

THE CONNECTIVE TISSUE OF PHYSICAL COMPUTING

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Abstract

This paper investigates the role of performativity, intersubjectivity and empathy in relational, participatory or computational art. Through the creation of sensorial, kinesthetic and immersive interfaces for the public to “perform” the work, participants can expand their somatic experiences to include looking, moving, touching, listening and other forms of sensing. They can enter into a sensuous continuum with the artwork, oscillating between the representation of another’s experience and reflection on their own, so as to reconstitute new subjectivities.

Keywords: interactive, empathy, performance, somatic, touch, intersubjectivity, physical computing, sensorial, trauma, relational.

Shock trauma is that event that intervenes in our whole life narrative, erasing memory and preventing the forward movement that is immanent in our life history. Without a coherent life narrative, we are immobilized at the moment of its incision into our lives. In order to move beyond its facticity and fixity, to incorporate it into our life narrative, we need to enact it into new narrative forms that allow for re-inscription of the traumatic event into other psychic, social or personal narratives. Rewriting the narrative allows for one’s movement through the event [1].

Somatic therapies such as EMDR, (Eye Movement Desensitization and Reprocessing), a therapeutic technique that seeks to fill gaps in the narrative language and retelling, strive to heal trauma. Through a series of sessions, the traumatic event is retold and pieced together to desensitize the person and decrease symptoms of stress. Through the telling and retelling, which is accompanied by somatic stimulation (such as tactile tapping or creating back and forth eye movement), the brain reprograms ruptured experience. The goal is to locate the traumatic moment as one of many experiences situated in a whole life narrative. The severance of one’s life is then integrated into, or united with, one’s life timeline [2].

Somatic techniques of reconstructing the archive of experience informs in part how I employ experimental narrative and participation in art works and videos that address traumatic events. As an artist, I am concerned with reworking the narrative of trauma through choreography of movement, staged performances and

restructuring of recorded interviews. Disturbing the archive, originally provided by the collaborator through interviews or writing, can translate a new understanding of the traumatic experience to the public and give voice and agency to the collaborators in the projects. I

acknowledge that translating the experience of others should always be critically evaluated at every stage of a project. The evaluation process is part of the collaboration. Each project commences with discussions between participants and artists to determine guidelines by which stories are shared and represented and timelines for periodic review and revision. Participants determine what can and cannot be shared, and provide expertise in their areas as to which representations are appropriate and sensitive, especially when the possibility of re-traumatization is present.

This paper investigates the role of performativity, intersubjectivity and empathy in relational, participatory or computational art, focusing primarily on three prototypes I constructed in collaboration with designers and a United States Army veteran using physical computing. Physical computing refers to artworks and interfaces that translate the analogue world into digital processes in responsive ways through sensors. Through the creation of sensorial, kinesthetic and immersive interfaces for the public to “perform” the work, participants can expand their somatic and art experiences to include looking, moving, touching, listening and other forms of sensing. They enter into a sensuous continuum with the artwork, oscillating between the representation of another’s experience and reflection on their own, so as to reconstitute new subjectivities. Psychologist Robert Stolorow describes the intersubjective exchange as the “experience of being understood that supplies its

mutative power” and that does not separate “cognition and affect, thinking and feeling, and interpreting and relating.” Within this relational system of the intersubjective exchange, we can expand our capacity for self/world awareness [3].

Affect and Embodiment

We spend a lifetime in our own bodies. We know that our limbs belong to us. Or do we?

In 2008- 2009, I completed a collaborative media installation work entitled, “United and Severed”. Based on interviews with three women living with traumatic bodily injuries, the work investigated their somatic experiences and called upon the viewer to reconsider their own. One goal of the work was to create an understanding of “othered” experience at the level of the body.

One of the women who collaborated in the project was paralyzed from the neck down. Counter to the notion that there was no feeling in her body below the neck, she described her bodily sensations differently. When explaining how the paralyzed parts of her body felt she said, “My hand cannot feel my face” and “I am like Mario; I can feel the need to jump and leap, but the cord is cut to the controller” [4].

Many of the statements the women shared point to the following concepts: that the phenomenological body is a site of identity and subjectivity, that sensing is an important determinant in our self/world affective and empathic practices, and that sensing can take many forms.

Studies based on visual and somasensory stimulus, such as watching another body being touched as one’s own body is simultaneously touched, have shown that we can fairly quickly take ownership of the other body that is not ours [5]. Participants in a study were so able to manifest

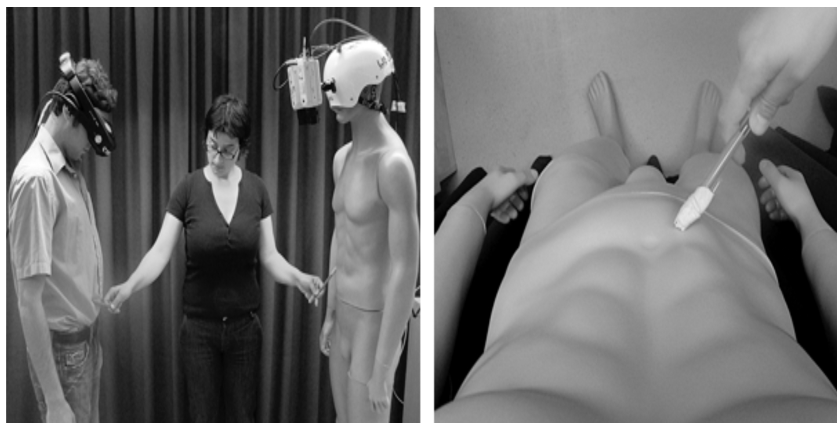


Fig. 1. Petkova VI, Ehrsson HH (2008) If I Were You: Perceptual Illusion of Body Swapping. *PLoS ONE* 3(12): e3832. doi:10.1371/journal.pone.0003832

themselves in another body that when the other body was threatened with a knife, they felt the threat as much if not more than a threat to their own actual body. This was measured through Skin Conductive Responses or sweating, a somatic fear/flight response. This was especially effective if they experienced this from the first person perspective, such as in a virtual reality configuration where they could “own” another body part, such as an arm, that was not actually theirs (Fig. 1).

The study identifies two important factors, amongst others; one is that emotions or affect are deeply conjoined with the body, and the other is that empathy derives from a multisensory experience that includes the perception of temporal and spatial signals that situate our body in direct relationship to another. In other words, we have an intensified intersubjective experience that is based on multisensory modes.

Relational Art

Relational art can provide a home for the narrator/collaborator’s painful emotional states and can unfreeze the severe emotional and somatic symptoms through creating an intersubjective context. Through dialogic practice, artists and collaborators “catalyze understanding, mediate exchange and sustain an ongoing process of empathic identification and critical analysis” [6].

Of the many examples of relational art both within the new and traditional media art worlds, *Home Visit* (2000) by Pepòn Osorio, exemplifies what I consider the three most important aspects of art framed to heal trauma: dialogue, materialization and narrative reworking. For *Home Visit*, which was based on a family’s experience of loosing everything in a home fire, he sat with the family in dialogue about their experience of loss, grief and displacement. They recreated a model of their home as a result of this dialogue, and then took the house to other homes to retell their story. In the process of telling and retelling in a relational environment, the family was able to heal their trauma of loss.

Technophenomenology and Intersubjectivity

Artworks that are placed in the temporal and spatial world of the audience afford the immersion of looking, listening, and moving through them. They create an “intertwining of the senses” (to borrow a phrase from Merleau-Ponty) [7], and call

the public to an awareness of their own embodiment, and by extension, the body of the other. In representing the traumatic experience through physical computing, artists can constitute a relational home, where stories of trauma, and their pain, can be held and narratively reworked. Performing the artwork through appropriate kinesthetic explorations gives the audience the reflexive experience of sensing oneself at close proximity to and within the artwork. This can move the audience through symbolic understanding to an integrated somatic/affective response and ultimately, empathy [8].

The constitutive power of these computational or relational artworks creates an appreciative attunement that brings the audience closer to the story. Feminist art historian Amelia Jones coined the term “technophenomenology” to characterise the ways that performing subjects

(collaborators and audiences alike) are politicized and socialized in their embodied relationship through technology to self/other and self/world. She stresses that embodied experience is generative, rather than representative, in its performativity. As techno-subjects performing within computational, interactive artworks, our subject/object orientations can be reversed, altered and reconstituted [9].

Called Out

The following are collaboratively created prototypical artworks that utilize sensing by touch or movement that I developed in 2008 – 2011, some through a residency at Banff New Media Institute.

“Called Out” is a series of interactive, touch sensitive artworks that asks the public to embody the solitary experience of writing and reading through touching and listening. The text, sound and sur-

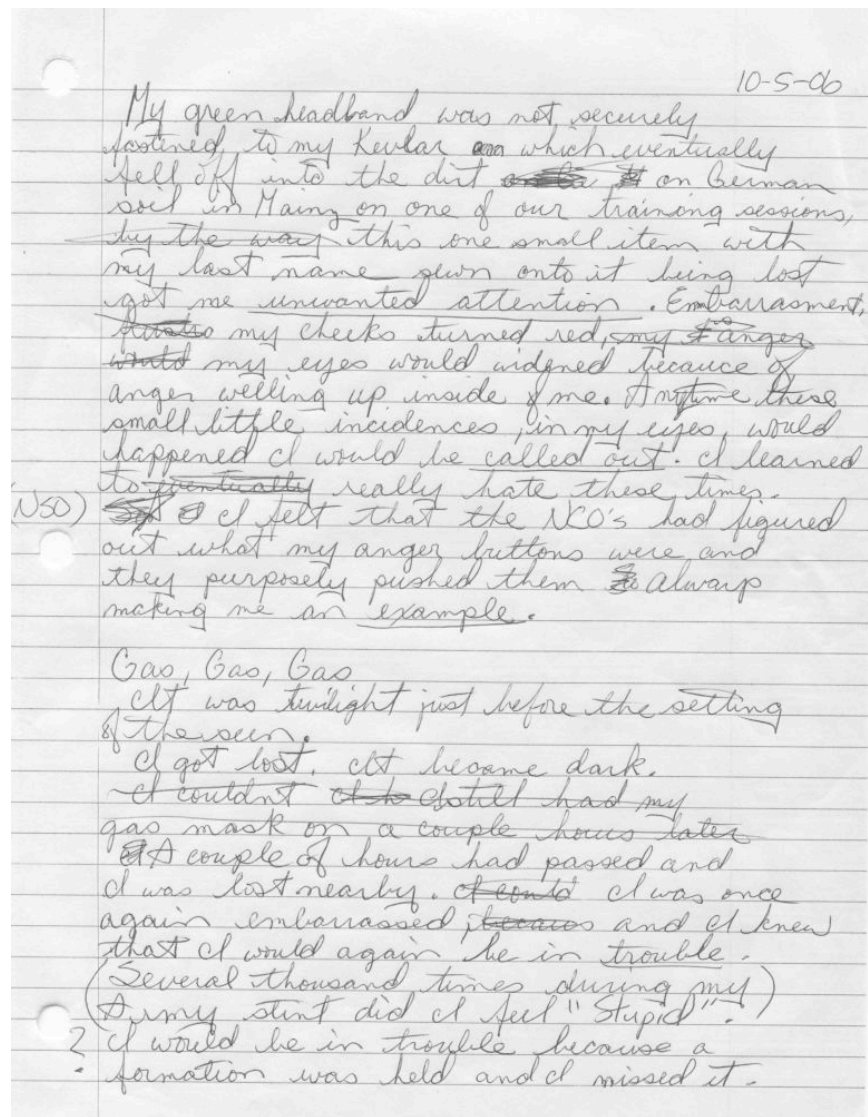


Fig. 2. Journal page written by Private Kristine Wise.

faces are based on the hand-written journal entries and creative writing of a United States Army Veteran, Private Kristine Wise. Private Wise, like many returning soldiers, suffers from Post Traumatic Stress Disorder (PTSD), a neurological dysfunction that is caused by sudden traumatic events that disrupt personal life narratives. Her experience as a female veteran subject to sexual harassment and abuse amplifies her trauma (Fig. 2).

“Called Out” incorporates small gestures and close listening with the intent of creating a sensuous connection between the material, the writer, the reader and the listener. The project seeks to translate her writing into a kinesthetic and affectively resonant experience for the public, situating their direct connection with the script. In her writing, Private Wise expresses fear, discomfort, anger, erasure and embarrassment at the condition of being subjected to a patriarchal military structure and being “called out” or hazed. Her diary is a creative and contemplative act, a communication tool between her experience and the

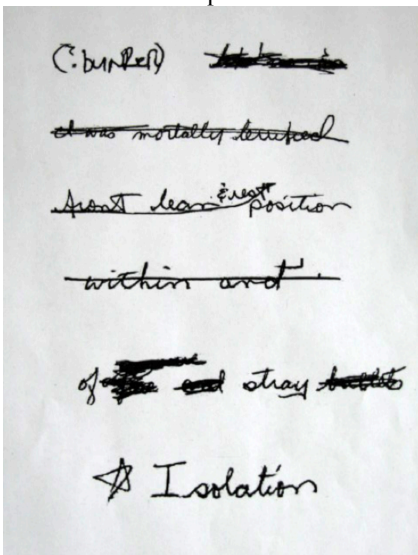


Fig. 3. Selections from Private Kristine Wise’s journal pages.

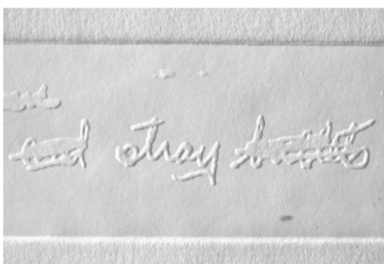


Fig. 4. “Called Out”, 2009, Diekman, embossed paper surfaces. (© Kristine Diekman).

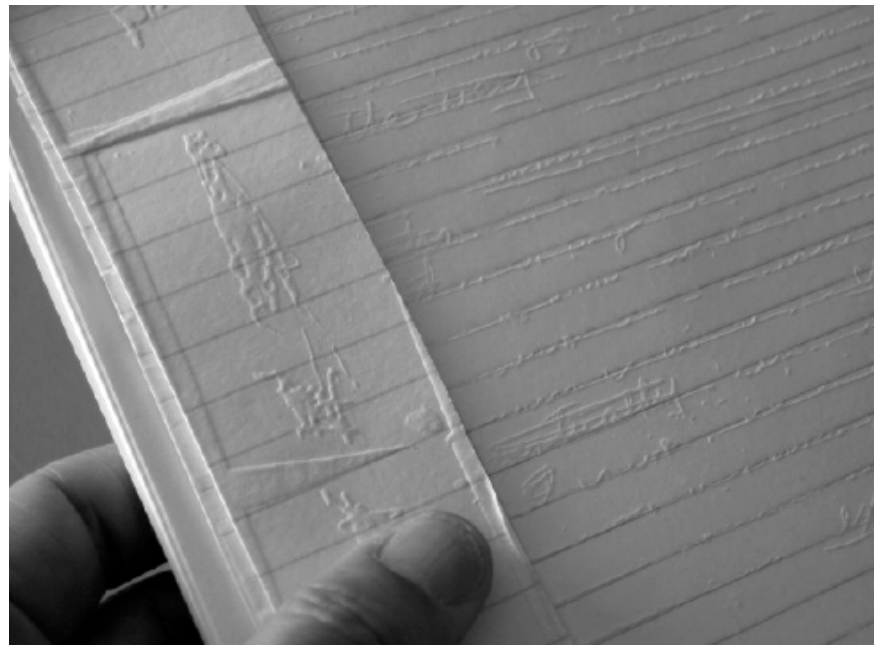


Fig. 5. “Periphery”, Kristine Diekman, embossed paper surfaces, sensors, audio. (© Kristine Diekman).

world. Through her writing, she records thoughts and emotions at the moment of inscription, working and reworking her subject formation, pre and post trauma.

The resulting artwork focuses on fragments of heavily crossed out words and phrases from her journals (Fig. 3). Selecting these inscriptions draws attention to the dual nature of the journals; the organization of private experience and the desire for public communication. The obliteration is the speech act, at once hiding and manifesting the content. Self-censure, non-disclosure, shame, and aggression are physically embodied in the obliterated words. The complexity and integrity of her writing can be accessed, however, in the aural experience of the work. While enunciation is an important assertive act that should be recognized and valued as empowering for artist and collaborator, listening itself is a creative practice for the audience.

I transcribed Private Wise’s writing as a trace of her thoughts, feelings and experiences into raised, touch-sensitive surfaces, that when touched, allow us to hear her writing. Like a line of scars, they invite and repel touch. In this way, I hope that “Called Out”, as interactive artworks, collapse the distance between the experience of the veteran and the civilian, while maintaining the specificity of her story (Fig. 4).

Periphery

In the series “Called Out”, *Periphery*, a sheaf of inaccessible papers, can be

picked up and held. At the center of *Periphery* are narratives expressing shame, anger and isolation at being “called out” or made an example of. They include seemingly small infractions, consequent punishments such as the “the front, lean, and rest position”, and finally demotion.

The quality of touch determines how and what we hear. When squeezed tightly, the narrative at the center is interrupted by descriptions of physical states of PTSD. Like the emphatic scars of crossed out words embossed around the edges, the symptoms of PTSD surround and interrupt the process of storytelling. We quiet the trauma through releasing pressure, providing a space for telling and listening (Fig. 5).

Tent City

Private Wise drew a map of the barracks where she was stationed in Iraq. *Tent City* is both a spatial map, including the clothesline, the showers, the rocks and sand, and a psychological map of traumatic experience, where she learned of her grandfather’s death, where she was counseled for suicide prevention, where she experienced sexual abuse (Fig. 6).

When we first encounter the interface, her audio narrative is overwhelmed by the cacophony of the crowded, noisy space of the barracks, mostly the sound of generators. As we place our hand gently on the map, we quiet the noise. Slowly the liminal space of Camp Dogwood, where she was living, is drawn. The

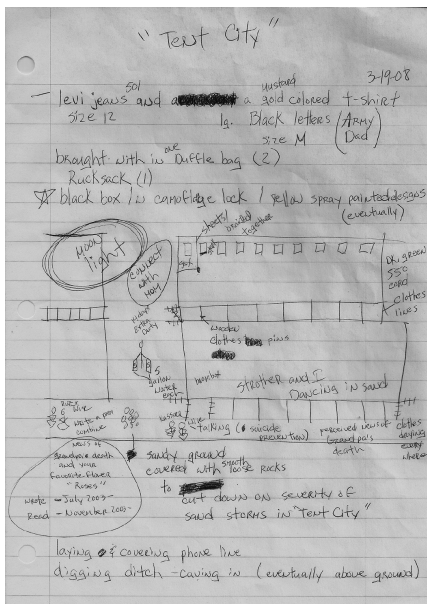


Fig. 6. Page from Private Kristine Wise's journals mapping her barracks

sound returned is not informational, but consists of emotional fragments.

Because *Tent City* looks like it should be activated through pushing on or poking at specific markers on the map, the audience/participant is sometimes confounded by the lack of specific feedback expected of interactive interfaces. This initial response foregrounds the important role of interactive interfaces as opportunities to build skills, in this case, of listening and touching. The touch required for this piece is one of condolence, a simple and thoughtful pressure of laying one's hand on the shoulder or arm of the sufferer. Seeking and giving touch of this type can create a bonding effect, and can be instrumental in such affect responses as integrity, honesty, helpfulness, recognition and empathy (Fig. 7).

Although neither of these works include "being touched back" in the sense of pure haptic feedback, as there is no touch back in the strictest sense, they still access our body's holdings. Being called to specific touch and movement, we empathically invest in the experience of the other. We come to know what matters through mattering itself [10].

Line of Duty

Line of Duty, also based on Private Wise' military experience, explores contractual mimicry, and investigates the ways in which we are co-created by and contingent upon one another. When we enter the installation, we see the projected figure of a female soldier standing at attention. In her world there is a foot-

locker that is mirrored on the floor in the physical space. Next to it is a straight backed chair. As we approach the soldier, we see her reach for her flak jacket in the footlocker, and repeat gestures of putting it on, calling us to do the same.

By putting on her jacket, we enter into her world, and are further called to stand at attention until she sinks against the wall in a sitting position. This position, the "sit-out", is a painful hazing or disciplinary position that Private Wise endured. In front of us is the chair, and when we sit to mirror her, we are in the same position as the soldier, but physically comfortable where as the soldier struggles to maintain the painful wall-sit. Our sitting down causes the video to proceed forward. As we shift on the chair, we learn that our position controls the narrative flow of her struggle. Leaning back creates a continuity of narrative flow, while leaning forward slows and disrupts it. Yet leaning back drives the virtual figure further along the path of suffering, while we relax. Even so, her image at times jumps forward and backward in micro jolts that accentuate and materialize the discontinuity of her traumatic experience. We are in a mimetic relationship with the figure, sometimes controlling the figure and sometimes being controlled by it (Fig. 8).

The conditions of watching and moving are enmeshed in *Line of Duty*. We experience something like an embodied spectatorship. We watch, we move, yet are unable to physically feel her struggle. People describe being discomfited by what they see, coupled with a sense of

vulnerability as performers in the space. After experiencing the installation, some people try out what they witnessed, and gain more intimate understanding of her struggle through their own physical experiments with the "sit-out".

Conclusion

In "Touch: Sensuous Theory and Multi-sensory Media", Laura Marks describes her own approach to writing about media as "haptic criticism," which is mimetic: "It presses up to the object and takes its shape. Mimesis is a form of representation based on getting close enough to the other thing to become it. Again, the point is not to utterly replace symbolization... Rather it is to maintain a robust flow between sensuous closeness and symbolic distance." She suggests that we need to "warm up" our cultural tendency to keep at a distance while maintaining the material specificity of the body represented [11].

Artworks that foreground the material and tangible existence of space and time can create what Marks calls "empathic non-understanding", which allows for the recognition of difference while maintaining a material understanding in our connection to others and their stories. Although I argue for the intersubjective connection that physical computing can create between the artwork, audience and narrative, difference or distance or inter-objectivity, as Amelia Jones suggests, is equally important. Connective tissue works to hold things together in cohesion and to be kept apart through boundaries. The "flesh" operates, either theoretically

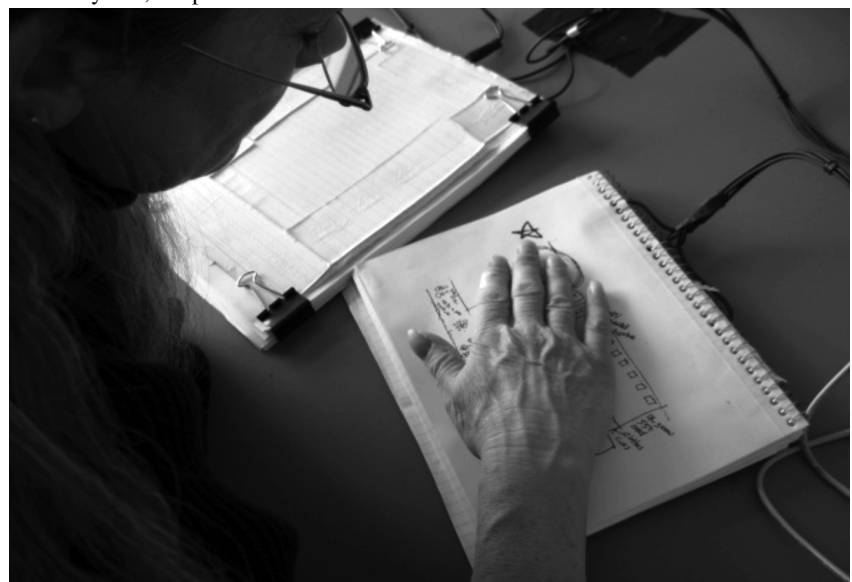


Fig. 7. "Tent City", 2009, Kristine Diekman, paper, audio, sensors. The interface encourages the touch of condolence and close listening. (© Kristine Diekman).

or practically, in both ways, as membrane and boundary. We rework and reclaim the space and relation between our body and the world, self and other, through these artistic practices.

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8. In an adjacent gallery to our exhibition, *United & Severed: What Happens in that Window of Time*, we created a space for reading, writing and discussing. We determined this to be especially important as the artwork required wearing wireless headphones to navigate the installation space; effectively isolating the public from each other while in the installation space. After leaving the installation, the public wrote about their experience within the art work as one in which they became more sensitive to the subject of disability, more aware of their own kinesthetic experience of the world and more able to understand the experiences of their own bodies and the bodies of others.
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Fig. 8. "Line of Duty", 2011, Kristine Diekman, video objects and sensors. "Line of Duty" utilizes light, motion and proximity sensors, RFID tags, military clothing and gear, and audience performance to create an interactive system. (© Kristine Diekman).