
Toward Richer Models of Experience

"Everything real must be experience-able somewhere, and every kind of thing experienced must somewhere be real."
William James¹

"...to continue the investigation ... will require a paradigm shift in multimedia research away from purely technical concerns satisfied with incremental progress within established paradigms to a radically interdisciplinary approach to research, design and development."
Marc Davis²

"Academic disciplines are most active at their ever-changing interfaces."
Schechner³

9.1 Introduction

This thesis has presented a radical interdisciplinary dialogue, one that draws upon a necessary collaboration between divergent knowledge traditions and epistemologies of practice within human computer interaction, somatics and contemporary dance performance. By weaving together strands of theory, practice and methodology this dialogue has produced a body of work articulated through the case studies, whisper, exhale and soft(n). This final chapter draws upon the collaborative nature of these case studies by summarizing their contribution to human computer interaction. These collaborative and radical interdisciplinary methods are based on an epistemological *reframing* of the nature of user experience within HCI and between HCI and somatics. This chapter articulates the thesis's contributions to HCI, drawing conclusions about the relationship between theory and practice, and outlines future possibilities for research in the area of somatics and embodied interaction within HCI.

¹ James, W. (2003). *Essays in Radical Empiricism*. London, UK: Dover Publications, p. 83.

² Davis, M. (2003), op. cit., p. 51.

³ Schechner, R. (2002). *Performance Studies*. London, UK: Routledge, p. 19.

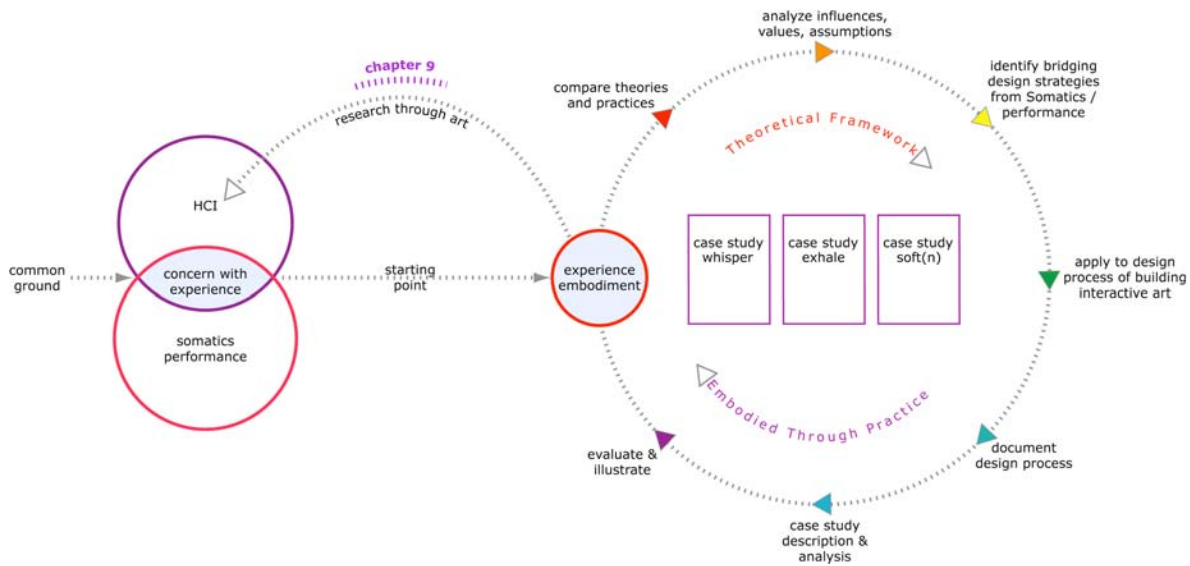


Figure 124: Chapter 9 Summarizes a Radical Interdisciplinary Dialogue Based on Collaboration between Body-based Somatic Awareness Techniques and Human Computer Interaction

9.2 Summarizing and Contextualizing Research Objectives

The thesis research strategy has been based on an overarching process of Research through Art that has explanatory value within the HCI community in the context of design for embodied interaction. The case studies provided examples of somatic body-based techniques that were applied to technology design. This ‘Research through Art’ supported a discovery-led, exploratory design process that resulted in the development of a theoretical framework, grounded in practice. Because the HCI literature offered no insights into how we can apply somatic body-based techniques and embodied theory to the design and implementation of technology, and because this research is framed within artistic practice, I utilized a Research through Art approach, with the goal of gaining insights into the application of somatic practice to the design of technology. The application of somatic techniques to technology design has been described, analyzed, interpreted and critically reflected upon throughout the thesis, as illustrated in Figure 124. This explication has framed somatic theory and practice, identifying the need for expanding embodied methodologies within HCI, and has contextualized a range of somatic techniques that can be applied to technology design for experience.

This approach has illustrated *how* somatic body-based practices can be applied as a *resource* for technology design within HCI. The Research through Art strategy has also influenced the collaborative processes engendered within the research. The case study art-works were large-scale projects developed over multiple year periods, requiring collaboration within interdisciplinary design teams. Team membership spanned disciplinary domains including: somatics, contemporary dance, computer science, electrical engineering, interaction design, media arts, sound design, mathematics, phenomenology and project management. Because the outcome for each case study was an art installation, the overarching artistic goals *led* the design process, and therefore *aligned* the various interdisciplinary domains *within* the artistic strategy and directive⁴. The case studies were highly collaborative processes that were artist-led.⁵

The theoretical framework utilized in the case studies was developed through personal experience articulated within somatic connoisseurship, combined with empirical data gathered from the design processes of *whisper*, *exhale* and *soft(n)*. Robert Yin's analysis of case-study research suggests that this combination optimizes and strengthens the case-study design because it can articulate converging lines of inquiry that ground a theoretical framework⁶. By positioning the *phenomenon* of body-based somatic practice within the *context* of design for technology within HCI, the case studies enable a deliberate inquiry into contextual conditions arising from the differences between two distinct epistemologies of practice, one that focuses on self-evidence gained from first-person experience, and the other that directs its attention toward "technical concerns satisfied with incremental progress within established

⁴ This distinguishes these case studies from other technological design projects that can be encountered within HCI, however, the contribution of somatic-based techniques within a technological design process can be applied to any technology design process in which design for the user's self awareness can increase the instrumentality of a computer mediated interaction.

⁵ In each of these projects my own role as a conceptualizing artist required developing and refining artistic concept, strategy and implementation, thereby guiding design decisions throughout the implementation process. In both *whisper* and *exhale*, Susan Kozel also contributed in the role of collaborative artist, supporting the development of artistic conceptualization and refinement. In *whisper*, Kristina Andersen's role in interaction design also had a tremendous impact on the development of the concept iteration.

⁶ Yin, R.K. (2003), op. cit. p. 98.

paradigms".⁷ The intersection of these contextual frames creates a space for radical interdisciplinary inquiry in which both somatic practice and human computer interaction can collaborate to transform and extend their own domain boundaries.

Collaboration creates an environment where the partners can push the boundaries of themselves and integrate their differing personal characteristics. Interactions among partners create new properties that build on each other toward creative outcomes, identities, and relationship possibilities. [this can lead to] both personal transformation and domain transformation.⁸

The 'somatic turn' invites a rethinking of the process of making technology, one that includes design for the experience of the self. Including self-experience and self-awareness into technological design brings an ethical dimension to the assessment of technological systems within HCI, enabling us to answer the question, how can technological design support self-awareness in the context of the personal, social and global communities of practice? The benefits of this radical interdisciplinary approach, extends beyond the user experience of technology. It also influences and transforms the collaborators embodied in the roles of researchers, artists, designers, scientists and technologists, and finally extends to transform the domain knowledge itself.

9.2.1 Research Objectives

The propositions, design exploration and evidence gathered throughout the thesis has followed from an inquiry based on a set of research objectives derived from the research questions outlined in Chapter 1. These are summarized to frame the thesis contributions that follow. The research objectives are to:

1. Illustrate the application of body-based somatic practices within an HCI context in order to expand the practical application of embodied theory and its application to technology design, particularly in its use as a design resource within HCI.

⁷ Davis, M. (2003), op. cit., p. 51.

⁸ Miell, D., & Littleton, L. (eds.) (2004). *Collaborative Creativity: Contemporary Perspectives*. London: Free Association Books, p. 21.

2. Enhance a reflective space for ethical valuation of technology design within HCI through a radical interdisciplinary approach utilizing ameliorative properties of first- and second- person methods of somatics and contemporary dance.
3. Reframe user experience within HCI and between HCI and somatics through an articulation of the epistemological nature of body-based somatic practices.

These three research objectives are the basis for the discussion of the thesis contributions to human computer interaction.

9.3 Contributions to Human Computer Interaction

This research is focused on the varieties of user-experience from the pragmatic to the exquisite, and articulates this focus by bridging embodied methodologies from somatics and contemporary dance performance to human computer interaction. The contributions to human computer interaction derive from the development of theory, practice and methodologies that support the process of applying the ameliorative approaches of somatic body-based awareness practice to the technology design in HCI⁹.

9.3.1 Application of body-based somatic practices as a design resource for HCI

The first research objective was to *illustrate the application of body-based somatic practices within an HCI context in order to expand the practical application of embodied theory and its application to technology design, particularly in its use as a design resource within HCI.*

A design resource is a technique or tool that supports design: creative processes that result in the development of an artifact or experience, that affect an outcome by improving the self or the world. Within this research, the design resource is a collection of somatic body-based techniques that can be applied to design for technology,

⁹ For clarification, contributions to HCI articulated within the text are presented in *italics*.

supporting pragmatic approaches to experience design within HCI. Depraz, Varela and Vermersch define a pragmatic approach to knowledge generation as:

the implementation of techniques, means and know-how. In pragmatism, one cares about how well something adapts to its situations rather than how well one formulates *a priori* principles. From this viewpoint, truth consists in the success, efficacy, and functionality of the realized action.¹⁰

A somatic design resource illustrates techniques for exploring experience, sustaining pragmatic approaches within HCI, and thereby enabling designers to “think more precisely” in order to improve design knowledge and practice.

Bill Gaver has argued for the value of augmenting design practice by articulating design resources within the HCI community:

Our purpose is to reveal some of the techniques that interaction designers use in creating compelling designs, and to enable other designers to think more precisely—whether critically or constructively...¹¹

This thesis contributes to HCI by articulating somatic body-based techniques as a design resource, in order to enable HCI researchers and designers to more accurately conceive, develop and reflect upon appropriate uses of embodied awareness theory and practice.

This research also provides opportunities to select specific technical approaches to incorporating somatic techniques within technology design processes. In doing so, it illustrates the application of the *values* of self, attention, experience and interconnectedness, described in Chapter 2 as central to defining somatic sensibilities. This research supports the concept of *Technology as Experience*,¹² and facilitates access to technology's *potential experience*¹³ through training *our ability to notice*. This thesis

¹⁰ Depraz, N., Varela, F.J., & Vermersch, P. (2003), op. cit. p. 17.

¹¹ Gaver, W., Beaver, J., & Benford, S. (2003). Ambiguity as a resource for design, *CHI Letters, Proc. CHI 2003*, New York: ACM Press, p. 233.

¹² McCarthy, J., & Wright, P. (2004), op. cit.

¹³ Eisner, E.W. (1998), op. cit., p. 64.

also contributes to the concept of somatic connoisseurship as a pragmatic approach to somatic facilitation within technology design in HCI. Somatic connoisseurship highlights matters of quality, and refers to the ability to recognize and discriminate between qualities of experience in precise ways. Somatic sensibilities support fine-grained discrimination regarding the use of experience as material within the design of interaction. In this way somatic connoisseurship can facilitate the development of techniques of awareness, the simple act of paying attention that can be supported through technology design processes.

Incorporating somatic facilitation through the practice of connoisseurship within a technology design process expands the practical application of embodied theory and its application to technology design.

The varied somatic knowledge and techniques that underlie these contributions have been described in Chapters 5, 6, and 7, and analyzed in Chapter 8. In particular, Chapter 8 articulated the concept of somatic connoisseurship as a framework for analyzing and evaluating the application of bridging embodied methodologies from somatics and contemporary dance performance to human computer interaction.

This thesis has contributed to the field of HCI by 1) illustrating the application of body-based somatic practices within an HCI context, thereby 2) expanding the practical application of embodied theory and its application to technology design, and 3) demonstrating the value of body-based somatic techniques as a somatic design resource within HCI.

9.3.2 A Radical Interdisciplinary Approach to Collaboration

The second research objective was to *enhance a reflective space for ethical valuation of technology design within HCI through a radical interdisciplinary approach utilizing ameliorative properties of first-person methods of somatics and contemporary dance.*

Chapter 8 described attentional methods used to facilitate awareness. Because attention operates on experience in order to alter our state, and because state includes access to specific qualities and types of knowledge, our goals of developing attentional skill through technology has multiple levels of social and ethical value.

This approach contributes to HCI by expanding ethical resources for technological design that transforms the self and the world.

Body-based awareness practices in somatics are based in self-cultivation and self-agency; they act upon the self in order to ameliorate and to improve our *technical skills* of accessing experience. However, the application of first- and second- person methods of phenomenological somatics within this research can be differentiated by its context.

This research contributes to HCI by articulating first- and second- person methods through the design of technology, so that the ameliorative process is at once individual, cultural and systemic: it becomes simultaneously inter-subjective combining a form of social self-inquiry through somatic facilitation. Awareness of one's own organism leads to recognition of the commonality of all human organisms.¹⁴ Attention is an ecological process.

The proposition is that as the self is cultivated, an ethical relationship can emerge between self-awareness and technologies created from the application of attention to our experience. An ethical valuation of interdisciplinary technology design also requires an evaluation of the nature of collaboration within interdisciplinary design teams, exploring the collaborative frameworks that have supported the three case studies. Marc Davis has suggested that in order to investigate new methodologies for

¹⁴ Burrow, T. (1999), op. cit.

experiential systems within HCI, we require a paradigm shift that moves beyond incremental progress based on technical solutions to a:

... radically interdisciplinary approach to research, design and development. To facilitate such a paradigm shift, we will have to question and be willing to change basic components of our work: our methodologies, objects of study, and the composition of the research community for experiential systems. This reorientation will be challenging, but the technologies we can develop and the experiences may be able to facilitate will be worth the effort.¹⁵

In the research presented within this thesis, somatic facilitation existed during all phases of the exploratory design process, building up shared experience between collaborators and design team members as well as unique personal experience that were used as *material* throughout the iterative design and genesis of the technology. Radical interdisciplinary design requires collaborative creativity within the design team in order to support the *indwelling* that facilitates co-experience shared within team processes.

Inherent in these contemporary approaches to collaborative creativity is an emphasis on studying *processes* involved rather than a sole focus on examining the quality of the products of creative endeavours. It is not only cognitive processes that are implicated in creative work. Creating collaboratively can be a highly emotionally charged and deeply personal meaningful process—involving the construction of subjectivities and relationships as well as ideas and artefacts.¹⁶ [italics mine]

Chapter 8 introduced Polanyi's notion of indwelling. Within this thesis, indwelling is used both as an approach to user experience, and as an approach to collaborative processes. By *indwelling* within a design process, design team members negotiate and construct shared understanding of experiential language. This shared co-experience accumulates throughout the life of the exploratory design process, iterated and refined

¹⁵ Marc Davis makes this statement in the closing Future Work section that ends his discussion of Theoretical Foundations for Experiential Systems. His suggestion of future work summarizes the strategies and practice that has been outlined within this thesis. See Davis, M. (2003), op. cit., p. 51.

¹⁶ Miell, D., & Littleton, L. (2004), op. cit., p. 1.

multiple times throughout the life of the creative cycle¹⁷. Within the research elaborated in this thesis, the collaborative design process centered on exploring self-experience as *material* for design. This focus on experience *as design material* required that each design team member personally experience, and have access to the knowledge embedded in processes of ‘technologies of the self’ within the collaboration. This resonates with Foucault’s observation that that ‘care of the self’ is a precursor to the concept of citizenship and the Hellenistic understanding of the ‘care of the city’¹⁸. In this case, citizenship within the design team includes shared somatic experiential processes in the context of collaborative creativity. These first-person experiences are facilitated through techniques of somatic connoisseurship and are distinct from the everyday experience and ‘natural attitude’ in their specific application of attentional skill¹⁹. Including ameliorative properties of self-cultivation in roles of citizenship within a design group, echoes Trigant Burrow’s view that first-person attention is the process by which we connect in a sustainable way to our environment. These views of the relationship between the care of the self, and attention *through the self* to the world illustrate theoretical and reflective positions that are put into practice within this research. This approach redefines a radical interdisciplinary dialogue that is included in the collaborative nature of design exemplified within the case studies. Defining collaboration as a ‘critical technical practice’ as articulated in Chapter 1, becomes relevant in this instance. The collaborative processes distinguish between technologies of the self, and the concept of “individualism”: two politically distinct views reflecting the relationship between self and world. Individualism dissociates the self from the world privileging the boundary-separation of self from world, and enabling the

¹⁷ The design processes of whisper, exhale and soft(n) each occurred over a period of over two years. These lengthy design processes enabled more in-depth accumulation of design experience, knowledge and shared practice, and also created an internal set of personal stories that imbue multiple experiential layers within a design process.

¹⁸ Refer to the discussion in Chapter 2, pp. 62-65, in which Foucault traces subjective practices including self-observation to the ancient Hellenistic concept of the ‘care of the self’ illustrating how first-person practices such as ‘attending to the self’ were utilized as a foundation of knowledge.

¹⁹ Many of the whisper and exhale design team members participated in the whisper and exhale workshops as facilitators and/or participants including: Thecla Schiphorst, Susan Kozel, Kristina Andersen, Robb Lovell, Jan Erkuu, Calvin Chow and Camille Baker. Additionally, many of the soft(n) design team also participated in the soft(n) user workshops.

traditional positivist view of the world as existing outside of the self; whereas, 'technologies of the self' enables an integrated articulation of both self and world by valuing interconnectedness as a strategy for accessing state-based knowledge and the experience of wholeness: the ecology of the self within the world²⁰. The original conceptual description of the whisper project used the term *collective first-person methodologies* to describe the creative process that included the self within the radical interdisciplinary process of collaborative design.

The 'first person' of these methodologies comes into play through emphasis on design that is intimately connected to the body. Like phenomenology, collective first person methodologies are based primarily upon physical experience, but emphasis is shifted to the collective. The design process involves a strong commitment to material and physical experimentation. Each stage of the research period is linked to exploration in the (dance) studio. Physical improvisation techniques determine emergent movement vocabularies and inform the design process. The process is not simply to import pre-fabricated devices into the studio. All materials and devices are tested physically so that the body knowledge and the hardware/software design occur simultaneously. The creative development of the wearable devices is an embodied and performative process.²¹

The creative collaborative design team processes utilized within the case studies contributed to HCI by defining design features of a radical interdisciplinary collaborative approach that utilized ameliorative properties of first- and second- person methodologies of somatics and contemporary dance.



Figure 125: Design Team Workshop Participation in Creative Collaboration

²⁰ Refer to the discussion in Chapter 8 regarding distinct topologies of awareness, p. 268, where the psychologist, Shellie Levine, has described awareness as a 'topology' in which multiple levels of awareness construct varying experiential 'logics', so that knowledge is state-dependent.

²¹ Cited from design brief and planning document *whisper: wearable body architectures*, concept description document, and funding application for the Daniel Langlois Foundation, the Canada Council for the Arts and the Arts Council of British Columbia. This document was co-authored by Thecla Schiphorst and Susan Kozel.

This research objective is operationalized in two ways within the collaborative team processes: 1) design team members share in somatic awareness techniques facilitated by somatic connoisseurship in order to develop a collective experiential knowledge of the specific qualities that formed the basis for *experiential material* used within the design process, and 2) design team members *ground* their individual areas of domain expertise in the shared experience constructed through the process described above, allowing the team to develop a common *experiential* language. Developing a radical interdisciplinary dialogue through the *material* of experience becomes the basis for pragmatic design outcomes that define aesthetic, technological and experiential features of the wearable tangible networked art installation. Both 1) and 2) are part of an overarching artist-led process in which artistic goals are used to align the various interdisciplinary domains *within* the artistic strategy and directive, guided by somatic facilitation.

An example of design team members sharing in somatic awareness techniques facilitated by somatic connoisseurship (described in 1. above) is illustrated in Figure 125, in which design team members participated in exploratory experience workshops, side by side with workshop participants. This is an example of the application of collective first-person methodologies to support shared knowledge and *indwelling*.

An example of design team members *grounding* their domain expertise (such as textile design, sewing, engineering, programming) in the cumulative shared knowledge gained through shared experience (constructed through exploration in workshops and other exploratory experiential somatically facilitated processes), are illustrated in Figures 126 and 127 (described in 2. above).



Figure 126: The Shared Sewing Circle includes Sewing, Soldering and Engineering Design

These examples illustrate the concept of the sewing circle, a collaborative design approach to prototyping in shared space that can share aesthetic development as a result of aligning to experiential goals, ‘mixing’ the methodologies of engineering, sewing, movement and aesthetic design. Like the definition of ‘collective first-person methodologies’, the *sewing circle* was originally articulated during the conception of the whisper installation:

... generally attributed to groups of women, domesticity and textiles, the term is associated with 19th century social and creative processes employed in the interests of rehabilitating a largely dismissed creative activity: crafting an artifact according to an inherently social and collective design process. Like the members of sewing circles and other creative collectives, we are building our own vocabularies, physical techniques and methodologies working with textiles and mapping the skills of knitting and stitching onto device design. Our sewing circle may stitch ...and knit with [materials and textiles], but we will also wire our bodies into wearable devices and physically improvise, fabricate, and engineer in the studio.²²



Figure 127: Aesthetics Evolved from Collaborative Approach to Sewing Circle

²² Ibid.

As the self is cultivated within a technology design process, an ethical relationship can emerge between self-awareness and technologies created from the application of attention to our experience. An ethical valuation of interdisciplinary technology design requires an evaluation of the nature of collaboration within interdisciplinary design teams, exploring the collaborative frameworks that have supported the three case studies.

The benefits of this radical interdisciplinary approach, extends beyond the user experience of technology. It influences and transforms the collaborators embodied in the roles of researchers, artists, designers, scientists and technologists, and finally extends to transform the domain knowledge itself.

This thesis has contributed to HCI by 1) enhancing a reflective space for ethical valuation of technology design within HCI, 2) applying this to a radical interdisciplinary approach that evaluates the nature of collaboration, that is articulated through 3) the utilization of ameliorative properties self-cultivation supported through somatic facilitation within collaborative design processes.

9.3.3 Reframe Epistemologies of Practice regarding User Experience within HCI

The third research objective in this thesis was to *reframe user experience within HCI and between HCI and somatics through an articulation of the epistemological nature of body-based somatic practice.*

The exploration of felt-life within HCI holds a nascent and yet-to-be fulfilled place within the design of technology. There is a continued need for the development of a theoretical and pragmatic exploration of the mediation of our subjectivity in the context of HCI. This thesis has explored the epistemological nature of body-based somatic practice, grounding this exploration in the historical development of the parallel yet differentiated epistemologies of practice that represent somatics and human computer interaction.

The thesis has differentiated between historical trajectories that construct knowledge from *within the subject* and those that construct knowledge from the externalized frame of an *empirical body*. Chapter 2 has described the historical emergence of these distinct epistemologies of practice. Chapter 8 has elaborated on the historical differences by articulating specific attentional techniques that support the development of experiential skill that can bridge these epistemological methods through their application within technology design, providing possible approaches to reframing user experience within human computer interaction.

In somatic practice meaning is constructed through self-observation, experience and the interconnectedness of body with mind. Chapter 2 has summarized four principle values that ground attitudes, practices and knowledge within somatics. These values are summarized as the values of self, attention, experience, and interconnectedness. Each of these values creates an intentional, ethical and aesthetic stance that constructs meaning and frames knowledge production.

Somatic connoisseurship focuses on experience as material, and on using attention as an operator to transform that experience. Chapter 8 summarized a variety of ways that one can focus attention in experiential activities. Attentional skill requires discernment and agency. Discernment is the ability to recognize the subtle qualities of experience, and agency is the ability to choose to move toward one or another quality within an experiential stream. Christopher Alexander uses the example of the practice of mindfulness to describe this process:

...the Buddhist student is taught to recognize, feel, and experience the precise inner state which he or she is in at each instant. The key to this method, as practiced by Buddhists, is to recognize the inner states that are wholesome, and then to move toward those phenomena in the inner and outer world which cause or tend to create this state of wholesomeness in the observer and in which wholesomeness is

considered to be the most important and the most fundamental internal condition.²³

The proposition is that shifting attention to our own body-state is a step towards increasing our bodily awareness, thereby gaining insight into perceptual habits, personal knowledge and somatic sensibilities.

Acknowledging the realm of embodied habits, which the process of becoming aware is to reveal²⁴

By engendering a role for cultivating self-awareness within interaction, our digital technologies can support the development of an *attentional skill-set* for experience. Viewing experience as a skill that can be evolved, is an epistemological framing that is central to somatics practice.

This research contributes to HCI by reframing user experience through an articulation of the epistemological nature of body-based somatic practice. By engendering a role for cultivating self-awareness within interaction, our digital technologies can support the development of an attentional skill-set for experience. Viewing experience as a skill that can be evolved, is an epistemological framing that is central to somatics practice.

9.4 Future Work

As science and technology continues to discover, invent and mediate living systems that will alter our lives on the planet, human computer interaction can play an active role in increasing the legitimacy of a non-alienated view of technology through its ability to critically respond *through* the imagination and design of future technologies. The democratization of technology has increased technological mediation of experience in work, home, play and mobile social and ubiquitous networks. Our futures include organic technologies that can be grown both inside and outside our bodies, and

²³ Alexander, C. (2002), op. cit, p. 368.

²⁴ Depraz, N., Varela, F.J., & Vermersch, P. (2003), op. cit., p. 3.

networks that use 'self-awareness' strategies to intelligently reconfigure themselves in response to adverse conditions including error recovery based on 'self-healing', where devices can detect lost connectivity, locating another active route, and supporting the network goal of inter-connectedness. Since the birth of the ENIAC²⁵, technological language and metaphors have been appropriated to describe our bodies and minds, embracing our cognitive and computational selves, while leaving out our intuitive, subtle-sensing and subjective selves. Yet, as our human history begins to bridge its own epistemologies of practice, integrating 'Technologies of the Self' more actively within design processes, language that describes computer network processes are also beginning to appropriate somatic awareness metaphors, describing intelligent autonomous behaviour within a network as mirroring the intelligence of self-awareness. There is no doubt that HCI is extending its collaborators, knowledge and its methods. Like the multiple disciplines that partner within HCI research, somatic facilitation can play a role in the technological design process that is a central theme and outcome of HCI research.

How can we begin to conceptualize and prototype our applications of tomorrow? Our ability to design our futures requires some hand-holding: bringing closer connection to the communication between art, science, and research in the technology industry. This hand-holding can be uncomfortable at first, with a requisite period of sweaty palms, uncomfortable silences, and social faux pas. But hand-holding can also invite affection, curiosity, and vulnerable data: which, if respected, can result in knowledge sharing and building.

This research domain extends embodied cognition, expanded perception, adaptive environments, and interactive systems. It considers these differing aspects as layers of architectures that embrace and include the body and its own data, affectionate computing, sensual interfaces, models for intention, smart materials, textiles, shape-shifting forms, and spaces that can move and transform.²⁶

²⁵ Electronic Numerical Integrator and Computer (ENIAC) was the first general purpose electronic computer. ENIAC was designed to calculate artillery firing tables for the U.S. Army's Ballistic Research Laboratory, but its first use was in calculations for the hydrogen bomb. See Goldstine, H.H. (1972). *The Computer: from Pascal to von Neumann*. Princeton, New Jersey: Princeton University Press.

²⁶ Schiphorst, T. (2006a). Affectionate computing: can we fall in love with a machine?, *IEEE Multimedia*, 13(1), January–March 2006, 20-23.

The proposition that somatic facilitation can be a resource within a technological design process has been the central argument of this thesis. How can technological design support self-awareness in the context of the personal, social and global communities of practice? Although the focus on processes of somatic connoisseurship has been artist-led practice, somatic facilitation has future potential within HCI whenever there is a need to design for a *relationship to the self within the user experience*. This could have application in systems that rely on contextual awareness such as CSCW and wearable and mobile technology systems, reminder systems, computer gaming, immersion, research in technological design for health and well-being as well as 'design for the self'. New applications of organic materials, medical technologies, and bio-medical processes require ethical practices that enable the mediation of subjectivity. In the social sector, appreciative inquiry for social change, and experiential research that employs first and second-person values such as empathy, trust and forgiveness require subjective evaluation within design processes.

The need for expanding tools, techniques and resources that can support design for experience within technology continues to increase. Human computer interaction has acknowledged the need to develop and expand methods of exploring experience. Depraz, Varela and Vermersch acknowledge the lack of precedence in integrating somatic awareness techniques within interdisciplinary practices. Because there is little interdisciplinary precedence in articulating these techniques to a wider audience, the research is still exploratory and its' ultimate acceptance not known:

Because of this lack of precedence ... we have no clearly defined audience. Our hunch is that we are addressing ourselves primarily to those people *within...* the domains [of cognitive neuroscience, philosophy, psychology, the many professions dealing with human transformation such as education, remedial therapies, knowledge management] who have become sensitive to the need for further work on the method of exploring experience.²⁷

²⁷ Ibid, p.4.

This unknown future points to the *potential experience* that can be articulated through the skills of somatic connoisseurship. This thesis has articulated ways in which human computer interaction can incorporate new “methods of exploring experience”. The research presented here can also be of interest to researchers that apply body-based somatic awareness practices to interdisciplinary methods in the sciences, social sciences and humanities: those interested in a radical interdisciplinary dialogue that includes somatic awareness practices.

9.4 Coda

This Chapter has drawn together theory and practice, revisiting the theoretical framework presented at the beginning of this thesis, and crossing back on itself with greater knowledge and appreciation for the wealth and richness that exist in the technical practices of human computer interaction, and the depth and rigour that exist in the technical practices of somatics and performance. This theory and practice has been grounded in a discourse of radical interdisciplinary collaboration, in which we have questioned and reoriented our “methodologies, objects of study, and the composition of the research community for experiential systems”²⁸.

We exist in an expanding circle of practice, from creation and ideation to constructing, interpreting and reframing. I have articulated an argument for bridging embodied methodologies from somatics and performance to human computer interaction, by reframing epistemologies of practice between these disciplines, illustrating the intersections, alliances, histories and influences that have existed between them even before either was named into existence. The inclusion of self-evidence and the non-alienated view of technology design supports experiential technology design in which the *self*, embodied within the multiple roles of researcher, designer, artist, and

²⁸ Davis, M. (2003), *op. cit.*, p. 51.

participant or user, is included in the methodological structure of design for technology, both as design goal and as design process.

I have acknowledged the pragmatic and critical reflection within HCI, in its ever evolving integration of new knowledge, techniques and approaches to “understanding the human in human computer interaction,”²⁹ positioning it as a partner within the shifting landscape of embodied cognition that is engaging the sciences, humanities and the arts. I have surveyed approaches to embodiment from within the sciences and from within the practices of body-based disciplines finding strands and threads of continuity, similarity and resonance. I have adopted an approach of ‘blending’ differences in values and assumptions, leaving openings for critical reflection, comparison, and historical perspective. I have introduced the importance of the Technologies of the Self, and the relationship between the personal and the political in our positioning of self-practice and the ‘first’-person in the greater landscape of validity, reason, and subjectivity. I have defined and explored somatic connoisseurship as an instrumental approach to positioning ‘the somatic turn’ within a technological design process, supporting the varied somatic techniques that can offer a *somatic design resource* experience design within HCI, incorporating collaborative creativity through a radical interdisciplinary dialogue.

I have braided a story that maintains and values its differences, but can look up to see that the cloth is shared between many, many threads. I have brought my self to this task, and I have stood back from myself to loosen my own biases and assumptions, aiming to create clarity and objectivity, and yet to remain within the frame. This frame, while encompassing the self, also includes the expanding knowledge and methodologies within HCI. I have illustrated how somatic facilitation can be used to create a space for the experience of *self-awareness* within technology design,

²⁹ Wright, P., Blythe, M., & McCarthy, J. (2006), op. cit., p. 13.

supporting self-cultivation through the development of our *skills of experience* in a non-alienated view of technology.

I have contributed to theory and practice of human computer interaction, recommending the inclusion and embrace of a set of practices of embodiment exemplified in the form of somatic connoisseurship throughout the case studies, supporting the design of embodied interaction and increasing the efficacy of experience. These are framed under the rubric of somatic connoisseurship, as a facilitating role within the radical interdisciplinary dialogue of collaboration within HCI. I support the concept of a continuum of practices incorporating a range of methodologies that can co-operate between one another in the expansion of knowledge and of experience. Collaboration within a radical interdisciplinary framework includes methodological collaboration between first, second and third person methodologies, as it does between researcher, artist, scientist, designer, technologist and participant-users in creative discovery.

Like Valerie Janesick, I have engaged in Stretching Exercises for the Qualitative Researcher,

In qualitative work, the fact that the researcher is the research instrument requires that the sense be fine-tuned. Hence, the idea of practice, on a daily basis, sharpens the instrument. Many individuals can look at something and not see what is there.... The qualitative researcher must understand the functions and *feel* of observations, interviews, writing and so on, before the final written report of the study is created.³⁰

Earlier, I invited the reader to explore the *experience* of research through the reading of this text imagining that the art of practice in uncertainty and uniqueness can develop the *researcher as an instrument* through the disciplined inquiry of the research itself. Schechner has also invited a radical interdisciplinary dialogue when he says:

³⁰ Janesick, V.J. (2004), op. cit., p. 3.

Cultures are most fully expressed in and made conscious of themselves in their performances... We will know one another better by entering one another's performances and learning their grammars and vocabularies.

If we consider the differing cultures of human computer interaction and the body-based practices of somatics and performance, imagining our research as a kind of performance, then the growing shared grammars and vocabularies described by Schechner become our epistemologies of practice.

One of the promises of the 'somatic turn' within technology design, and the corresponding ubiquity and 'disappearing' visual presence of the computer is that by its very disappearance, we are left with ourselves in our world. Herein lies the opportunity to perceive our selves more clearly in connection to our own felt-life. Perhaps this trend can make visible connections and interactions with ourselves that we were not able to perceive when the physical technology was 'in the way' obscuring our lines of sight and insight. In the opening quotation of this chapter, William James claimed that, "every kind of thing experienced must somewhere be real."³¹ We have the pragmatic opportunity to *create new realities* through our engagement with experience. Bonnie Bainbridge Cohen states:

When someone says, "I don't know what I'm feeling", then I say, "Wonderful, because if you are interested in what you do not know, you have a whole wealth of *experience* ahead of you... Sometimes people think that my knowledge was a given for me. It wasn't. It was something I wanted."³²

As Cohen suggests, what we do not yet understand, can become *experience*. It is not simply a matter of 'knowledge'. It is also a matter of choice.

³¹ James, W. (2003), op. cit., p. 83.

³² Cohen, B.B. (1993), op. cit., p. 1.

