4

Bridging Methodologies

"It would be possible to describe everything scientifically but it would make no sense; it would be description without meaning, as if you described a Beethoven Symphony as a variation of wave pressure."
Albert Einstein[1]

"The process of embodied meaning in the arts are the very same ones that make linguistic meaning possible…The arts are not a luxury, they are a condition of full human flourishing."
Mark Johnson[2]

"Movement is alteration in <u>qualities</u> of experience... Mathematically there is no such thing as fast and slow… To be forced to wait a long time for an important event… is a length very different from that measure by the movement of the hands of a clock. It is something <u>qualitative</u>."
John Dewey[3]

4.1   Introduction

This chapter explores *Bridging Embodied Methodologies* from somatics and performance to technology design within Human Computer Interaction. Embodied interaction is articulated through embodied *methodologies:* processes that engage meaning by attending to *quality* of experience. Three case studies are presented that contribute to the conceptual development of embodied practice within HCI. By centering technology design from within a *non-alienated* view[4], I employ the *experience of the self* as an integral component of design processes for technology. Like Polanyi and Alexander my research-through-art seeks to acknowledge the *personal* nature of comprehending a qualitative world.

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[1] Clark, R.W. (1971). *Einstein: The Life and Times*, World Publishing Company, p. 192.

[2] Johnson, M. (2007). *The Meaning of the Body: Aesthetics of Human Understanding*, Chicago: The University of Chicago Press, p. xi, p. 209.

[3] Dewey, J. (1934). *Art as Experience,* Carbondale, Illinois: Southern Illinois University Press, p. 215.

[4] Hillary Putnam (Putnam, 1981) sketches a non-alienated view, which attempts to resolve dichotomies of subjective and objective, and acknowledges the value-laden relationship between truth and reason.

My design strategies are born from the four *values* common to body-based practice

articulated in Chapter Two. These are: the value of the self, of attention, of experience

and of inter-connectedness. The value of inter-connectedness is the recognition of the

indivisible nature of body and mind, self and world, technology and experience,

practice and theory. While interconnectedness is an embodied unifying *substrate* of

reason, feeling and action, it also supports the specificity of rigorous technical practice

and articulation of embodied approaches to interaction design.

This chapter identifies bridging strategies from somatics and performance, applying

them to the design processes for personal and wearable interactive art. Design

processes include experience inquiry, concept development, materials exploration,

technology implementation, and system integration. This is supported through a cycle

of 'research through art' illustrated in Figure 19. The *artistic practice* is the foundation

of the formalization and embodiment of the *theoretical framework*. This cycle as a

whole is a balanced representation of the relationship between reflection-in-action and

research-through-art.
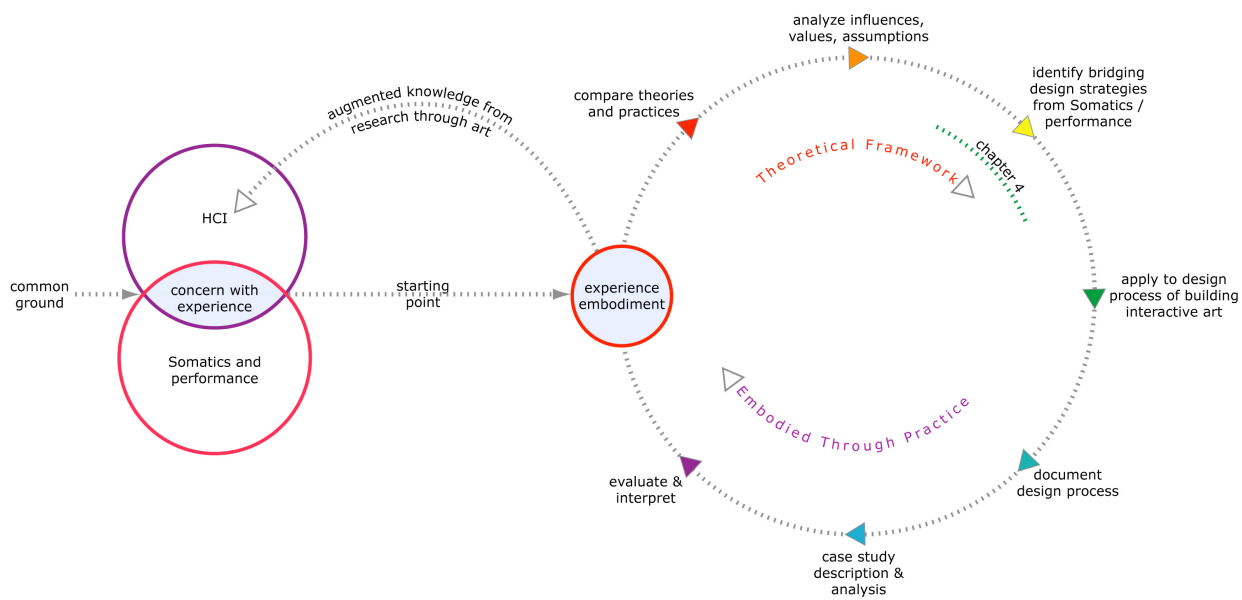
Figure 19. Bridging Design Strategies from Somatics and Performance

4.2   Design Processes for the Technologies of the Self

This section contextualizes the application of embodied methodologies within design processes for technology. A design cycle is typically composed of a set of iterative stages from the initial research and inquiry through to realization and evaluation. Embodied techniques can be applied within various stages of the design process: from discovery-led processes and speculative inquiry, through concept exploration, realization, technological implementation and evaluation processes for efficacy of experience and function.

| experience design enquiry | concept realization | technological realization | evaluation of quality of experience |
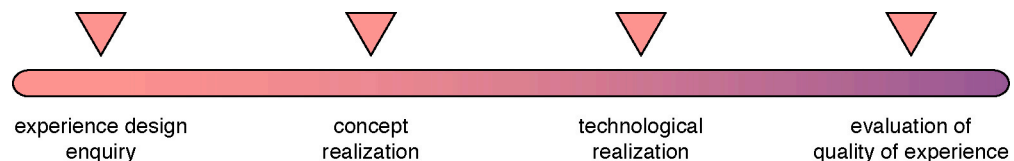
Figure 20. Somatics Techniques can be applied to Various Stages of Design Process

The case studies presented in Chapter Five through Chapter Seven illustrate a variety of ways in which somatics and performance techniques can be applied to technology design at various stages of design process. These case studies differ in what they explore, but together they create a rich exploration of experience, embodiment and the application of somatics techniques within the design process of Interactive Art. Depraz, Varela and Vermersch remind us that the practical knowledge supporting the efficacy of first-person methodologies is a valuable evidential resource for the research community:

> First-person methodologies are available and *can* be fruitfully brought to bear… The proof of the pudding is not in *a priori* arguments, but in actually pointing to explicit examples of practical knowledge, in case studies.[5]

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[5] Varela, F.J., & Shear, J. (1999). First Person Methodologies: Why, What, How?, *Journal of Consciousness Studies*, *6*(2-3), p. 2.

The examples from my own research are organized within three case studies. Each case study is based on the design process of a specific interactive art installation, and each is described within its own Chapter. Chapter 5, *From the Inside Out* describes the design process of *whisper*: a wearable interactive art installation based on co-experience of body-state data; Chapter 6, *Designing with Breath* describes the design process of *exhale:* a wearable interactive art installation based on exploring empathy through networked breath; and Chapter 7, *The Somaesthetics of Touch:* describes the design process of *soft(n)*: a networked interactive art installation based on tactile interaction between 12 soft objects in a space.

Each case study provides examples that emphasize a particular stage of the design process life cycle. Chapter Five, *From the Inside Out* focuses on 'experience discovery' exploring concept development for a wearable art installation called whisper. Prior to technology development, five discovery-led workshops were held over a two-month period to explore experience, meaning, and interaction. Placebo objects, props and exploratory game-like structures were enacted based on participants' experience. Workshop data was gathered in order to explore and observe participants willingness to engage with their 'body-data'. These design processes are presented in Chapter Five.
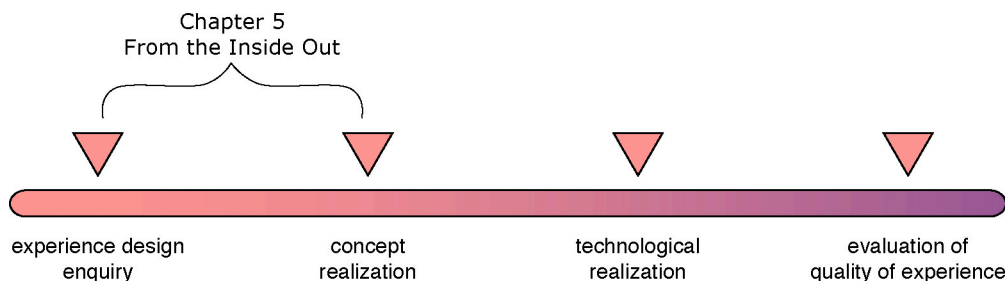

Figure 21. Chapter 5 Focuses on Experience Discovery for Exploratory Concept Design

Chapter Six, *Designing with Breath,* focuses on sensory experience for concept and technology design, including materials exploration and refinement. A series of workshops explored participants' sensory experience with partially operational prototypes in the form of wearable skirts networked to one another. Sensory experience through breath sensing and movement interaction formed the basis of the explorations. These workshops supported conceptual and technological refinement processes for the interactive art installation, *exhale*. These design processes are presented in Chapter Six.
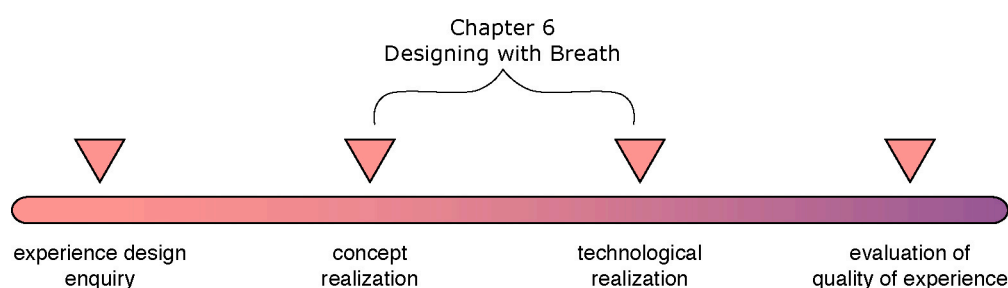
Figure 22. Chapter 6 focuses on Sensory Experience for Concept and Technology Design

Chapter Seven, *The Somaesthetics of Touch* focuses on the implementation and testing stage of a design process, describing the development of a heuristics for recognizing tactile qualities in a fabric-based flexible soft tactile surface developed for the interactive installation *soft(n).* The implementation was based on Rudolph Laban's Effort/Shape Analysis, which defines a set of movement *qualities* that express a range of qualitative meaning. In *soft(n)* these were applied to touch. These design processes are presented in Chapter Seven.
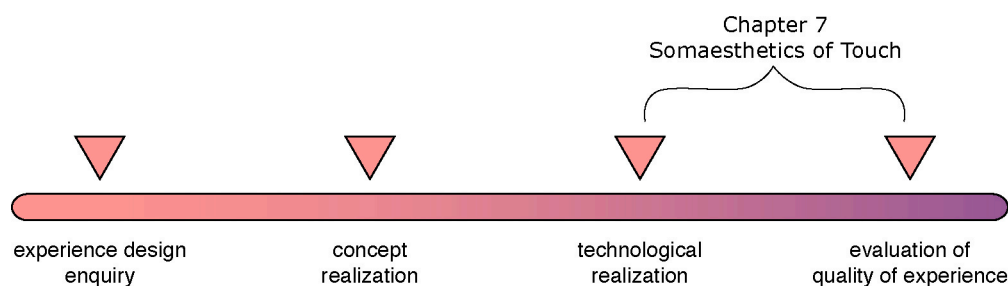
Figure 23. Chapter 7 focuses Implementation of a Heuristics for Tactile Qualities

The figures on the previous page illustrate the variety of ways in which first-person embodied techniques found within somatics and performance can be applied to technology design. The table below summarizes some of the approaches articulated within the case studies in Chapters Five through Seven.

Use of Somatics Techniques within Design Cycle

• In Experiential Discovery Led Processes
    o Workshops
        ▪ Attentional skill development
        ▪ Creativity development
        ▪ Field studies "of the self" (self-efficacy)
        ▪ Training acuity of the researcher
        ▪ Experience discovery of participants
        ▪ Exploration of use of body, movement, space
    o Cultural probes
    o Narrative inquiry

• In Conceptual Design for
    o Articulation of experiential qualities
    o Interaction Design – mechanisms for choice, sharing, control, presence
    o Gestural Interaction

• In Conceptual Development
    o Materials Design
    o Materials Properties and uses in defining experiential Qualities
    o Materials Integration
    o Collaborative approaches to creativity, conceptualization and engineering

• Technology Design
    o As a basis for an interaction heuristics
    o Collaboration between interdisciplinary strategies
    o In refining definitions of experiential quality in interactivity

• Evaluation
    o Experiential efficacy
    o Connection with self
    o Incorporating first- and second-person techniques to assess and evaluate "wholeness" (Alexander)

Table 3. Use of Somatics Techniques within Design Cycle

4.3   Somatics Values and Techniques Applied to Case Studies

In addition to approaching the case studies from the point of view of design processes, each case study is also an example of the application of the *values* common to body-based practice. The table below summarizes how each case study has applied the values of embodied practices, and also identifies some of the specific somatics techniques that design methods were based upon. Values are listed in the left most column and somatics techniques are listed in the last row of the table. For more information on body-based disciplines, a list of contemporary Western somatics practices can be found in Appendix B in Volume II of this thesis.

	Chapter 5 From the Inside Out **whisper**	Chapter 6 Designing with Breath **exhale**	Chapter 7 Somaesthetics of Touch **soft(n)**
VALUE			
Self	Body-state Physiological data	Body-state Breath Inner awareness	Self-through-touch Active touch Tactile intention
Attention	Sensory listening Inner - Outer Kinaesthesia Proprioception Movement	Attention to Breath Kinaesthesia Fullness - Emptiness Inter-subjectivity & awareness through shared breath	Tactile Attentions • Intention • Sensation • Quality - Meaning • Content: Pressure, Duration, Path
Experience Qualities	Inner World Rhythm of "life" Joy - Melancholy Expansion - Contraction	Imagination Stillness Connectedness Empathy	Sensuality Intimacy Pleasure Play

Inter-Connection	Body-Data
	• Within self
	• Between other
	• Choice to share
	• Create extended
	  body
		Breath Relationship
		• To self
		• Receive from other
		• Choice to "hold" or
		  "contain"
		• Create Larger
		  Whole
			Tactile Relationship
			• To object
			• To self
			• To other participant
			• To space

Somatics Systems Applied	Butoh
	• Slow motion
	  walking
	Arsenal of Theatre
	• De-specialization
	• Sensing self
	• Moving self
	Contact Improvisation
	• Weight, Flow
	• Gesture Affordance
		Body-Mind Centering
		
		Kinetic Awareness
		• Attention to breath
		  (Redirection)
		• Slowing movement
		  (Suspension)
		• Expansion
		  (Letting-Go)
		• Wholeness
			Laban Effort-Shape
			Movement Analysis
			
			• Quality
			• Attention
			• Intention
			• Decision/Choice
			• Continuity/Progression

Table 4. Embodied Values and Somatic Techniques Used in Case Studies

4.4 Data Gathering Methods Applied within Case Studies

The case studies present evidence in the form of rigorously documented design processes that illustrate the multi-faceted techniques applied within embodied design while simultaneously grounding the development of the theoretical framework. Evaluation of the process is based on interpretations of the assumptions, methods and outcomes. The table below summarizes the data gathering methods applied within the case studies.

Data Gathering Methods applied within Case Studies

• Case Studies
    o Design Processes in Interactive Art
    o Collaborative interweaving
    o Research Through Art
        ▪ Documentation of Process
        ▪ Narrative Analysis of Process

• Elements of Design Process Used
    o Experience Prototyping
    o Concept Development
    o Physical Prototyping
    o Materials Selection
    o Form Design
    o Interaction Design
    o Experience Testing

• Methods of Data Acquisition
    o Workshops
    o Questionnaires
    o Participant Observation
        ▪ Videotaping
        ▪ Photographs
        ▪ Journaling
    o Interviews

• Methods of Analysis
    o Transcription
    o Comparative Data Analysis
    o Video Analysis for Gesture and Meaning
    o Narrative Analysis

Table 5. Summary of Data Gathering Methods applied within Case Studies

Outcomes are equally balanced between the theoretical framework of embodied methodologies and the artworks created within the framework. This example of research-through-art is applied in the context of experience-design of personal, wearable and social interaction and is illustrated in the following Chapters.

Observation plays a critical role in all research and inquiry and is central to first, second and third person methodologies. Knowledge can be gained by sharing observational strategies and techniques. In my research, the first-person embodied methods used within the case studies are "blended" with second and third person observation. Varela and Shear,[6] suggest that there is a need to harmonize subjective first-person methodologies by building appropriate *links* with third-person studies. Introducing second-person positions is one such link. For Varela and Shear the specific nature of the first-person methodology is crucial. They state that we need to provide rich and subtly inter-connected descriptions so that the questions of "How do you actually *do* it?" [the question of technique], "Is there evidence that it *can* be done?" [the question of expected outcome],"If so what are the *results?"* [the question of visible change in body-state that can enable validation], can be answered. The rich descriptions suggested by Varela and Shear are supplied in this thesis through the process of documenting design processes, experiences and explorations. Each of the case studies incorporates supporting material and data available in Appendices C (whisper), D (exhale) and E (*soft(n)*). The case studies presented in Chapters Five, Six and Seven illustrate and answer questions of technique, outcome and validation, and do so through the exploration of embodiment and experience. This follows from the pragmatist approach of William James, in which "analysis respects experience"[7].

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[6] See Varela, F.J., & Shear, J. (1999), op. cit., p. 2.

[7] Jacques Barzun in his Forward to William James' *The Varieties of Religious Experience,* see James, W. (1999). *The Varieties of Religious Experience*. Modern Library, p. vi.