

# Research-Based Practice

## Situating *Vertical City* between Artistic Development and Applied Cognitive Science

*Pil Hansen and Bruce Barton*



This article speaks with three voices, each of which appears in a different font:

Pil Hansen's voice   Bruce Barton's voice   A shared voice

Two women hang upside down, motionless, a couple of feet above the ground. Their arms are by their sides, taut but still; the blood is pooling in their heads, turning their faces bright red. They are just feet away from their audience, who can see the veins in their foreheads and sense the strain in their limbs. Almost imperceptibly, their fingers begin to creep up their thighs. They reach their knees, then their calves, then their ankles, as each performer gradually hoists her own mass into space. Effectively they are climbing up their own bodies to where their feet are bound tightly in their suspended silks. Their abdomens clench, they shake visibly as they slowly raise their heads, shoulders, torsos. Then, as slowly, they continue, hauling their dangling bodies with long, unbroken lifts towards the ceiling. Patiently, excruciatingly, without a pause.

Two men hang suspended in mid-air, facing one another across a long plank supported between them. The silks, dropping from the ceiling, are wound tightly around their upper legs, biting into the flesh below their buttocks. Their conversation is humorous, playful, without any discernible trajectory. They seem to be filling out an application of some sort, but neither the questions nor the answers they offer one another provide the audience with a sense of development. Yet time is clearly passing, measured by the increasing restriction of blood to their legs. Their ability to focus, to joke, to perform, is progressively being choked—and it is this strangulation, ultimately, that is performed through their voices, their expressions, their entire bodies. The scene ends, because it must.

A man is talking to the audience. He speaks about “embodied cognition,” about “our ability, both personal and as a species, to enhance our adaptive success,” and about our “capacity for self-modification, to adjust, and to restructure to the stressors that we encounter.” As he does so, he repeatedly lifts a set of kettlebells—30-pound cast iron weights with handles—straight up over his head, pauses, and then drops them to his chest again. The movement locks his body into a precise posture and set of movements, machined and calibrated to handle the specific stress of the load. As his words speed up and ultimately become lost amidst a torrent of computer-generated verbiage, he hoists the kettlebells faster and faster. His eyes glaze over.

*Vertical City* is an interdisciplinary performance collaboration among seven artists with backgrounds in, respectively, physical performance, aerial movement, musical composition, and dance dramaturgy. Directed by Bruce Barton with dramaturgy by Pil Hansen, the Toronto-based group completed its first cycle of development, with public showings in Toronto, in the spring of 2008. The primary objective of this first cycle was to challenge discipline-specific “habits” and affect mutual contamination among the participating artists. A secondary objective was to reorient the spectators’ attention towards elements of the performance that do not fit within the conventional foci of the art forms involved. Aiming at these objectives, we took inspiration from cognitive theories on human perception and memory to develop dramaturgical strategies of process and composition. These strategies were, in turn, applied to our subject material: human conditioning in response to a continuously changing urban environment. The

*Figure 1 (facing page).* *Vertical City.* “Then, as slowly, they continue, hauling their dangling bodies with long, unbroken lifts towards the ceiling.” Workshop showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performers: Lori Le Mare and Diane McGrath. (Photo by Pil Hansen)

*Pil Hansen holds a PhD in Dramaturgy and Perception from University of Copenhagen in Denmark and is presently exploring cognitive layers of memory in creative processes of dance and theatrical devising as a Social Sciences and Humanities Research Council postdoctoral fellow at the University of Toronto in Canada. She has worked as a professional dramaturge of dance, devising, and new circus in Scandinavia and Canada since 2002, and teaches developmental dramaturgy at the University of Toronto. She has published articles in Canadian Theatre Review and Peripeti, as well as the essay collections Space and Composition (Danish National Theatre School and Nordic Centre for the Performing Arts, 2005) and Developing Nation (Playwrights Canada Press, 2009).*

*Bruce Barton teaches devising, dramaturgy, and intermedial performance at the University of Toronto. He has published in numerous scholarly and practical periodicals as well as several international essay collections. His book publications include Developing Nation: New Play Creation in English-Speaking Canada (2009) and Collective Creation, Collaboration and Devising (2008, both Playwrights Canada Press), Reluctant Texts from Exuberant Performance: Canadian Devised Theatre (Borealis, 2008), Imagination in Transition: Mamet Moves to Film (Peter Lang, 2005), and Marigraph (Playwrights Canada Press, 2004). Current research includes a three-year study on dramaturgies of the body in physically based devised theatre and intermedial performance. Current creative practice includes writing and dramaturgy for multiple devised theatre projects and the creation of aerial-based interdisciplinary performance.*



Figure 2. Vertical City. “The scene ends, because it must.” Workshop showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performers: Frank Cox-O’Connell and Marc Tellez. (Photo by Pil Hansen)

performance material and reflections coming out of this process are valuable ends in themselves; but what if the artistic inquiries at the center of these objectives and materials were pushed further, with methodological clarity, and in a context that does not have a performance as its objective? We believe that artistic inquiries emerging out of the *Vertical City* project could lead to innovative creative approaches and new knowledge if they were repositioned within a framework of practice-based research. In an attempt to articulate such a project, this article sets out to:

- Extract artistic inquiries from the process of *Vertical City*;
- Imagine a framework for further exploration;
- Offer examples of a more precise engagement with the cognitive sources;
- Discuss the utility of the kinds of practice and knowledge this work could produce.

## From PBR to RBP

Practice-Based Research is notorious for the breadth of interpretation it elicits, and so part of our task is to articulate our understanding of this elusive field. In an effort to set our proposal off from this crowded territory—and to avoid the impression that we are attempting to assert some kind of “best practice”—we will refer to our approach to practice-based research as Research-Based Practice (RBP). RBP is particularly well suited to the task of bridging such apparently distant fields as performance and cognitive science. We see it as a systematic response to the enduring opposition between practice and research, in part through an effort to reduce the perceived contrast between *product* and *process*. In the RBP designs imagined here, we include multiple familiar “spaces” of activity, divided into two general categories: on the one hand, the space of *practitioner-driven training* and *the development of artistic skills*; and, on the other hand, that of *research-driven empirical experimentation*. Our understanding of RBP incorporates a 3rd Space of inquiry, one that brings the investments, expectations, and processes of these multiple areas into novel modes of exchange. Thus, the first of several shifts

involved in RBP is one in emphasis from *products* to *processes* (hopefully diffusing the binary somewhat in the gesture). What follows from this distinction is a subsequent emphasis on the selection and combination of appropriate *artistic approaches* and *research methodologies*.

By resituating the inquiries from *Vertical City* into a framework of Research-Based Practice, what initially was a practice of *taking inspiration* from cognitive theory can become a practice of more precise *application* of those theories. When taking inspiration we often form speculative hypotheses that enable us to move from the very specific research questions and answers of cognitive experiments to generalized explanations. This jump is creative, and as such it leaves behind the specificity of the science in order to generate something else. While such work is productive in exclusively creative terms, it does not enable us to reach the depth of inquiry and development that is possible if we engage more precisely with the science involved. If the transferal of findings between the three spaces, as Barton describes later in this article, is prioritized and fully facilitated, it is likely that the artistic inquiries from *Vertical City* can be productively supported by empirical experiments guided by scientific methodology.

## Vertical City

The collaboration that became *Vertical City* was initiated by Toronto aerialists Lorie Le Mare and Diane McGrath. They wanted to push their practice outside of the general conventions of aerial movement—with its emphasis on circus-based spectacle—and reposition it within an interdisciplinary context that heightened its relationship to theatrical performance. Intending to reach this goal through interdisciplinary exchange, Le Mare and McGrath enlisted Ann Stadlmair as composer, Bruce Barton as director, Pil Hansen as dramaturge, and the actors Frank Cox-O’Connell and Marc Tellez as devisors. Le Mare and McGrath had previously begun to experiment with the execution of repetitive everyday activities as an element of their aerial routines. They had for instance explored the act of dishwashing (as movement, rhythm, and mind-space) on the trapeze. Picking up on this choice, Hansen and Barton pitched the idea of working across disciplines on a topic that we all engaged with physically on a daily basis: navigating in the city.

Our group trained once a week for approximately four months and then entered into an intensive three-week creation period that lead up to two public workshop showings in April 2008 at Toronto’s Harbourfront Performing Art’s York Quay Studio Theatre.<sup>1</sup> The weekly training meetings involved several regular components:

1. Group stretching, warm-up, and games-based exchange;
2. Skill-based “barter” sessions, where aerialists, actors, and musicians shared approaches and gave group instruction in their individual discipline;
3. Task-based generation of material, done individually and in combinations of performers, involving skill-based work on creation assignments.

From the outset, this task-based generation was directly related to ideas of habit and repetition as key aspects of contemporary urban life. The initial exercises evolved into an exploration of both habitual and consciously repetitive behavior as a means of creating distinct relationships to the spatial and temporal aspects of one’s environment. In other words, repetition was understood as, on the one hand, a form of distraction or escape or simply relief and, on the other hand, a means of establishing highly personal zones of control or solitude or reflection. For example:

- Marc Tellez is a certified physical trainer and specializes in kettlebell training methods. At the time his personal daily routine included highly structured sessions of lifting and resting,

---

1. *Vertical City* was hosted and presented by Harbourfront Performing Arts’ HATCH program for emerging performance projects (see HATCH n.d.).



Figure 3. Vertical City. “Skill-based ‘barter’ sessions, where aerialists, actors, and musicians shared approaches and gave group instruction in their individual disciplines.” Development period, April 2008. Sterling Aerial Studio, Toronto. Directed by Bruce Barton. Diane McGrath, Lori Le Mare, Marc Tellez, Frank Cox-O’Connell, and Bruce Barton. (Photo by Pil Hansen)

which he regulated through the use of a handheld electronic timer. These sessions involved highly precise spatial and temporal relationships, as Marc moved into—and evoked, in those of us watching—a nearly meditative state.

- Frank Cox-O’Connell contrasted the strenuous nature of Tellez’s activity with the nearly imperceptible movement of clicking a computer mouse while browsing the internet. As he explored the physical immobility and mental concentration that regularly accompanies this activity, he also foregrounded the spatial paradox it suggests. On the one hand, the activity enforces a defined, constricted, and anchored relationship to personal space; on the other, it provides an individual with access to the “world” via the internet.

- Lori Le Mare offered the focused and

methodical process of making coffee in a stovetop espresso maker as a form of urban ritual. She then translated her abstract hand gestures into even more abstract aerial movement while carefully retaining the basic shapes, intensity, and trajectories of her actions.

- Diane McGrath was more interested in domestic acts of near-automatic repetition—washing dishes, doing laundry—as forms of both personal release *and* escape from social interaction. Her early material thus took the form of intuitive “maps”—and map reading—as she shifted from concrete physical enactment to more abstract aerial exploration of these domestic territories.

## Creative Development with Inspiration from Cognitive Theory

As dramaturge, my approach to both the interdisciplinary exchange among participants and to our subject materials was informed by my previous work applying reconstructive memory theory to compositional dramaturgy (see Hansen 2006). A general, and now widely accepted, understanding of reconstructive memory is that memories are not stored; rather, they are synaptic processes through which we select, connect, and organize stimuli in the brain. Thus when humans recall a memory, we do not *retrieve* it; rather, we reconstruct the process of perception that was involved in the past experience. Such processes (or memories) are continuously used to perceive our present, and in the act they are transformed. This adaptability enables humans to learn and survive in a changing environment; but it does, of course, also render our memory quite unreliable. When perceiving in the present, new stimuli trigger a remembered perceptual process, one that fast and effectively leads to a coherent perception and a functional response. This process is usually implicit and, although its result may be experienced as new, it is merely a repetition of a rewarding perception and auto-response that was established in a similar situation in the past.<sup>2</sup>

2. For more information about reconstructive memory theory, including implicit processes, see Edelman and Tononi (2000:58–61, 102–12). For more on how human habits are based on reactions, with both positive and negative outcomes (also called conditioning), see Cerutti (2004:2501–11).

In the context of *Vertical City*, I used this theory as a basic epistemological premise: I considered each participant a perceptual lens with learned, and thus implicit, ways of attending to and processing stimuli that, in turn, trigger corresponding sets of auto-responses. My initial dramaturgical focus was to gather information about what each participant was inclined to be attentive to; how each person organized the stimuli offered to her or him; and how each responded to the stimuli. Was a set of stimuli organized and synthesized as image, repetition, rhythm, shape, system, mathematics, concept, narrative, causality, meaning, atmosphere, or something else? Did the response contrast with the stimulus, act on it, freeze it, set it in motion, introduce objects to it, change its relation to time or space, or personalize it? The examples just listed all occurred in our studio, and my observation of these examples helped me build a sense of what each participant turned towards and depended on to be able to create.

While I cannot here share in detail my developing understanding of the group members' complex skill sets, I can offer a few generalized examples to illustrate the range of reactions that came up in the studio. One aerial artist searched for meaningful stories and dramatic emotions to make sense of abstract movement when she pushed beyond her physical aerial routines; as a result her work tended to involve dramatic development and resolution. Another aerialist, who was more comfortable with abstract ideas, merged physical routines with personal experiences or everyday activities; she relied on her immediate responses to this combination of elements as a way to transform her routines and manipulate tempo and spatial orientation. One deviser relied upon concrete stimuli, such as an anecdote or an object, to create, and he tended to transform themes and ideas into practical concepts that could govern his actions. He required time to plan and often developed language-based scenarios. Another deviser turned first to his body and voice as instruments, relying on proprioception (perception of one's own body) and motor memory from prior physical training and everyday activities as his sources of inspiration. As a result, the material he generated was usually organized as a repeatable "chain reaction." My observations were not systematically collected; rather, they remained loose, impression-based notes that I could refer to in my exchanges with the director. These notes were of particular use in our conversations about the progression and goals of exercises and the strategies involved in Barton's ongoing manipulation of the same. Nonetheless, my observations—collected and offered exclusively in the service of the emerging performance—remained distant from stable, repeatable, and/or verifiable scholarly knowledge.

Part of our challenge, as I saw it, was to offer the participants opportunities to move beyond auto-responses—sometimes by suggesting tasks that made such responses dysfunctional. For instance, the actors could not rely on psychological character or the musicality of words when they delivered a dialogue while hanging in aerial silks that gradually blocked the flow of blood to their legs. Similarly, the aerialists could not create routines that appeared easy and stylized when the movement's momentum—on which this quality depends—was removed, the tempo reduced, and the pull of gravity reintroduced. Although these are examples from a later stage in our process, the principles of displacement and the limitations they demonstrate were used from the outset. Another possibility we explored was to continuously filter one participant's creation through the lenses of other participants, and to observe what the others would choose to work with and how that material changed through their interaction with it. Collaborative conversation about these observations was meant to help the participants "read" each other and thus, in their own ways, begin to reach across disciplinary boundaries and discover ways of responding to each other.

While the displacement and introduction of limitations destabilize the skill set of a discipline through its transferal to a new environment or set of regulating principles, the filtering exercises invite the participants to discover channels of connection between their different, respective means of expression. Both are important; the transferal does not have much effect in an ensemble piece unless it also manages to facilitate some compositional connections between the various forms of expression the participants employ.

The strategy of making auto-responses dysfunctional can block artists because it results in an immediate loss of competence and a need to pay attention to choices. Therefore it is important to



*Figure 4. Vertical City. “. . . the aerialists could not create routines that appeared easy and stylized when the movement’s momentum—on which this quality depends—was removed, the tempo reduced, and the pull of gravity reintroduced.” Development period, April 2008. Sterling Aerial Studio, Toronto. Directed by Bruce Barton. Performers: Lori Le Mare and Diane McGrath. (Photo by Pil Hansen)*

provide participants with some of the aids they depend on to be able to create when working with displacements and restraints. These aids may be abstract shapes, practical concepts, concrete events, tangible materials, or the possibility of drawing on personal experiences. Again, while my recommendations to the director about such aids relied on the initial observations described above, and thus remained influenced by this theoretical perspective, they also remained exclusively in support of the performance creation process.

These observations on cognitive processes were translated into a variety of practical tasks assigned to the performers. In relation to the strategy of “filtering,” during the period of weekly training sessions I asked the performers to work from a common conceptual (or merely pragmatic) idea or objective, but to utilize their distinct training and skill-set(s) in their exploration and articulation. In one instance, each performer was asked to reflect upon “a habit you would like to establish or a habit you would like to break.” Then, within a short period of time (these

exercises ranged in preparation time from as long as 30 minutes to as little as 5 minutes), each performer developed a short action (a movement/voice sequence) to express his or her reflections on this topic through that performer’s familiar performance vocabulary. Once they had shared these with the group, the performers were asked to “translate” one another’s sequences into corresponding expressions grounded in their own skill-set(s)—attempting, in the process, to transfer a dominant aspect of the other’s action into a different performance vocabulary (i.e., their own). The result was not merely the identification of shared preoccupations and points of interest. Perhaps more important, we all discovered which aspects of one another’s skill-sets we were most attentive and attracted to (and which we were most distant from and disinterested in), as well as which we were most inclined to adopt and attempt to translate into our own familiar performance strategies.

For example, Tellez's rigorous practice as both a physical trainer and a martial artist gives his movements a high degree of precision and repeatability. His approach to the issue of habitual activity both foregrounded and critiqued this reliance on repeatability, demonstrating the potential for mechanical and unreflective behavior. Le Mare's "translation" of these qualities in Tellez's movement involved her systematically tying a series of knots in one of her silks so that each knot became a platform from which she could untie the corresponding knot in the other silk. Repeating the process again and again, she worked her way up and down the set of silks in an ongoing process with no discernible purpose and no predictable end.

In our search for subject material, we aimed to address the conditioning effect of the city and our everyday attempts at claiming a space through repeated acts and familiar habits. Some of the experiences that were brought into the studio by the participants in response to this theme would be recognizable to most people. These included the experience of minimizing personal space and movement to a repeated click on a mouse; of being pummeled by the stimuli of noise in an airport until one begins to focus one's attention on smaller, distant interactions or specific sounds; or of daily physical activities that become spaces of action that cannot be skipped, yet hardly register unless they are missed.

As discussed above, these and related experiences informed our explorations of personal space during the three-week generation period. At this point we also introduced two new points of reference: (1) theoretical calculations of "choice behavior" from the field of architecture via a 1969 vertical and adaptable urban planning utopia (*Project Romulus*, see Kettaneh 1968) designed by MIT engineering students; and (2) text and imagery drawn from Alfred Hitchcock's 1963 film *The Birds*, with a particular focus on its "revenge of nature" subtext. Both these primary sources play out in the text we have developed so far and will be further contextualized by a prism of isolated events, situations, and dreams that manifest the destabilizing, repetitious, disruptive, and maze-like qualities of the urban environment.

In the final weeks of development we also focused directly on our relationship with gravity and exertion. For the aerialists, specifically, this translated into explicitly resisting a reliance on speed, spectacle, and momentum, and instead emphasizing duration, variation, and strength. We attempted to accomplish this transition in several ways, including:

1. Increasing the intimacy of the performance configuration, limiting the aerial equipment during the Harbourfront showings to two sets of hanging silks, and situating the audience onstage, on either side of the performance space);
2. Regularly lowering the aerial elements to a few feet or even, at times, inches from the floor of the playing space;
3. Developing scenes that emphasized the increased difficulty of performing at painfully slow tempos, with extended, unbroken sequences and strenuous repetition.

At the development stage of our showing, each performer's usual form of expression had been altered through the interdisciplinary exchange. Le Mare had, for example, integrated speech with aerial techniques and altered the conditions—and thus effects—of the aerial work. She was creating imaginative spaces with the combined elements of body, silks, words, and stories. She was also using the resistance of gravity and her struggle for breath as she spoke during extreme physical action to draw spectators into her intimate sphere, instead of relying on the distant, (apparently) effortless beauty of aerial conventions. However, at this point of development, there was only minimal interaction between the actors and aerialists onstage. In terms of composition, our performance material was only loosely connected. Most of the connections were thematic, taking measure of how different utopias of built environments (poetic visions, engineering designs, card houses) can influence individual behavior and, conversely, how individual behavior can create isolated, ritualized spaces. Multiple connections were also facilitated through repeated manipulation of proximity in space and the isolation of space. The spectators were seated too close to the work to take in the





Figure 5. Vertical City. "Most of the connections were thematic, taking measure of how different utopias of built environments (poetic visions, engineering designs, card houses) can influence individual behavior . . ." Workshop Showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performers: Lori Le Mare and Frank Cox-O'Connell. (Photo by Pil Hansen)

whole frame; they had to direct their attention selectively. Despite this proximity, the performers were able to establish and sustain the isolation of small, self-created spaces. For example, Tellez fenced himself into a square with pencils that barely allowed him to move, and Le Mare built a nest in and with the silks that encapsulated her body and removed her to a place of reminiscence. The physical separation of the silks, ladders, and actions also contributed to the performers' isolation from each other. Performance material was further interconnected through repeated manipulation of speed (from the slow movements of the aerialists to the increased speed of the kettlebell exercises), certain types of movement (pulling oneself upwards, slow rotation while hanging, lifting), and a few objects (playing cards, pencils, acoustic instruments). Again, none of the connections were explicit; they remained in the realm of potential, largely dependent on the audience's perception for completion.

In an attempt to learn more about which materials our audience perceived, which

connections they drew, and what, if any, effect was generated by our alteration of familiar disciplinary forms of expression, we asked our audiences to recall their impressions after the showings. I took notes with the intention of using the information to further develop our compositional strategies. From the spectators' responses we learned that the points that received the most attention were those at which a disciplinary expression had been altered through obstacles: the effort and tempo of the aerial movements, the combination of speech and aerial work, the devisors' attempt to deliver a dialogue-based scene while hanging in the silks. Some spectators also commented directly on how these obstacles resulted in a shift in their perceptual orientation: "You had people crossing into another field, I could feel the anxiety"; "Circus and skill were transformed into power, control, pain. I was not afraid, but when the boys [i.e., the devisors] got up there I thought 'Don't, it's dangerous'"; "When they [the aerialists] started to speak it shocked me." At the level of *sensory* experience and perception of the performers' actions, physical activities that involved and revealed effort received



*Figure 6. Vertical City. "Despite this proximity, the performers were able to establish and sustain the isolation of small, self-created spaces." Workshop showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performer: Marc Tellez. (Photo by Pil Hansen)*

the most audience attention: "Friction between body and cloth"; "Number of times lifting [kettlebells]"; "How physically I felt the effort"; "Legs shaking holding the card house level." In terms of *semantic* perception, thematic relations between mechanical construction and organic movement were foregrounded, and the isolation of various spaces was commented on several times: "Contrast between utopian readings and the organic plant pod [Le Mare's encapsulation in the silks]"; "The productive relation between organic soundscape and the mechanical city"; "The moment you go for adaptability you create structure"; "Attempts to build a little bit of privacy"; "I find the piece lonely, everybody lives in their cases." In addition, audience members offered a number of interpretations based on factors that were external to the performance-material and that derived from a sphere of collective knowledge, such as religion or classical mythology. This information indicates that our choices directed the spectators' attention towards something other than the foci of conventional, character-driven theatre or circus spectacles and, in the act, produced a conscious experience of perceptual adjustment.

To summarize, based upon the above examples, inspiration from either cognitive neuroscience or behavioral psychology was used to navigate the following areas: (1) the creative process and artistic development; (2) the dramaturgy of composition; and (3) the dramaturgical strategies of the performance situation (including the audience as perceiving participants). In all of these areas we worked with the three following strands of artistic inquiry as they related to our objectives and subject materials:

1. The discipline-specific perceptual "lenses" and auto-responses of the participants—specifically:
  - How to learn about them;
  - How to challenge them;
  - How to facilitate transferal across them; and
  - How to build connections between them.
2. The conditioning effect of the city and our attempts to navigate it—specifically:
  - Reducing space through activities and scope of attention;
  - Personalizing space through repetition and habit;
  - "Counter-Construction," or the act of imagining differently constructed cities;
  - Bringing time to a near stop through the pull of gravity;
  - Speeding up time by defying gravity.
3. Audience attention—specifically:
  - How to direct spectators towards various kinds of material;
  - How to facilitate multiple possible experiential journeys through the material, depending upon how individual audience members select and organize stimuli when engaged in perception.

The result of these inquiries—as befits the explicit context of creative development—was the generation of performance material and practical strategies of filtration, creation, and composition. The outcome was neither application of the theory, nor precise observations that could allow us to follow the actual effects of our strategies, nor a resistance from effects that might contradict our assumptions or help us revise our questions. To achieve *these* results, we propose, the inquiries need to be pursued within a RBP framework.

## From Creative Development to Research-Based Practice

Adopting the concept of RBP allows us to both sidestep the knotty contention around general definitions of PBR and to stake out a narrowly focused piece of this territory in the form of a specific case scenario. In the process, however, we also risk proposing some conditions of application that can be transferred to related research practice (and practical research).

In our model, RBP demands participants' mutual agreement on a shared *set of concerns*, which may (or may not) take the form of questions, objectives, problems, or hypotheses. No doubt, each participant will bring related issues of more personal interest into the mix, and each participant will play a discipline-specific role (or roles) within the project according to his/her experience, expertise, and interest. However, the research team should, to a member, acknowledge and endorse the stated set of concerns as the overall focus of the PBR project. The obvious challenge that emerges here is coming up with a research design that respects the desire for a shared focus while at the same time honoring the diverse perspectives and investments brought to the table. Granted, the ability to incorporate multiple orientations is a prerequisite of work that crosses disciplinary borders. However, the ability to embrace such differences across professional and knowledge paradigms is a baseline condition of RBP.

In writing of her participation in the five-year Practice as Research in Performance (PARIP) project ([www.bris.ac.uk/parip](http://www.bris.ac.uk/parip)), Carolyn Rye has described her attempts to navigate the research/practice paradox, particularly in terms of her proposed solution to the challenges of documentation and dissemination. Apart from the specific technologies Rye employs, it is the number of distinct perspectives made possible through her video-based research "document" that is of relevance here:

New forms of research methodologies inevitably produce new types of knowledge and in order to recognize this difference new types of submission will have to be devised. A multimedia document is appropriate in its ability to contain a variety of diverse discourses: writing, sound, photography, video [ . . . ] It acknowledges the differences between things and the different types of knowledge that different forms of expression can provide. (Rye 2003)

If we pull the impetus behind Rye's application of intentionally multivocal documentation into not only a project's design but also it's point of departure, we begin to approach the framework we are proposing. For what this framework makes possible is an integrated range of artistic approaches and research methodologies that yield—in collaboration—a multilateral and multiplanal body of results.

In general, RBP begins with preliminary input from the broadly defined fields of, on the one hand, performance praxis and production and, on the other, traditional research praxis and dissemination, with the goal of exploring how these conventionally distinct and distant fields can inform and enrich one another. In the case of *Vertical City*, the input from the fields of performance praxis and production relate to the disciplinary conditioning of aerial and physical theatre performers, while the input from traditional research praxis and dissemination relates to contemporary theories of cognition and memory. These inputs are then introduced into a research design that involves three distinct but related spaces of activity, with all research participants spending time working in all three spaces:

1. In a space that is focused on training and skills acquisition/refinement, the activities are governed by carefully selected and rigorously applied *artistic approaches*.
2. In a second space that is focused on empirical experimentation, the activities are governed by carefully selected and rigorously applied *research methodologies*.
3. The 3rd Space of RBP is, in fact, the initial area of activity. The inputs identified above (disciplinary conditioning and cognitive science) are brought into unconventional and spontaneous interaction in order to explore possible connections and applications. These unformed and tentative connections are then transferred into the more rigorously structured and maintained first and second spaces, where more stable and controlled inquiry, using appropriate artistic approaches and research methodologies, may be conducted.



*Figure 7. Vertical City. "Multiple connections were also facilitated through repeated manipulation of proximity in space and the isolation of space." Workshop showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performers: Anne Stadlmair, Frank Cox-O'Connell, Lori Le Mare, Diane McGrath, and Marc Tellez. (Photo by Pil Hansen)*

*Figure 8. Transferral and contamination across the three spaces of the RBP design and between the RPB project and external contexts. (Graphic by Pil Hansen)*

The results generated in these paradigm-specific spaces are then returned yet again to the 3rd Space for additional exploration. This process of “recycling” among the three spaces of activity can be repeated as many times as resources permit.

In one sense, then, the RBP design is continuous and self-serving, an ongoing process of internal contamination, modification, and refinement. However, it is also directly connected to the “outside world” in multiple ways. The space of training and artistic skill acquisition yields immediately applicable benefits for performance generation and production, in that it employs shared artistic approaches with these activities. These benefits are experienced both by the participating practitioners and by other practitioners with whom they engage. The sphere of empirical experimentation similarly yields immediately applicable benefits for more traditional approaches to research—both performance research and research in other fields—with which it is directly associated through shared research methodologies. And the 3rd Space of exploration yields multiple benefits for other RBP (and PBR) projects through the ongoing refinement of strategies for exploration and documentation in interdisciplinary and inter-paradigm research contexts. In fact, a key outcome of this 3rd Space activity is the ability to build, cumulatively, on the process of discovery and ask increasingly complex and innovative questions in other RBP efforts.

With this understanding of the framework and priorities of RBP in mind, and having identified multiple inquiries from the *Vertical City* creative process, we now turn towards the possibilities of exchange with a space of empirical experimentation.

### **Imagining Experimental Application of Cognitive Theory**

When inquiries from *Vertical City* are pursued in a process of exchange between the various spaces within a RBP framework, the exploration of intersections between theory and practice become more focused and evenly balanced.

It is not difficult to imagine how experiences from the 3rd Space can be made use of within the space of artistic development. Such experiences could, for instance, lead to more effective strategies for interdisciplinary “contamination” that can in turn be applied to other artistic projects. However,

when facilitating transferal between the 3rd Space and the space of empirical experimentation, a larger gap must be bridged. The various fields of cognitive science (experimental, theoretical, and applied) and performance (scholarship and practice) share an interest in human perception. But because studies of cognitive science depend on several layers of reduction (of context and object of study), there are real limitations to the application of their results. To make the cognitive approach more specific, it is necessary to break down the inquiries into smaller questions, reduce the complexity of the experimentation as well as the contextual influences on it, and remain aware of the specificity of the empirical studies that the theories are based upon.

In the following, I draft preliminary designs of complexity-reduced studies into the following questions: (1) How can one interrupt auto-responses in a creative process that involves both text and movement; and (2) How can connections between different perceptual lenses be built.<sup>3</sup>

Cognitive research into motor memory and semantic comprehension offers evidence that some linguistic concepts are directly associated with memories of movement. The discovery of "mirror neurons" in a macaque monkey (Rizzolatti et al. 1996)—neurons that are active both when the monkey executes a specific hand grasp and when it observes another monkey execute a similar grasp—has led to numerous theories on the evolution of human language that argue that certain concepts are grounded in sensory-motor memory. For example, in his article "From Grasp to Language: Embodied Concepts and the Challenge of Abstraction" (2008), the neuroscientist Michael A. Arbib explains his mirror system hypothesis while critiquing Vittorio Gallese and George Lakoff (2005) for their perhaps too eager application of the mirror neuron discovery to their theory of metaphor and imitation—they take imagining to be a mental simulation of experienced physical action. Arbib recognizes that "knowledge is grounded in the embodied organism's interaction with the world," but he also states that, "[I]t is not limited to it" (2008:9). He continues, "The parameters involved in describing a skill are not the automatic readout of the neural code for that skill" (10). Thus for now I recommend only using this theory when working with linguistic concepts that are likely to involve an embodied experience.

Arbib's argument and the idea that there is an evolutionary connection between sensory-motor memory and concepts is also supported by the paradigmatic work of Gerald M. Edelman and Giulio Tononi (although these authors do not reference each other). In their monograph *A Universe of Consciousness: How Matter Becomes Imagination* (2000), Edelman and Tononi suggest that physically based perceptual categorizations are developed into generalized scenarios and rewarding auto-responses called "non-linguistic concepts" (104–05). When language—and thus semantic concepts—are added to the picture, the human spectrum of concepts and auto-responses becomes much larger and our ability to function efficiently and fast through implicit perception and response rather than conscious choice making is increased (196–97).

This evolution means that in some cases our comprehension of language activates—and even depends upon—associated motor memory, and vice versa. When taking these theories as points-of-departure, one can hypothesize that auto-responses that depend on motor memory become disrupted when movements and concepts are separated and re-combined in disassociated constellations. If that is the case, it is then possible to use strategies of disassociation to break certain types of habits and discover new qualities in and across text and movement.

The need to form new hypotheses—like the one just proposed—to bridge a gap between the reduced subject of the theoretical source and the complex and embodied subject of performance is likely familiar to scholars and artists who work in these respective areas. In my example above, the new hypothesis bridges the gaps between MRI scans of mirror neurons in the brains of the macaque monkeys, very simple task execution studies on humans within behavioral psychology, and the extremely complex area of performance processes. What we propose is to reach beyond this kind of

---

3. I primarily suggest using research methods from behavioral psychology because this branch of cognitive studies is less reductive than, for instance, neurobiological studies, and thus less difficult to connect with the field of performance.



Figure 9. Vertical City. “. . . Le Mare built a nest in and with the silks that encapsulated her body and removed her to a place of reminiscence.” Workshop showing, April 2008. York Quay Studio Theatre, Harbourfront Centre, Toronto. Directed by Bruce Barton. Performer: Lori Le Mare. (Photo by Pil Hansen)

speculation by lifting the premises of such “bridging” hypotheses into a space of deductive empirical experimentation and testing that is governed by the methodologies of the conservative research practice involved, but also dares to ask questions that cannot spring from a conservative research situation alone. In practical terms, and in the context of *Vertical City*, this means that the hypothesis “that auto-responses are disrupted when working on disassociated concepts and movements” would have to be reduced to a relation of cause-and-effect between a *manipulated independent variable* (the disassociation of concept and movement) and a *dependant variable* (a specific, observed type of auto-response). In a simple “one-way” and “within-subject design” (see Leary 2001:219), we would record on video the auto-responses of performers when engaging with selected *associated* concepts and movements; then we would repeat the experiment with the same concepts and movements arranged in *disassociated* combinations, in order to observe differences in auto-responsive behavior.

Results from such an experiment could lead us to revise our hypothesis or discover new possibilities that would feed directly into the 3rd Space of our Research-Based Practice.

Approaching the second question about building connections between different perceptual lenses, I would return to reconstructive memory theory and document whether different orientations merge, perceptions change, and memory recall is transformed over the course of several filtering exercises, and if so how.

In practical terms, we would compare recordings made at intervals within a process that is meant to facilitate integration of the participating artists' very different approaches, yet which repeats similar tasks and encourages the recycling of material. After each video recorded interval, we would ask the participating artists about where they started and how the piece changed to monitor their memory recall. With these answers, we would attempt to understand how much of the observed transformation involved conscious perception and choice of response. Careful comparative analysis

of such data could help us understand whether, when, and how the exchange adapts memory and response, and whether the participants adapt to each other. This process could be repeated using strategies to hinder auto-responses (derived from the previous example of an experiment) in an attempt to determine whether these hindrances render the participants more or less able to adapt. On a practical note, we would need to be alert to the fact that memory recall can prime the recalled actions and increase the likelihood of their repetition in concurrent intervals. That influence has to be taken into account when analyzing the results and considering how our findings might be used in the 3rd Space.

These studies can lead to more complex and accurate answers than the simplified hypotheses and guesses we turned to in *Vertical City*, and thus enable us to reach a greater depth of inquiry. The design of a later stage of the project, in which such results are transferred to the 3rd Space and, ultimately, the space of artistic development, would depend on our findings and the interests of the team.

## Looking Forwards

We recognize that we are imagining an approach to discipline and paradigm border crossing for which there are few precedents. Much valuable work is being done in utilizing cognitive theory as a source of inspiration for the analysis and interpretation of performance dynamics. More controversial and less familiar, however, is the proposal of direct and reciprocal application of cognitive theory and performance generation. The potential in such application is huge, but so too are the gaps between the necessarily reduced complexity of empirical experimentation and the unavoidably dense field of live performance. A key element of our attempt to realize this potential is the introduction of the 3rd Space of RBP, an area of spontaneous and opportunistic contamination between research and practice. It is in the systematic transferal between these distinct spaces that the potential for bridge-building resides.

Dramaturgical, performative, and cognitive approaches share a focus on what something does, what it affects, or simply how it works—a focus that differs from a more hermeneutic or semiotic interest in what something is or how it can be understood. Because of this shared focus, the potential for mutual advancement through exchange between these fields is significant. But, unfortunately, the challenges brought about by disciplinary boundaries, methodological incompatibilities, and different agendas make it very difficult to fully realize this potential. RBP aims to overcome some of these challenges by proposing a framework for inter- and cross-disciplinary work that keeps the strengths of each disciplinary field intact while also facilitating productive transferal and integration between them. As befits the shared focus on affect, our design prioritizes the establishment of channels of exchange that allow us to observe effects of mutual contamination. Our proposition is by no means prescriptive: it is not offered as a standard against which other PBR projects and approaches should be assessed. It is merely one, albeit ambitious, step toward our goal of reaching into deeper and more methodologically rigorous levels of inquiry, while widening the fields from which we can draw material and to which our results may be of use.

The kind of work we are proposing requires collaboration among several groups of artists, artist-scholars, and scholars from different fields at each stage of the process: the movement towards the 3rd Space, cycles of work among the three spaces, and the re-application of results to the fields of the different disciplines involved. Given this, we think that it is important to share our proposal, design, and aspirations at this early stage of development and to engage communities of artists and scholars in critical discussion of the framework.

## References

- Arbib, A. Michael. 2008. "From Grasp to Language: Embodied Concepts and the Challenge of Abstraction." *Journal of Physiology: Paris* 102, 1–3:4–20.



- Cerutti, D.T. 2004. "Psychology of Conditioning and Habit." In *International Encyclopedia of the Social and Behavioral Sciences*, eds. Neil J. Smelser and Paul B. Baltes, 2501–11. Oxford: Elsevier Science. (4 May 2009).
- Edelman, Gerald M., and Giulio Tononi. 2000. *A Universe of Consciousness: How Matter Becomes Imagination*. New York: Basic Books.
- Gallese, V., and G. Lakoff. 2005. "The Brain's Concepts: The Role of the Sensory-Motor System in Reason and Language." *Cognitive Neuropsychology* 22, 3–4:455–79.
- Hansen, Pil. 2006. "Dramaturgi og Perception" (Dramaturgy and Perception). PhD diss., University of Copenhagen.
- HATCH: emerging performance projects. n.d. Harbourfront Performing Arts. [www.harbourfrontcentre.com/hatch](http://www.harbourfrontcentre.com/hatch) (4 May 2009).
- Kettaneh, Anthony, ed. 1968. *Project Romulus: An Adaptable High-Density Urban Prototype*. Boston: MIT Press.
- Leary, Mark R. 2001. *Introduction to Behavioral Research Methodology*. 3rd ed. Boston: Allyn and Bacon.
- PARIP. n.d. *Practice as Research in Performance*. University of Bristol. [www.bristol.ac.uk/parip/](http://www.bristol.ac.uk/parip/) (5 September 2008).
- Rizzolatti, G., L. Fadiga, V. Gallese, and L. Fogassi. 1996. "Premotor Cortex and the Recognition of Motor Action." *Cognitive Brain Research* 3, 2:131–41.
- Rye, Caroline. 2003. "Incorporating Practice: A Multi-Viewpoint Approach to Performance Documentation." *Journal of Media Practice* 3, 2:115–23. [www.bristol.ac.uk/parip/s\\_cr.htm](http://www.bristol.ac.uk/parip/s_cr.htm) (5 September 2008).