attempting to map the experience. The horse passage relies on my desire to attempt this, but through scenographic affect disrupts me.

7.3 Perceptual presence, the trauma of astonishment – knowing and not knowing

Embodied cognition means embodied knowing. Noë’s enactive embodied cognition means knowing through actual and potential action. Let me go a little deeper into the knowing part of Noë’s argument in order to further establish the necessity for the attendant’s neurally grounded understanding of a performance design. I will then continue to develop the not-knowing part of my argument, which relies on theories of neural interference and oscillation. I will argue that P. #06 Paris exploits interference, oscillation, and partial completion of neural patterns to produce an encounter with otherness that frees the attendant from the very burden of knowing. This consequence of embodied non-cognition, a state of new and less secure cognition, cannot occur without the knowing part of embodied cognition. Without reference to the possibility of past sensorimotor knowledge, the new experience would be meaningless.

“Perception is a transaction,” writes Noë, between organism and environment, “a sharing of a situation with what you perceive” (Noë Varieties 4). There is no independence of mind, somehow isolated from its situation. Brain and mind-process are embodied phenomena and this mind-body continuum is always situated. We take advantage of situational affordances directly, by constantly adjusting our own movement. The degree to which we can negotiate affordances depends on our current level of perceptual skill. A situation with things in it offers opportunities for perception and movement. By shifting your body parts (including rotating your eyeballs) you discover affordances for sight and movement, as well as affordances for other sensory
experiences. You marshal your perceptual skills, including physical disposition and position, to make an exchange with a situation: “The detail [of the situation] shows up not as something ‘represented in my mind,’ but as available to me” (20). A critical point in Noë’s argument is that we are somehow able to understand the totality of things we see without seeing that totality, such as the back of a horse when only the front of it is immediately visible. In other words we can move through and predict possibilities for movement even when we cannot see the whole ‘picture.’ If action depends on pictures-in-the-head, as the more traditional model of visual perception holds, how can we perceive and act upon that which we cannot see? To explain this, Noë introduces the concept of perceptual presence. Perceptual presence is about access; that is, you perceive something to the extent that you are able to access it:

[A thing or quality] shows up as present, and this is crucial—in that I understand, implicitly, practically, that by the merest movement of my eyes and head I can secure access to an element that now is obscured on the periphery of the visual field. It now shows up as present, but out of view, insofar as I understand that I am now related to it by familiar patterns of motorsensory dependence. It is my basic understanding of the way my movements produce sensory change given my situation that makes it the case, now, even before I’ve moved a jot, that elements outside of focus and attention can be perceptually present. (20)

To repeat: “elements outside of focus and attention can be perceptually present.” There is no picture in my mind of the backside of the horse — the part I cannot immediately see — but through movement I can gain access to it.

This is different from traditional theories of visual perception. Jacob and Jeannerod offer a complex explanation of how we are able to represent that which we cannot see. For example, in
order to see a scene in which a mug of beer is to the left of a bottle of wine from the reverse view, in effect seeing what you can’t see from your current perspective, you would have to abstract all the elements from the scene before you — “the colors and levels of the two liquids and the shapes of the mug and bottle” (Visual 4) — and recompose them as if from a position opposite to the one you currently occupy, allowing the mug to now be on the right of the wine bottle. Noë argues that such “snapshots” of a situation do not actually occur in the mind (Varieties 105). Damasio argues that the brain simply does not have the capacity to store the vast number of snapshots required to construct such counter-positional images, or to store the required number of past images that would help one make sense of a current image by categorizing it according to previously created categories (Damasio loc. 2740).

Embodied cognition tends to dispense with the idea of internal visual representations in favor of direct sensorimotor access. For Noë we have access to the parts of things that are “out of view” because they are perceptually present. The world becomes “available” to us to the extent that we have the sensorimotor skill to take advantage of its affordances. Skills are acquired as we come to understand things. Understanding means having a subjective experience which changes the way you perceive something, or simply allows you to perceive something you could not perceive before. What changes? Probably not the thing you are trying to understand. Rather, something has shifted in you. There are many ways of understanding, but each way is cut from the same cloth, so to speak. Seeing something and thinking about it are related skills. It is more a matter of degree of perceptual skill than of absolutely different skill sets. In acting on something or thinking about it, you are simply using a different size of “caliper” (Noë Varieties 36). American philosopher John Dewey, of the pragmatist school, makes a similar argument: in the pragmatists’ view of continuity, “higher” thinking (reason) is not of a different type than “lower”
thinking (emotion) (Johnson 120-22). Rather, it exists on a continuum. We use the same processes, but they become more complex (the process is one of addition of complexity).

Seeing as touching

We are also “continuous” with our environments, in that we cannot achieve perception, thought, or action outside of a material context. We create the kind of meaning we do because we are bodies of a certain type interacting with environments of a certain type (Johnson 120-121 and throughout). So, using one sensory mode or several sensory modes in combination is about skill and applying a different size of caliper rather than an altogether different tool. And this applies not just to physical interaction, as we conventionally understand it, but to concepts as well:

Don’t think of a concept as a label you can slap on a thing; think of it as a pair of calipers with which you can pick the thing up. Seeing something is picking it up using one sort of caliper. […] If there is a difference between seeing something and thinking about it, it is because of differences in our calipers. (Noë Varieties 36)

And whether we are in the act of seeing or thinking, we are, in a sense, touching:

[…] understanding is akin to an ability, I propose that we think of concepts as tools for picking up features of the world around us, or techniques for grasping, things, features, aspects, qualities. To learn a concept is to learn to grasp something (it is to acquire a Begriff; it is to learn to handle something, etwas begreifen). What criticism affords is the cultivation of understanding, the development and so the procurement of the conceptual tools that enable us to pick up what is there before us. Concepts are ways of achieving access to the world around us. (Varieties 127)
To drive the point home: “Conceptual and sensorimotor skills are not means of representation; they are means of achieving access to the world” (124). If we do not have the skill, we do not have access. So if we stop thinking about perception, seeing, and conceptualizing as mental formations that mediate our engagement with the world, then we become bodily creatures attempting various degrees of direct tactile engagement with the world.

Pallasmaa argues that the skin is the mother of all senses; even of the eye, which is encased in a fold of skin. Seeing is touching: “All the senses, including vision, are extensions of the sense of touch: the senses are specializations of the skin, and all sensory experiences are related to tactility” (Pallasmaa “Matter”). Seeing is a collaborative action, part of a holistic perceptual experience. It is not the sum of discrete processes or of abstracting features from a thing. “I perceive with my whole being,” writes Merleau-Ponty, “I grasp a unique structure of the thing, a unique way of being, that speaks to all my senses at once” (qtd. in Pallasmaa “Matter”). Pallasmaa considers the eye a collaborative agent of hapticity: “the eye invites and stimulates muscular and tactile sensations. The sense of sight may incorporate, and even reinforce, other sense modalities” (Pallasmaa The Eyes loc. 491).

There are several implications to this for a performance designer. The attendant’s body, her unique body, becomes not only the measure of space (distance, height, width) but the toucher of everything it sees. If a set designer places a bundle of rich satin fabric, pearly pale olive in colour, on a stage, the attendant will not primarily create a visual representation in her mind that abstracts the shape and size of the perceived object; rather, through vision, in collaboration with other sensory modalities, she feels the weight and texture of the folds, almost as if physically manipulating the material with her hands. So the visual becomes tactile. Hapticity is a visuo-tactile experience that is also, by neurological necessity, multi-sensory. We might say that while
all perception is multi-modal, hapticity gives us a visuo-tactile vocabulary for discussing this multimodality.

The attendant, even sitting in a seat at a distance from the horse, can on a neuromuscular level get up, walk to it, and touch it. Through sensorimotor, or visuomotor neural mapping, the horse is cognizable, knowable. The question, then, is how does the artist help the attendant un-know it? How does he free us from habitual knowing?

I actively investigate the scene before me with my whole body, even though dynamic movement is confined to eyeball adjustments and turns of the head. For an attendant at the live performance, there is a higher degree of sensorimotor affordance. “The earth is cluttered,” writes Gibson (78). Most situations are cluttered: there are paths that afford movement and there are obstacles that block movement. The scene with the horse offers a number of movement possibilities, including the following: the attendant can stand up and squeeze past fellow patrons in the aisle, climb over their laps, climb over the rows in front of her, and go through or around the orchestra. She will then find herself in the relatively uncluttered area of the stage where she can approach the horse from various angles. She can then move around the horse, or crawl under its belly. Or she can try to climb over its back. She might try to squeeze between the flanks of the horse and the edge of the doorway, although this might be too great an obstruction. Clearly, some of these possibilities are awkward and risky; they are dangerous affordances. Crawling under the belly of a horse is probably an unwise thing to do. Standing behind the hind legs of a horse is risky — the startled or guarded horse might kick me. These dangerous affordances create what might be called, in conventional dramaturgical terms, dramatic tension. The protagonist-attendant decides on a goal (get through the aperture) and encounters complications. We project ourselves into architectonic and natural environments in order to understand their
dimensions and qualities. How does the attendant understand the difficulty of trying to squeeze past the horse in the narrow space between flank and door-edge? By feeling the potential of it, by projecting herself into that space and feeling the tightness of it. Prior to the horse’s entrance, the door opens up, creating a hole. The hole then gets filled by the powerful animal. The animal does not seem to have much room to maneuver.

Dramatic tension is also created in other ways that underline the danger of this particular composition of affordances. During a later point in the performance, three full-sized automobiles drop from the fly onto the stage, one after the other. Each one lands with a huge bang.

Figure 24 (Screen Capture) Cars falling in P.#06 Paris. (hasui1000)
Even on screen it is shocking. The horse is shocked. I see it react, pulling against whatever/whoever is constraining it to remain in place. What if this powerful animal gets loose in a panic?

Prior to the cars falling, there are additional affordances to consider that are not about moving around obstacles. Horses can be petted, stroked, brushed, slapped. You can ride a horse, nuzzle it, and feed it. You can draw a picture of a horse. You can admire a horse, make friends with it, shoe it, or shoot it. Leather can be made from a horse’s hide and glue from its hooves. You can eat a horse. These are all affordances of one kind or another. The dangerous physical affordances of Castellucci’s arrangement can potentially produce tension in an attendant. Speaking for myself, I have been trained never to stand directly behind a horse. I have seen the consequence of an irritated horse kicking in the ribs a childhood friend who carelessly stood behind it. This memory, an instantiated neural pattern, comes into play as I watch the scene. Even though the scene has strong pictorial content, as Castellucci’s work invariably does — by which I mean the scene has been composed in the manner of a painting — it is also of course three-dimensional and offers actual pathways for movement and things for touching. Gibson writes, “Observation implies movement, that is, locomotion with reference to the rigid environment [rigid: things that are relatively permanent — the ground, a building, etc.], because all observers are animals and all animals are mobile” (72). The seated attendant can adjust the view — not radically, but a little. Castellucci accepts and employs theatrical convention when he constrains the attendant to a seat. Why would he favor this arrangement?
The Societas Rafaello Sanzio performances I have seen live or on video all have this strong *pictorial* intent.⁶¹ That is, they reference or approximate two-dimensional visual art within the three dimensions of the stage. Romeo Castellucci claims that he and his company, as Italian artists, “come from a Catholic culture, from the Baroque, from oil painting” (Castellucci et al. 225). Elsewhere, and in contradiction of this, he speaks of a pre-intellectual, visceral response to theatre spaces, which he describes as *volumes*:

In every instance, there’s a sort of animalistic response to the space as volume; it’s not an architectonic space but a volume, a cavity, like the volume of a sculpture. I mean facing any space you can have an animal, infantile reaction to its volume; it becomes very clear and evident how this volume can speak. (203).

Therefore, the tension between the stage as a painterly composition and the fact that it is a three-dimensional volume (a box with an open end where the audience sits) seems deliberate. In shows such as *Purgatorio* (2008; 2009), *B.#3 Berlin* (2003), and others, Castellucci opens with a scrim or glass across the front of the stage. A scrim can reinforce the idea of a picture frame or suggest a foggy window through which shapes appear in soft focus. When the scrim is lifted, a sudden clarity of focus intensifies the three-dimensionality.

⁶¹ To be clear, by *pictorial* I do not mean the late 19th and early 20th century style of photography in which photographs were made to resemble paintings, drawings, and engravings, although there is something of this in Castellucci’s scenography.
Sometimes Castellucci will draw attention to the difference between flatness and depth by placing upstage a massive reproduction of a painting that towers over the scene, as he does with
a Vermeer self-portrait in *Hey Girl!* (2008), or with the face of Jesus, extracted from a painting by da Messina, in *On the Concept of the Face, Regarding the Son of God* (2012).

The three-dimensional factors, sometimes humans, sometimes objects moved by crew members, and sometimes mechanized objects that move themselves, are not given much room for spontaneous expression. Object and actor movement is tightly choreographed. While the ideology of the Renaissance “natural” perspective stage, which privileged the gaze of the spectator of highest social rank, no longer determines stage composition, the desire to fix the attendant in place so as to take in the stage as a picture is still very much the goal of artists like...
Castellucci, as well as others like Robert Wilson. If observation implies movement, minimizing that movement is important for making the stage work as a quasi-picture.

Many innovative approaches to theatre staging have been influenced by visual arts practice, from the French Symbolist stage of the late 19th century down to the present, first by painters (Symbolists, Cubists, Futurists, Suprematists, Constructivists), and in recent decades by installation and video artists. As far as spectator agency goes, there exist ideological, political, or aesthetic distinctions between the pictorial stage and an installation. In a typical art installation the attendant is offered many possible views, usually from points around the installation, and in many cases from points within the installation. This offers the potential of a fuller, more complex understanding of the art work. Contrast this with photography or painting. These simplify a scene by fixing it to a single viewing point and a frozen moment in time (a video offers a fixed view but does not freeze the moment). Spectator movement is a radical challenge to the authorial photograph, painting, video, or stage picture. There are advantages and disadvantages to simplifying a phenomenal experience. It may be reassuring to be able to say, “That’s what the thing is. I can see all of it. I now know it.” On the other hand the fixity of an image, if it is disturbing, can destabilize one’s sense of security.

Modernist and minimalist trends in various art forms can, on the one hand, be considered open aesthetics that invite co-authorship. On the other, they can be considered reductions of phenomena that are digestible due to the simplification of, say, an architectonic situation (as in ________________)

62 For a historical overview see Goldberg’s Performance Art: From Futurism to the Present. Goldberg includes descriptions of the work of theatre artists from Alfred Jarry to Meyerhold to Robert Wilson, Robert Lepage, Castellucci and others.
much modernist architecture) or a visual object in a stripped down modernist gallery, or a sonic composition that puts a lot of space between notes or encourages you to fixate on a tape loop or sound texture. Movement allows more to be seen, heard, and felt directly. (It can also interfere with these, as I argued in the previous chapter.) It resists concretization. But when it comes to performance it also asks a lot of the attendant. It asks for moment to moment renegotiation of an environment. It asks a lot of artists as well. A performance must be constructed with attention to innumerable points of view. Perhaps the most radical thing that has happened in performance over the past century or so is the surrendering of authorial control to the attendant’s movement in sited, perambulatory, and other “participatory” events. 63 When artists give up control of the attendant’s physical point of view they expose themselves to new kinds of scrutiny from multiple angles of judgment.

The landscape play, as theorized by Gertrude Stein in the 1920s and 1930s (Fuchs 94-95; Watson 45-46) and as practiced today by artists such as Robert Wilson, 64 and occasionally by Castellucci, goes a certain way to relinquishing authorial control of the spectator’s gaze without


64 I would argue that the Symbolists created proto-landscape performances. They often used downstage scims to obscure the focus of the attendant, avoided plot or character-driven work, and tended to emphasize atmosphere and contemplation. For a thorough history of this early avant garde theatre and its influence, see Deak.
making her mobile. In the landscape play the attendant is not overly directed to a single area of visual focus on the stage but is free to range over the entire spectacle, as one might over a landscape painting or an actual landscape. In the landscape performance, the spectator is still usually restricted to her seat. So it is far from the installation/performance art model. The freedom that it does offer comes from roaming over the scenography, visually, without feeling that one thing is necessarily more important than another. The spectator has great latitude in making up her own mind about what, if anything, is significant.

Stein likened the opera she created with Virgil Thomson in 1934, *Four Saints in Three Acts*, “to a landscape, where many elements are presented simultaneously, stretching to the horizon without a center. One discovered it piece by piece rather than following a predetermined path” (Watson 45). Hans-Thies Lehmann lists, among other features of the landscape play, “defocalisation and equal status for all parts” (Lehmann 63; italics original). The attendant is not in motion at a landscape play but she is implicitly offered a greater range of simulated movement. If we simulate, on a neurological level, that which we see, and if our own movement can interfere with that simulation (as argued in my analysis of the Carnival scene), then in a perambulatory theatre performance we may gain freedom of movement at the expense of freedom of understanding. The interference that can occur when the same neural regions for actually moving are also used to simulate movement may become too dominant. Therefore, being relatively still can allow for greater neuromuscular mapping.

What are the further advantages of an attendant submitting herself to the *pictorial* influence of a theatre director? When I speak of tension between two-dimensional pictorialism and the three-dimensional depth of a stage — which has perceptible height, width, and distance, and in which things and people in it have height, width, and distance (say from the front side of the
thing/person to the back side) — I am describing a situation rich with experiential potential. A productive artistic tension inherent to this situation is having affordances, understanding them through *embodied projection*, but not being able to fully exploit them. The attendant’s shifts in awareness between affordance potential and the knowledge that she is unable to exploit these is another example of perceptual oscillation. Let me now pick up the thread of pattern completion/frustration, which I introduced earlier in the chapter, in order to further illustrate how this works.

*How I made my neural map of a horse:*

Or: How I came to know, and then *not* know, what a horse is. When I was very young I saw a horse or a picture of a horse. I do not know for sure which one came first. I certainly had seen smaller four-legged animals such as cats and dogs. I probably also saw pictures of these. It would have been necessary to see the live, moving thing with four legs first. Without this prior experience, the picture of the animal would have been just a visual abstraction on a page. I formed neural patterns of four-legged walking things — cats, dogs, and horses. These were not exclusively visual in nature. Cross-modal maps gave me a more complete understanding of these animals: how they smelled, what they felt like to touch, the particular characteristics of their movement. I also developed very personal understandings of these animals based on the particular cats, dogs, and horses I encountered in life.

The first horse I encountered was probably the one the pony man brought to my family’s house in the Vancouver neighbourhood of Kitsilano when I was a child. You could pay to sit on the pony and get your picture taken. I was too small. I watched my oldest siblings get their pictures taken. I was in grade seven when I first got to ride an actual horse at a dude ranch in...
Aldergrove, BC. It was there that I saw a horse kick my friend in the ribs, and another horse grab, with its teeth, the skin around the ribs of a different friend, lift the child into the air, and toss him. Until that moment I had been assured that if I just followed protocol I could feel completely safe around a horse. Now my pattern for horse included a danger frame, as F&T describe it (see previous chapter). As a teenager and young adult, I rode horses from time to time and developed a level of confidence with them. Each experience with an actual horse updated cross-modal neural patterns of horse. Movies, TV shows, pictures in books, written or oral stories that were about horses, horse toys such as figurines — these all played a part in forming the neural patterns through which I encounter and understand horses.

When I see the projected back half of Castellucci’s horse, I feel a desire to complete the creature. I want the rest of the horse to come into view. Castellucci withholds it. The unprojected front end of the horse takes on the status of a ghost. It haunts the projected back end as mere potential. I am deprived of the half of the horse that would make it most easy to identify— the eyes, mouth, nose, ears, and face. Cognitive studies show that we recognize faces faster than other features (Bergen 46). Without these, the horse becomes unknowable, remains other; it cannot easily be categorized with the familiar pattern. Castellucci forces me to rethink the category and update. For me, it is harder to anthropomorphize a horse with no face or head. But I do feel its textures. When it breathes, its ribs expand, creating new surfaces of shadow and light as the ribs push the skin outward, producing little peaks and valleys between the bones and cartilage. The horse becomes a topology. I update.

What the horse does not become is… me. The age-old technique of identification between attendant and performer is resisted by the artist. Traditional theatre puts great emphasis on audience identification with a human figure and actor representation of a character: I adopt the
other’s perspective, as Roesch-Marsh puts it, metaphorically changing places with him (Roesch-Marsh 309). There is an intersubjectivity at work that, according to Husserl, the founder of phenomenology, makes the other an alter-ego, a knowable other self (308-09). When seeing the back half of a horse, in neural mapping terms, I activate my horse patterns, adjust them slightly or radically, and *know* the horse. This seems to be an implicit assumption of neural mapping theories: as we map, we know the thing we map. The mapping, an activity that is intersubjective in the sense that the subject creates its maps in collaboration with its environment, is homeostatic; in Damasio’s terms, the brain’s mapping of the body’s internal processes, and regulating them, further stabilizes the subject’s sense of self. Castellucci problematizes this. The back half of the horse remains other. I cannot apprehend it properly through my existing horse map. It is *like* but also radically *unlike* my map. I remain in a state of unknowing. The half-horse is a fascinating stranger.

Is it possible to have a neural map of *unknowing*? I would like to suggest it is. If maps are instantiated due to intensity and repetition of experience, an experience of unknowing fascination can also be instantiated. But, returning to Damasio’s formulation of homeostasis, would unknowing be counter to life-sustenance? I will hazard that organism motivations, especially in creatures with a very developed sense of subjectivity such as humans, are too complex to easily assign to either survival or suicidal tactics. *Unknowing* might be as important a survival strategy as *knowing*. For reasons that are as yet unclear, *unknowing* may have been genetically selected for. There may be a reason other than ignorant self-destruction that people like me are drawn to experiences of unknowing.

The philosopher Emmanuel Levinas speaks of a “trauma of astonishment” — an encounter in which we are faced with something that does not affirm a stable sense of self (Roesch-Marsh
Unable to reconcile sensory affect with rational understanding, we are shaken open. This is what Fischer-Lichte describes, in her own way, as an oscillation — between the material phenomenon before us expressed as a special presence, whether it is an actor, thing, or atmosphere, and our logical expectations (what we think we are supposed to know); we oscillate between the actual and the fictive, which resist merging until the swinging between these two poles becomes unsustainable and we are caught in in a *neither here nor there* place. The ordinary becomes extraordinary. We become aware of ourselves as acutely alive. This is a bit different from anthropologist and performance theorist Victor Turner’s idea of the *liminal*, in which an individual leaves a stable set of social relationships, undergoes an ordeal, then returns changed to the social arrangement. The ritual ultimately upholds the societal status quo. Oscillation might be closer to his idea of the *liminoid*, in which the time-space (so to speak) of daily routine is temporarily suspended in order to partake in a time-space that has special focus (such as going to a play).

What happens in this special time-space depends on the intent of the artist and attendant. It may follow the conventional notion of catharsis, in which the audience is purged of certain feelings that challenge the status quo, and must ultimately submit to the cosmic order: we cannot completely understand the motivations of the gods, and that is unfortunately our lot; we at least understand that it must be so. In each of these examples there is tendency toward conclusiveness: I have experienced something, I now know what I have experienced and how I fit into the experience. I think Levinas proposes something more radical: the rejection of self as stable and emplaced. For Levinas, like Fischer-Lichte, the extraordinary arises from and depends upon the ordinary. For Fischer-Lichte the “radical presence” of the other awakens you to the *extraordinariness* of what you usually consider to be your *ordinary* self. For Levinas the
mundane is also the locus for the radical awakening that occurs when encountering the other. Even in a simple person-to-person encounter the other presents an alterity that cannot be collapsed into the familiar and that challenges one’s sense of subjective stability. “The ‘wonder’ of intersubjectivity unseats the self, setting it adrift. It is cast outside itself and ejected from the comfort and complacency of its repose” (Roesch-Marsh 309-10). We awaken to the reality of a permanently destabilized self. It is “a displacement of site — the dislocation of the ‘ego’ from its ‘here’ — and the visceral, neurological and even visual-optic impact exerted upon the self from the other person. The subject is shaken to its core…” (309-10; italics original). For Levinas there is a transcendental aspect to all of this, a quasi-religious intent, one that is also deeply ethical — the trauma of astonishment that the subject suffers in encounter with the other is also a questioning, and an appeal of sorts, that makes demands upon the subject, unstable as it is. It reveals that I, such as I am, must be “for” the Other, and in doing so liberates me from the illusory cage of self-interest.

Maybe Levinas is right. Maybe the astonishment I have “suffered” at various performances by Societas Rafaello Sanzio has made me a less self-contained, less emplaced subject, one that hears the call for “justice” from the other, one that understands that to be a subject is to be intersubjective and responsible for the other. I find value in the notion of an encounter with an alterity that, while not being totally other, resists being subsumed to my familiarizing of it, to my making it known and therefore categorizable, reducing it to another version of me. It is its otherness that awakens me, and its continuing resistance to easy identification that sustains its alterity and my astonishment. Therefore, Castellucci’s presentation of an un-completeable pattern, a situation in which multi-modal neural maps are forever attempting to form but never fully doing so, leaves me in a state of suspension, a subject whose subjectivity is always in
question, a subject that can never feel completely settled and is therefore hypersensitive to an ongoing negotiation with the other. As I suggested however, perhaps something gets formed as a contingency, a pattern of astonishment — neural firings through which I experience this particular feeling of unknowing.

In the terms I have been discussing in this chapter, to be other is to resist being easily cognized according to existing neural maps. To be a permanently destabilized subject is to take no other subject, human or horse, for granted. Because the other is changeable, because all things that are not frozen change, because I am changeable, I must approach affordances with openness. There is an open “dialogue” between instantiated patterns and newly forming experience. Do I know that thing? Look again. Do I know what it means to touch it? Did I pay attention or did I assume I already knew what it felt like? Was the same old story really the same old story? The opening I experience at a Societas Rafaello Sanzio performance comes from the way Castellucci troubles sensorimotor affordance and the unconscious relationship between self and environment described by Noë as perceptual presence. Things that should be easy, like knowing a horse is a whole horse, knowing it is rideable and touchable, knowing the parts I cannot see are really there, knowing the difference between a hole and a partial enclosure — all are thrown into doubt. All the usual elements contained in the simple dialectic of actual and fictive are made irreconcilable in such a way that I must discover them anew.

Having said the astonishment of my encounter with Castellucci’s half-horse rejects a settled neural formation, I then said that the feeling of unknowing is somehow instantiated as a neural pattern. I realize this borders on self-contradiction. I defer to the word “paradox” to get me out of this conundrum. If, as Damasio argues, I create formulas that recall memories (remember these are memories that come out of “storage” different than when they went in, and
are in a process of constant modification), then perhaps I have made a formula for this feeling of incompletion. Perhaps I have simulated an experience of incompletion. Johnson argues that we receive things whole, as gestalts; performance theorist Barbara Trimmingham applies the logic of gestalt to the work of Castellucci, particularly in the ways that it is a descendent of Oskar Schlemmer’s Bauhaus stage. Schlemmer mathematically planned his performances on paper while consciously allowing his plans to be undermined by live performance, as he knew they must be (Trimmingham 88). Citing theatre scholar and phenomenologist Stanton B. Garner, Trimmingham describes the postmodern body as a “potential ‘field of action,’ a ‘play of actuality,’ rather than a ‘stable essence’” (89). Following Fischer-Lichte, if the performer-body (including a horse) is an unstable field of actuality, the attendant body is potentially so. One of the ways Trimmingham defines gestalt is as a set of relations that have an underlying unity. The relationships of things to each other are crucial. It is the context of these relations that create the particular gestalt — that is, the relationships, and therefore the underlying unity, are what make up a particular, non-transferable gestalt (in combination with other things, a different gestalt will arise).

One could argue that the relationships in a gestalt tend to blend into a somewhat undifferentiated whole that can be characterized, not immediately but upon reflection, as a quality. This is architect Peter Zumthor’s point when he says, “I enter a building, see a room, and - in the fraction of a second - have this feeling about it” (Zumthor 11). As noted in Chapter 5, Manning and Massumi argue that among some autistics, described as “neurodiverse” individuals, there is a tendency to treat things around them, including human factors, as non-utilitarian — an object has “affordances” (Gibson again) beyond its use value — and as pre-intellectual or non-cognizable — and undifferentiated from the “field” or perception. One senses the whole of one’s
surroundings before things in the terrestrial array become individuated. Home-Cook is in similar territory when discussing sound: “An ambience . . . is not an object of perception but establishes its terms: ‘we do not perceive the ambience, we perceive on the basis of the ambience” (Thibaud qtd. in Home-Cook156).

But while phenomena such as bodies and objects have, as Trimmingham puts it, an aspect that is its “irreducible presence in space,” they also have an aspect that is symbolic (Trimmingham 88-89). When in a neurotypical perceptual mode, we tend to see affordances as having utilitarian or symbolic value: a flower is for smelling and not just part of a rich relational overall experience. Individuals, whether they are autistic or not, are capable of neurodiverse and neurotypical perception, or a blend of either. It is again a matter of emphasis: “Background and foreground are in mutual embrace . . . Consciousness flickers with the tension between backgrounded environmental awareness and foregrounded cognition” (Manning and Massumi 15). This, for me, is another way of describing the oscillation in awareness that occurs when an attendant is confronted with a theatrical phenomenon that resists being resolved as either fully familiar or fully alien.

Theorists of embodied cognition, Kauffer and Chemero, in their chapter on the phenomenology of Merleau-Ponty, write, “Consciousness is not originally an ‘I think that,’ but rather an ‘I can’” (Merleau-Ponty qtd. in Kauffer and Chemero 114). Encountering an alterity presents a challenge to “what a body can do.” A body has skills for doing things. When these skills are denied, something happens — usually the body keeps trying to do what it knows, until perhaps through trial and error it adapts and develops a new skill. For a while it keeps trying. By analogy Kauffer and Chemero use Merleau-Ponty’s discussion of the phantom limb. The old skill is like a limb one no longer has, but keeps trying to make use of. It is not a simple matter of
rationally knowing the limb is no longer there. The world ‘solicits’ the engagement of the missing limb. “There is a kind of misalignment between the habitual possibilities and the actual ones. ‘It is as though our body comprises two distinct layers, that of the habitual body and that of the actual body’” (Merleau-Ponty qtd. 103). It takes time to adjust: “As the person acquires new habits for walking and grasping, the solicitations of old possibilities diminish and the phantom limb experiences subside” (103). Castellucci solicits the attendant’s skill and then renders it no longer applicable. “If the world solicits one to grasp an object with a limb that is missing, the mutilation is forgotten in the solicitation and the intention to grasp, but present in the inability to perform the action” (Kauffer and Chemero 103). Here we have oscillation between the graspable and ungraspable. It is an oscillation because the subject is not completely unconscious of the fact: “The patient knows his disability insofar as he is ignorant of it, and ignores it insofar as he knows it” (Merleau-Ponty qtd. 103).

It is the tangibility of the other in the Castellucci example that makes the challenge of encounter so great. I am not simply offered a disembodied image of alterity, I am offered a different kind of tangibility. I reach out to grasp and the thing touched does not feel like it did before, or like I expected it to feel. This new awareness has another effect. It not only draws my attention acutely to the horse, but to its surroundings, and to myself. I attend, by turns, to the concreteness of the surfaces, then to the expansive totality of the environment. If, as Johnson insists, I take the experience with Castellucci’s horse as a whole and assign it a quality such as “astonishing,” “bewildering,” or “dislocating,” then it makes sense, in the logic of the multimodal neural map, that all the parts that make up the experience — the half-horse, the lighting, the sounds, the spatial affordances, etc. — can be assembled or reconstituted by Damasio’s brain stem formula to construct — in the moment or as a memory — the complex feeling I am
experiencing in the presence of the irreducible other, an unsettled feeling that leaves me in a state of sensory openness and existential questioning.

Levinas’ concern was for the inter-human. Animals, plants, and objects didn’t rate (Roesch-Marsh 319). The “wonder” of technology was for him mostly a diversion. I disagree. I see objects and technology as equally capable, and at times more capable, of dislodging me from subjective emplacement. The obviousness of a machine’s or a tree’s alterity makes its alterity that much more apparent. I can anthropomorphize a car or a willow tree but I know I am playing a game with myself. It is when I resist this game that I am truly struck by the wonder of an ordinary tree’s extraordinary otherness. Regarding Castellucci’s stage composition, it is in presenting a horse as a half-horse that he awakens me to its alterity.

Let me add a final note on the issue of affordances and how Castellucci uses them to defamiliarize the scene and insist on the horse’s otherness, potentially achieving the promise, or trauma, of astonishment. As I have noted above, one of the affordances a horse offers someone like me is ride-ability. All healthy, four-legged horses offer me this affordance. At least two things Castellucci does make this horse un-rideable. First, it is stationed beneath an archway that clears the horse’s back by what looks to be about ten to fifteen centimeters. The archway occupies the place where I might sit. Even if I were able to sit on just the back end of the horse I would be in danger of being knocked off or partially crushed if the horse suddenly decided to move into the dark aperture. Second, because the horse has been made strange to the point where the back half seems to have taken on the status of independent being, and because this has worked on me to the point where, despite knowing logically that there must be a front half I still entertain doubts about its wholeness, the thought of sitting on this creature is very unsettling and inspires trepidation. I do not know this thing, do not have the confidence to treat it as familiar and
rideable. Further, if I connect the experience of the horse to other parts of the show, I can say it is one of the factors that has laid the groundwork for astonishment. I cannot make sense of the horse, cannot get comfortable with it. It has thrown my attention back on myself, making me question my role in the performance. The half-horse has also directed my attention to the surfaces and circumstances around it, making me feel a heightened sensory relationship to my surroundings. I have come “alive in a world of texture,” as Manning and Massumi put it (3). I am open, raw, and extremely sensitized to the environment. When, later, entire automobiles fall from the sky and slam onto the stage, I am violently thrown into a state of bewilderment. The experience is pre-intellectual, fully somatic, and uncategorizable. In hindsight I can summarize the gestalt of the experience as a quality: astonishment. I do not really know what I have experienced. I feel open to the world in a way that I did not when the show began. I have questions about my relationship to the performance, about who I was then, and who I am now.

7.4 Dramaturgical questions regarding movement, oscillation, knowing and not knowing in relation to P#06. Paris:

Look at the terrestrial array you are creating. Is it cluttered or uncluttered?

- Where, from the attendant’s perspective, are the vectors of movement?
- Are there more obstacles than pathways?
- Are the lines of potential movement, from the attendant’s perspective, straight, curved, irregular, start-stop, and so on?
  - Do they offer smooth rhythm of movement? Jagged? Dead-end and return?
o Could the attendant potentially climb over or under obstacles?

o Are the pathways comfortable, uncomfortable, very tense, almost impossible?

o Do they change, sometimes seeming to offer access and other times not?

- How do the colour, texture, and density of materials in the terrestrial array contribute to the rhythm of movement?

  o Are there glassy surfaces that speed the body along?

  o Are there irregular surfaces that force the body to stop, go sideways, resume?

  o Are there highly textured surfaces that seem to slow movement?

  o Are there enclosures that the attendant can potentially get inside?

- Can you use intensity and colour of light to strengthen or alter the movement affordances listed above?

Do you want to show all of everything on stage?

How much of a person or thing do you wish to withhold, and why not provide the whole thing?

Is everything immediately recognizable? If so, what is left to discover?

How can you make people, things, and atmospheres less knowable? Note: Pallasmaa writes that “homogeneous bright light paralyzes the imagination” (Eyes loc. 1006).

Pick an element in the scenographic array that interests you. Find a way to focus attention on the element. Use light, movement, sound.
- How long does it take to lose interest?
- How much longer does it take to regain interest?
- How long does it take before the thing starts to mean something other than what it meant at first?

What can you do to make everything seem more tactile? Softer? Harder?

What can you do to make nothing stand out?

Take a person or thing that will likely be familiar to an attendant.
- Make it unfamiliar in stages.
- Add or remove one element at a time: clothing, light, sound, wigs, moustaches, hats, etc.

Choose a particular thing or area of the stage. Which of the following descriptors best describe it?
- Inviting.
- Non-committal.
- Insistent.
- Alien.
- Forbidding.
- Disinterested.
- Curious.
- Obstructive.
- Isolated.
- Communal.
- Extroverted.
- Introverted.
- Available.
- Hidden.
- Secret.
- In relationship.
- Speedy.
- Slow.
- Ponderous.
- Disappearing.
- Appearing.
- From above.
- From below.
- From within.
- Threshold.
- Transitory.
- Very there.
- Ambiguous.
- Touchable.
- Portentous.
- Untouchable.
- Elusive.

Once you have chosen, try to explain what it is about the thing or area that gives it this quality.

Then choose one of these adjectives, or another, to describe the overall atmosphere. How does the individual thing or area relate to the atmosphere?

- Does it support it, blend it, stand out, offer a counterpoint?
- Does it threaten to dismantle the atmosphere?
- Does it suggest potential transformation into a new atmosphere?
- Can it be the catalyst for such a transformation?

Do the scenographic elements suggest a two-dimensional picture?

- In what ways do the elements contribute to? the illusion of a picture?
- In what ways do the elements, individually or in relationship, disrupt the illusion of a picture.
- Can you, through elements such as placement of things and movement of things, at times reinforce the illusion of a picture, and at others destabilize this illusion.

Compose the elements in such a way that they offer forgetting of self to the attendant. You are trying to make the attendant lose awareness of self and become lost in the composition. Then introduce an element that throws the attendant’s attention back on herself. It can be a thing, actor, lighting shift, sound element, a shift in relationship between one thing and another on stage. Try several.

- Can you do it with one element?
- Can you do it suddenly?
- Can you make it happen gradually?
Chapter 8: Conclusion

The same old existential question and some new answers

The undertaking of this dissertation has been a journey, as I assume all such undertakings are. The character of this journey is evident, I think, in the contours of the study. It has been a study that has included equal parts reading-writing — the books on embodied cognition, performance theory, scenography, and philosophy — and performance-making — the creation and co-direction of three major professional stage works: To Wear a Heart so White, Steppenwolf, and Revolutions. I did not end up quite where I thought I would. My early enthusiasm for the insights of neuroscience gave way to a more cautious assessment of how far these can be taken. I continue to be fascinated with the constant new discoveries in the field, but I find myself resorting, more and more, to philosophy, and to performance itself, to make sense of these findings. Thus, while cognitive theories have informed my practice, practice itself has become cognitive theory. My overall approach is somewhat akin to the school of ecological psychology that Gibson helped initiate. Laboratory insights can take us only so far. Subjects have to be studied in their natural environment. In this case the subjects are theatre attendants and artists, and the natural environment is the theatre.

The study of embodied cognition has shaped the performances I make in ways I have not always been aware of until after the work has been done. The final section of Revolutions consists of twelve 8’x8’ wooden walls on casters travelling at high speeds past one another in a warehouse as the sound design pushes out through twelve speakers, shaking the building and the audience. Only after creating and performing Revolutions did I realize how well it illustrates Gibson’s theory of surface perception, the differences between optic and haptic vision, and the
way it induces its affects by playing on the attendant’s kinesthetic perception of space and motion. That cognitive science — psychological, neurobiological, or a combination of the two — has heavily informed theatre practice is as it should be. And vice versa.

Early on in this study, I sometimes encountered (among a few colleagues) an anti-science reflex regarding neuroscience and its application to performance research. Theatre, it would seem, has an ontological separateness from science. Its epistemologies are of a wholly different category. Science and technology are, at best, things theatre has to suffer. They are not at the heart of the endeavor. What matters are human bodies and human stories. Theatre is, of course, deeply enmeshed, on all practical levels, with technology. Which is to say, with science: Light: light bulbs; Electricity: sound and lighting boards, the internet, electric musical instruments, video, power tools, sewing machines; the manufacture of make-up; the manufacture of paper and writing instruments; air travel that is required to move all these products around the globe and to the theatre; fuel and combustion engines; the study of anatomy and all the physical training exercises that have been informed by discoveries in human biology regarding muscle tissue, the role of the web of fascia, bone structure and composition, the respiratory system. Etcetera, etcetera, ad nauseam. And then there are the more theoretical applications of science. For example, relativity and quantum physics. As the twentieth century progressed, theatre practice, in many critical areas, came to privilege process over product. “Energy” became a key term borrowed directly from discoveries in quantum physics that revealed matter is energy and is therefore always in a stage of change. This paradigm seemed to explain aspects of both theatre creation processes and public performance. One could think through the implications of quantum physics and apply them to training methods, improvisatory creations, and performance dynamics.
Lehmann’s *Postdramatic Theatre*, perhaps the most significant theatre textbook of the past two decades, uses the “energy” paradigm to explain much of current practice in theatre.

Why would theatre silo itself away from the most recent discoveries of neuroscience or genetics, any more than it would from politics and economics? I have encountered a good number of my professional theatre colleagues a conservatism regarding the forms theatre can take, and I think the innovations that rethinking theatre through the latest discoveries in neuroscience can encourage poses a threat to entrenched and habitual ways of making theatre. There is much fiddling with all the habitual methods and technologies, but little in the way of genuine innovation. There is a lot of looking backwards, as there has to be, but not enough looking sideways and forward: sideways at what the leaders in the field are currently doing, and forward to possibility. Neuroscience does not pose a threat to theatre practice or study. It opens up new pathways and helps to explain the old ones.

In the context of the work my company makes, investigation into theatre form is an existential necessity, a response to the same question that has been posed of theatre art since the emergence of radio and film, and then television, and now digital streaming technology. What does theatre have to offer that these media don’t? The question is perhaps more urgent now than it was several decades ago. In my opinion this is because the quality of programming in most of these other media has increased dramatically. On any night I can watch, in the comfort of my home, an online TV drama or comedy that is brilliantly written, acted, and directed. Often these shows are more innovative and more politically cutting than anything available on 99% of our conventional theatre stages. The ace-in-the-hole counter-argument that continues to be flogged is that theatre is “live.” Barely. Having spent my adult life on both sides of the proscenium, in theatres large and small, in conventional theatres and “experimental” situations, I would say that
the difference in energy between a conventional live theatre audience and a Cineplex theatre audience is that the Cineplex audience is much more energetic. This is partly due to age demographics: conventional theatre audiences tend to be much older than cinema audiences. It is also, I believe, due to the manner in which so much theatre tries to take on digital media. It takes it on from a relatively impoverished position. Artists in TV and movies, from writers to directors to set designers, get paid much more and have much larger production budgets than theatre artists do. Too often a stage drama offers an inferior script, inferior directing and production, compared to the TV version. Playwrights and directors do not get paid enough or have enough time and resources to make better drama or comedy than what is offered on TV.

If theatre can not do drama better than TV, using what is basically the same structure — a performance based on a play-script that features one or more protagonists trying to solve a problem, a clear literary theme, and a performance that depends on spectator identification with the protagonist — then what can it do? It can use environment, time (as in duration and change), architectonics, ambient light and sound, and tactility and density of materials; it can use text for values besides semantic content, values such as shape, rhythm, “timbre,” etc. It can apply theories of embodied cognition, or from some other field of study, to challenge theatre forms and remake them. It can insert what does not belong in order to make what does belong vital again. It can take advantage of the thing digital media cannot: scenography and performance design. With this approach it can also reassess the more traditional theatre elements of character, plot, and story. It can reinvigorate them.

What I have found in my own practice is that to achieve innovation in form requires innovation in creation process. This has meant questioning what representation can mean in theatre, including examining who the identifier is and what she might be identifying with. It has
meant reassessing the term *interdisciplinary*. And it has meant applying theories of embodied cognition to creative process and to the public performance event. I have come to view the traditional notion of spectator-performer identification as an obstacle to innovation. Theatre’s historical fixation on the human figure as the main carrier of meaning has blinded too many theatre artists to the potential of other scenographic actants. The potential of other materialities that might contribute to the *presence effect* of a performance is mostly dealt with habitually. They have been treated as background to the human figure. They are usually rendered incapable of carrying meaning in and of themselves, or of acting as catalysts for transformation. They are not considered worthy partners in and of themselves.

Therefore, the theatre event is rendered narrowly social. Despite the fact that in life we can have profound and intimate encounters with nature, architecture, animals, gardens, food, and weather, in the theatre there is no weather, there is only background (even most of the site-specific theatre I have seen treats site as a just a field for human action and story). In order to escape the solipsism implicit in a theatre that is fixated on the human actor, I have turned to the nonhuman materials available to me — which are the usual materials available in theatre, and some new ones. This has also necessitated studying architecture theory. Most scenographers, due to personal inclination, or training, or because it is demanded of them, fixate on supporting character-focused dramatic action. Architects often have other, more varied concerns. Reconsidering scenography through the thought of certain architects has sharpened my understanding of what solid materials, and intangible materials such as light, sound, and space, can do. Together with my growing knowledge of other compositional approaches, for example designed and environmental sound and installation art, I have been able, with my collaborators, to interrogate the materials I work with, taking nothing for granted. Further armed with the
constantly emerging findings of neuroscience and embodied cognition, I have been able to broaden my understanding of how an attendant might interact bodily with these materials; individual materials and entire scenographic environments. The process of investigation and innovation is alchemical. Architect Peter Zumthor characterizes the process well:

I take a certain amount of oak and a different amount of tufa, and then add something else: three grams of silver, a key - anything else you’d like? . . . we could get together and arrange things . . . And we would look and see how these things reacted together. And we all know there would be a reaction. Materials react with one another and have their radiance, so that the material composition gives rise to something unique. Material is endless. Take a stone: you can saw it, grind it, drill into it, split it, or polish it - it will become a different thing each time. Then take tiny amounts of the same stone, or huge amounts, and it will turn into something else again. Then hold it up to the light - different again. (Zumthor 24)

As I wrote in the methodology chapter, the process is based on hunch and curiosity. The results are unpredictable: “it will become a different thing each time.” But the intent is to innovate for the purpose of refreshing the attendant’s perception of theatre and the world.

Although I have not spent much of the dissertation discussing this, there is an ethical dimension to my company’s shift away from human-centered theatre. After so many centuries, millennia (eons?), of human-centered consciousness (at least in Western culture), we find ourselves in a precarious position as a species. Climate disaster may be imminent, mass extinctions of animal and plant species are the norm, and human-centered greed has created devastating inequities between and within human societies. The Fight With a Stick collaborators, in trying to recalibrate our relationship to the other-than-human, both in everyday life and in the
theatre, seek a different paradigm for how we might exist and survive on this planet. We have been influenced in this by the schools of new materialism, particularly the writings of political theorist Jane Bennett and her book *Vibrant Matter*, and Deleuze and Guattari’s monumental tome *A Thousand Plateaus*, which has been a major source for so much new materialist philosophizing.

Bennett, Deleuze, and Guattari’s writings ask us to rethink *other-than-human* agency, and in turn reconsider what human agency really is. For Fight With a Stick this has meant questioning the belief that we have, or should have, mastery over the materials we work with. Bennett makes the case for Deleuze and Guattari’s concept of the *assemblage*. Mastery is an illusion. We are always working in conscious or unconscious “confederacy” with our nonhuman surroundings (Bennett 36), an assemblage or network (or a “rhizome” in Deleuze and Guattari’s terminology) that has a temporary existence, and in which each part works sometimes in agreement with and sometimes in conflict with other parts of the assemblage. The model of the traditional theatre director is that she has, or should have, control over the materials at her disposal. This can lead to acknowledged, and often unacknowledged, frustration when control fails: the pigment in the fabric does not produce the expected color under a certain temperature of light; the set piece does not move with the expected ease; the lighting board short-circuits; the words do not translate from page to voice as imagined; the actor gets sick and cannot speak with clarity. The audience does not come.

In *Revolutions* we allowed ourselves to become more conscious of our “confederacy” with other-than-human materials. This shifted the way we worked. The object focus of our work with *Steppenwolf*, in which we tried to treat all materials, including actors, as objects, and in which all objects were given a status we normally attribute only to actors, and the success we had with our
audiences, offered us a new level of freedom from human-focused theatre. This prepared us to receive Bennett’s theorizing of “vibrant matter”: materials that have tendencies and behaviors, and are co-actants, materials that have agency. Working with this knowledge changed our relationship to how we co-created a space and how we performed in it. Neuroscience and embodied cognition added to our understanding. It is not only a case of neurally mapping a material or spatial dimension in order to make it meaningful, it is also one of being a material to be mapped, being a part of the scenographic assemblage — part of the “landscape,” as Gertrude Stein wanted the parts of a performance to be. We are biological assemblages. We are a community of organisms and cells, as Damasio points out, each with its own agenda, each part working sometimes cooperatively with the other parts, and at others in conflict (Damasio loc. 604-70). Coincidentally, this happens to be a perfect description of the assemblage. A neuron is a cell working with other cells, forming assemblages of neurons, within coalitions of neurons, that communicate with the other parts of our biology, and at the same time with all the human and nonhuman materialities that surround us. We are very much a process, very much in a constant state of transformation. Neuroscience has made us more aware of this fact. It has changed the way we think of ourselves. We know now that our brains do not ossify after our teenage years, that there a high degree of neural plasticity continues throughout life, and that we can encourage neural pattern reformation by undertaking certain activities, including challenging our bodyminds in scenographically complex performance environments.

Neither does an attendant come to a performance frozen by past experience. She is capable of changing her mind and attitude, capable of revising and updating her neural patterns and pathways. Past experience is in dialogue with immediate perception. This is what it means to embody a performance and a scenography. She is able to simulate not only the actions of another
human, an area that has by now been frequently studied in theatre and dance, but to simulate nonhuman materials that make up the performance design. She can simulate a horse, a gallop, a cat, a frame, a moving curtain, a density, a weight, a digital projection, a sound, a smell, a distance, a texture, a height, an ambience, and an atmosphere.

A group of scenographically-minded, material-conscious devisers, thinking in a transdisciplinary manner, and remaining aware that the attendant will physically simulate whatever is on offer, can make art that challenges habit and develops new perceptual understanding. It is by shifting emphasis away from the what of performance — what does it mean? what is it about? what is the message? — to the how of perception — how do I perceive? are there other ways? is there more available to me? do I have the skill? can I acquire skill here and now? — that we might manifest an embodied ethics that avoids doing violence to the other, whether the other is human or nonhuman. Levinas’s trauma of astonishment can be extended to the other-than-human, an astonishment that resists casting the other as an alter-ego, another self, another ‘I.’ In casting the other as another ‘I’ there is the assumption that the other is knowable, measurable, reducible, and ultimately controllable. As Levinas has argued, to claim to know the other is to violate the other, whether it is through slavery of a people, or resource extraction undertaken without considering long term consequences that leave the earth destroyed and unable to sustain life. There is always a price to be paid for assumed mastery. Presumption of knowing, writes Levinas in “Ethics as First Philosophy,” objectivizes the other.65

Western theatre is not exempt. Theatre has often explored the theme of hubris: the protagonist forgets he was only a small part of the whole; the polis indulges in the delusion of a

65 See “Ethics as First Philosophy” in The Levinas Reader.
hero-savior only to realize, too late, that no individual has the power to defy, or even make sense of, cosmic forces. When theatre plays out the same old story, according to the same old rules, in the same old form, it unconsciously performs its own hubris: the audience gazes on its alter-ego, the human figure that is evolution’s greatest achievement, a figure in the mirror that, despite Hamlet’s warning, claims to hold in its philosophy all the mysteries of Heaven and Earth. This hubristic meta-performance holds that if truth is to be found it is not in the walls, the floors, the lights, the ceiling, or the weather; it is there in the human figure that stands in for ‘me.’

Neuroscience offers us a human subject that is always in motion. Neurons pulse with electrical energy, neural patterns are a network of pathways that form, change, and reform. We seek pathways on both micro and macro levels. We move internally, and we have bodies that make sense of the world by moving through it. The more we examine ourselves on a micro level, on an animal-to-environment level, and on a cosmic level, the more apparent it becomes that we are part of both small and unimaginably large assemblages. Some operate on very short time scales, and others on what, for us, seem impossibly long. We are but a part of it all. Why make a theatre that collapses down to the human figure? A transdisciplinary approach that sees the human figure as just a part of the scenography (an equally important part), and theatre as part of not only theatre art but art in general, and not only art in general but politics, ethics, and science, is a rich approach, one that insists on dialogue with the world, human and other-than-human.
Works Cited

[A note on the use of Kindle books in this dissertation: Many of the books I use for research are available as Kindle editions. Some of these are paginated, but for some I have had to use “location” numbers instead. In these cases, rather than entering the page number in the Kindle book’s search function, the location number is entered. In-text citations of Kindle books with location numbers only will look like this: (Levitin loc. 441)].


*Steppenwolf*. Dir. Alex Lazaridis Ferguson and Steven Hill. Devisers: Nazli Akhtari, Alba Calvo, Alex Lazaridis Ferguson, Steven Hill, Josh Hite, Brette Little, Sean Marshal Jr., Natalie Purschwitz, Parjad Sharifi, Nancy Tam. Fight With a Stick Performance, PuSh International Performing Arts Festival, 2015. Live performance.


Appendix A  Dramaturgical Questions

Some dramaturgical questions for the artist and scholar inspired by sound design in *To Wear a Heart so White* (From Chapter 4):

Is sound at a given moment directional, ambient, or both?

At a given moment are you intending to emphasize one sensory modality, several, or make them all more or less equal?

How does the shell of the room amplify or suppress sounds?

What kinds of sounds do the surfaces/materials of the shell enhance or suppress?

Do you notice any existing frequencies, high, medium, or low?

Does the room have a buzz or hum? Do you want to mask these sounds, allow them to be noticed, or emphasize them?

Will you populate the room with materials that reflect sound, absorb sound, or both?

How will you use the materials you add to the space (including performers and attendants) to alter the way sound travels through the room?

Is the sound design, at a given section, intended to make the attendant feel emplaced, uncertain, decentered, stable, unstable, etc.?

Does the sound design emphasize pitch, timbre, tempo, volume, or rhythm? More than one of these? To what end?

When sound is directional, does it seem as if it is coming from the thing that is supposed to be making the sound, for example, a speaker, a human voice, or a set piece? Or is it directional but not connected to the apparent source?

When does the sound design seem to have a spatial direction, moving from one location to another?

When does the sound design seem to have a temporal direction, moving from past to present, present to future, and from future to present or past?

Is it possible to separate the spatial direction of sound from the temporal direction? Do they have to go in the same direction or can they be at odds?

Does the sound design make the space seem smaller or larger, more dense or more expansive, thick or thin, polluted or airy?
Does the sound design make one part of the room more present than another?

Does the sound design make the room feel like it’s tilting one way or another, turning one way or another, changing size, density, or other?

At a given moment do the lights make the room “sound” louder or quieter, harder or softer?

Do the rhythm and tempo of the lighting changes reinforce or conflict with the rhythm and tempo of the sound changes?

Do the natural acoustics and sound design, at a given moment, add clarity to where things are in the room or obscure things?

Does the sound design represent something — a story, or something found in the world like birdsong or traffic, or is it in itself a phenomena of intense perceptual engagement, a multisensory or synaesthetic provocation that challenges the attendant’s perceptual skill?

Does the sound design reference one or several genres? To what extent does it resist categorization? To what extent does it embrace categorization?

Is the sound design helping the attendant forget where they are?

Is the sound design drawing the attendant’s focus to herself and her material surroundings?

Dramaturgical questions regarding perception, sensorimotor affordance, image schemas, and perceptual affect, based on *Steppenwolf* (From Chapter 5):

Does a scene strive for object clarity or are the spatial relationships between objects deliberately obscured?

How would you describe the textures of what you see? Does looking at them evoke feelings of touch?

Do you feel that you, as an attendant, can easily move through the landscape you have created? Where are the obstacles to movement? Where are the pathways of least resistance?

Do the pathways and obstacles encourage different rates of movement? When does it feel like you can move slowly, medium-speed, or fast?

Does the lighting, sound design, or textures, densities, and shapes of objects alter your perception of the rate of movement?
Can you make a pathway seem slippery, bumpy, gelatinous, intermittent, and so on, by changing light colour and intensity, object texture, size, and shape, or timbre, pitch, volume, or rhythm of sound?

Are there predominant directions of movement? When, in what directions, and for how long? What happens when you change the duration, direction, or tempo of movement patterns?

Does a given scene represent an elsewhere or othertime, or is the attendant’s attention supposed to be on the here-and-now of scenographic relationships? Is there an oscillation between representation and presentation? Do you wish the attendant to be aware or unaware of the oscillation?

When are you intending to emphasize one sensory affect? When two or more? Is there a “journey” through sensory modalities?

Who, at a given moment, is the “protagonist” — the actor or attendant?

When is a nonhuman, such as a set piece, sound, or light, the main actant, or protagonist? When is a nonhuman the antagonist?

Does a scene have one point of view or several?

Are the points of view created by one artist “writing” several points of view, or are have they emerged from argument and discussion among the devisers? Do you wish to synthesize the various points of view or allow them to remain non-synthetic and dialogic?

Are the points of view represented solely by actors, or are they also represented by other scenographic elements such as rates of movement, tempo, lights, sound, textures and densities of materials, and so on?

How would you describe the performance venue in terms of felt form — a cube, a sphere, a tube, a corridor, a low place, pressurized, etc.?
- Does the feeling of this space change during the performance? How does it transform from one felt place to another?
- Can you map out the spaces and the transitions from one to the next?

Even in a conventional theatre no two seating locations are the same. There is no ideal center for attending.
- Occupy as many locations as possible in order to experience the truth of this.
- Are you comfortable with the inherent dialogism of this situation?
- Or do you want to encourage a common looking/hearing location? How can you do this?

Consider the following:
- “Miniaturize” the performing area by having the audience sit far away.
- Use a mirror to create the illusion of greater distance (a mirror generally doubles distance, perceptually, of whatever is seen in it).
- Limit the size of the audience so that the performance can be focused on a small viewing area.
- Flatten what is seen using digital imagery that offers roughly the same view to all, as long as the audience is not too close or too far to either side of the surface projected onto.

Is there an area of revelation in the performance space?
- Does it move?
- Does it disappear and reappear elsewhere, or does it transition from one area to another?
  - If the latter, how does it transition, at what tempo, etc.?
    - How does light, sound, object assist this?
    - How does it impede the transition?

Are the scenographic elements working in a coordinated fashion or is the relationship between them agonistic or dialogic?

A performance is always in dialogue, consciously or unconsciously, with performances, genres, artistic disciplines, that have gone before. What genres, etc., is your performance most obviously in dialogue with?

Are there predominant spatial schemas and metaphors you can draw from and exploit?
- Will these be widely familiar?
- Or will you have to “instantiate” them, establish familiarity, within your performance?
- How long will this take?
- Can you assist the attendant with other familiar handles/schemas?

Example: although *Steppenwolf* had no obvious characters or plot, it exploited two familiar things — looking at yourself in the mirror (something everyone is immediately and intimately familiar with), and the Italianate perspectival stage (a common spatial schema in theatre).

**Dramaturgical questions regarding movement, oscillation, knowing and not knowing in relation to *P#06. Paris* (From Chapter 6):**

At a given moment are you encouraging the attendant to focus on the material circumstances before her or an imagined elsewhere?

On a chart, create two input spaces, one *actual* and one *fictional*. Create generic and blend spaces.
- Fill the spaces in with things, ideas, affects, etc., that you have been discussing.
- Are there matches between input spaces, things that are disanalogies?
- Is there a way to increase or decrease the “clash” between matches?
- Do the matches reference elements in the generic space?
- Do they project to the blend space as newly compressed identities?

Is there a cultural frame, such as *debate* or *party*, that you are relying on and importing to the integration network for further reference?

At a given moment are you emphasizing a particular sensory modality?
  - Can you create interference by playing another sensory modality against it?
  - Play with the following:
    - Perform an action.
    - Use lights and sound to reinforce the action.
    - Begin to play against the action by having the lights and sound contrast intent, mood, tempo, or rhythm.
    - What is it like when the contrast is small? When it is large?
    - Try different colour and intensity of light.
    - Try different genres of music.
    - Introduce ambient sound.
      - Play between ambient and directional sound.
    - Use diegetic sound
      - Amplify the actions on stage with local microphones.
- Record the sounds on stage and introduce them at higher or lower volumes than the actual sounds.
  
  - Change the location of the recorded sounds:
    - Have them come from where the sounds should be produced.
    - Have them come from other locations.

What is the minimum part of a thing or affect required to “prompt” or suggest a whole thing?

- Choose an actual object (put this in one input space).
- Choose an imagined object (put this in another input space).
- How little of the actual object is needed to prompt the attendant to “see” the imagined object?
- Other prompts that might help:
  - Performer action.
  - Sound.
  - Light.
  - Movement of things.
- Choose a sound, diegetic or otherwise (put in one input space).
- Choose a mood, feeling, or atmosphere (put in other input space).
- How little of the sound is needed to prompt the mood, feeling, or atmosphere?
- Other prompts that might help:
  - Light.
  - Object textures and placement.
Movement of things.

Performer action.

Choose a verbal prompt such as *Alison is a middle-aged Filipino-Canadian Activist.* Explore interference and oscillation in the following ways:

- Have a middle-aged Filipino-Canadian occupy the performance area after or before the prompt is spoken.
- Have a twenty-year old Filipino-Canadian do this.
- Have a white middle-aged woman do this.
- Have a white elderly man do this.
- Have vase with flowers do this.
- Have a cabinet do this.
- Change the word “activist” to “conservationist,” then to “oil executive,” then to “biologist,” then “barista,” and so on.
- Change “is” to “was” or “will be.”
- Add “hurrying to a meeting,” or “relaxing in the sun,” “swimming with dolphins,” “starting up her helicopter,” “putting on her hazmat suit.”
- Mix and match the above.
- Have the performer move or not move.
- Change the direction and quality of movement.
- Continue in this manner.
- Which of your above experiments create the most challenge in being able to integrate the verbal prompt with the stage action? Which make it most easy?
- Can you switch back and forth from easy integration to challenging integration? In other words can you create an interference or oscillation?

Choose a passage from novel that interests you. Ignore the story. Identify object affect or atmospheres in the text. Try to create an affect based on the affect’s using objects, lights, sound, and performers as objects.

**Dramaturgical questions regarding movement, oscillation, knowing and not knowing in relation to P#06. Paris (From Chapter 7):**

Look at the terrestrial array you are creating. Is it cluttered or uncluttered?
- Where, from the attendant’s perspective, are the vectors of movement?
- Are there more obstacles than pathways?
- Are the lines of potential movement, from the attendant’s perspective, straight, curved, irregular, start-stop, and so on?
  - Do they offer smooth rhythm of movement? Jagged? Dead-end and return?
  - Could the attendant potentially climb over or under obstacles?
  - Are the pathways comfortable, uncomfortable, very tense, almost impossible?
  - Do they change, sometimes seeming to offer access and other times not?
- How do the colour, texture, and density of materials in the terrestrial array contribute to the rhythm of movement?
  - Are there glassy surfaces that speed the body along?
  - Are there irregular surfaces that force the body to stop, go sideways, resume?
  - Are there highly textured surfaces that seem to slow movement?
  - Are there enclosures that the attendant can potentially get inside?
- Can you use intensity and colour of light to strengthen or alter the movement affordances listed above?

Do you want to show all of everything on stage?

How much of a person or thing do you wish to withhold, and why not provide the whole thing?

Is everything immediately recognizable? If so, what is left to discover?

How can you make people, things, and atmospheres less knowable? Note: Pallasmaa writes that “homogeneous bright light paralyzes the imagination” (*Eyes* loc. 1006).

Pick an element in the scenographic array that interests you. Find a way to focus attention on the element. Use light, movement, sound.
- How long does it take to lose interest?
- How much longer does it take to regain interest?
- How long does it take before the thing starts to mean something other than what it meant at first?

What can you do to make everything seem more tactile? Softer? Harder?

What can you do to make nothing stand out?

Take a person or thing that will likely be familiar to an attendant.
- Make it unfamiliar in stages.
- Add or remove one element at a time: clothing, light, sound, wigs, moustaches, hats, etc.

Choose a particular thing or area of the stage. Which of the following descriptors best describe it?
- Inviting.
- Non-committal.
- Insistent.
- Alien.
- Forbidding.
- Disinterested.
- Curious.
- Obstructive.
- Isolated.
- Communal.
- Extroverted.
- Introverted.
- Available.
- Hidden.
- Secret.
- In relationship.
- Speedy.
- Slow.
- Ponderous.
- Disappearing.
- Appearing.
- From above.
- From below.
- From within.
- Threshold.
- Transitory.
- Very there.
- Ambiguous.
- Touchable.
- Portentous.
- Untouchable.
- Elusive.

Once you have chosen, try to explain what it is about the thing or area that gives it this quality. Then choose one of these adjectives, or another, to describe the overall atmosphere. How does the individual thing or area relate to the atmosphere?
- Does it support it, blend it, stand out, offer a counterpoint?
- Does it threaten to dismantle the atmosphere?
- Does it suggest potential transformation into a new atmosphere?
- Can it be the catalyst for such a transformation?

Do the scenographic elements suggest a two-dimensional picture?
- In what ways do the elements contribute to? the illusion of a picture?
- In what ways do the elements, individually or in relationship, disrupt the illusion of a picture.
- Can you, through elements such as placement of things and movement of things, at times reinforce the illusion of a picture, and at others destabilize this illusion.

Compose the elements in such a way that they offer *forgetting of self* to the attendant. You are trying to make the attendant lose awareness of self and become lost in the composition. Then introduce an element that throws the attendant’s attention back on herself. It can be a thing, actor, lighting shift, sound element, a shift in relationship between one thing and another on stage. Try several.
- Can you do it with one element?
- Can you do it suddenly?
- Can you make it happen gradually?