

UNIVERSITY OF CALIFORNIA

SANTA CRUZ

ELSEWHERE

A thesis paper submitted in partial satisfaction
of the requirements for the degree of

Masters of Fine Arts

in

Digital Arts and New Media

by

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June 2010

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ABSTRACT

Elsewhere is a modular installation sited around an interactive life-sized toy rocking boat. The boat is an assemblage of materials selected for their poetic and historic relationship to home and communication technology. This includes domestic fixtures, common furnishing materials, cardboard, textiles, text, and letterpress type. Participants are invited to interact with the boat by manually rocking it. The movement produces laughter through a motion sensitive audio system. “Elsewhere,” borrowed from the writing of Donna J. Haraway, designates a possible geography for collaborative work in the worthwhile, though never entirely knowable, aspiration toward a better world. Here, *Elsewhere* is proposed as a physical and conceptual vehicle for thinking through and tangibly engaging with collective understanding, mutual connection, and imaginable community.

DEDICATION

For
Tobias Star
and
everyone else
who laughed along.

ACKNOWLEDGEMENTS

Possibility arrives as the consequence of opening to our relationships. *Elsewhere* is evidence of the support and inspiration of many people, including: Angelita de Leon, the de Leon family, Eric Talbert and Jamie Jones, Kayla and Amber Rose, Wolfgang Hagar and Tobias Star, Roxie Longstocking; Chip Lord, Soraya Murray, Caetlin Benson-Allott, Jennifer Parker, Barney Haynes, Bruce Kirk, Elliot Anderson, Sharon Daniel, Warren Sack, Felicia Rice, Cris Imai, Lyle Troxell, Ralph Abraham, Karen Barad and Donna Haraway; Miki Foster, Laila Shereen Sakr, Lindsay Kelley, Nicole Archer, Nik Hanselmann, Nick Lally, Karl Baumann, Kyle McKinley, Christine Wong Yap and Dr. Anna Buchsbaum; The Porter College Graduate Arts Research Committee and the Florence French Fund. Ahoy! All my thanks for making this project possible and for all your encouragement to marry so freely joy, work, theory and making.

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1- OPENING WORDS

elsewhere *adverb*: SOMEWHERE ELSE, in/at/to another place, in/at/to a different place, hence; not here, not present, absent, away, abroad, out. ANTONYM here.¹

elsewhere O.E. *elles hwær* (see **else** + **where**). It survived, but *elsewhen* (early 15c.), *elsewhat* (O.E.), *elsewho* (1540s) did not.²

else O.E. *elles* "other, otherwise, different," from P.Gmc. **aljaz* (cf. Goth. *aljīs* "other," O.H.G. *eli-lenti*, O.E. *el-lende*, both meaning "in a foreign land;" see also **Alsace**), an adverbial genitive of the neut. of PIE base **al-* "beyond" (cf. Gk. *allos* "other," L. *alius*; see **alias**). Synonym of **other**, the nuances of usage are often arbitrary.³

Elsewhere "survived" to position and point, to place, in/at/to. It is neither the familiar here nor there, but else—other, otherwise, beyond; situated at another time, in another way. And although, elsewhere might strike us as strange, being rather non-descript, and indeterminate, it is for these same reasons that elsewhere beckons and calls. Elsewhere does not exceed the proximity of our possibilities. It is their just-out-of-sight-but-not-out-of-reach edge. Elsewhere entices us to stretch our senses and our sensibilities.

¹ *Concise Oxford American Dictionary*, (USA: Oxford University Press, 2006).

² Online Etymological Dictionary, "elsewhere," ed. Douglas Harper, <http://etymonline.com> (accessed May 28, 2010).

³ Online Etymological Dictionary, "else," ed. Douglas Harper, <http://etymonline.com> (accessed May 28, 2010).

Elsewhere does not invite so loudly, perhaps, those who would remain passively content with an only here, only now, mono-vocal dictation of subjects, objects, and how to proceed. But for those among us who honestly and willingly account for power; who take our place and bear our partial witness to the tumult of history (pain and pleasures alike); for those who prepare, risk, and enact, not only expect, a more mature humanity; who play, attempt, entangle, and thrive on imagination—Elsewhere is a calling. Elsewhere is a response.

We make our way toward elsewhere together. Elsewhere is co-poetic, material, discursive, process. Elsewhere is a historical phenomenon, a speculative fiction, a geography, and a collaborative media study. It brings together. It says. It stays—other, beyond, abroad. It looks and comes and goes. The toy boat is essay, object, embodiment, idea. *Elsewhere* cups and tips and turns and touches. *Elsewhere* is an arrival, a journey forth, a laugh, a leave, and a wake. *Elsewhere* suggests. She carries and carries away.

2- INTRODUCTION

There can be an elsewhere, not as utopian fantasy or relativist escape, but an elsewhere born out of hard (and sometimes joyful) work of getting on together in a kin group that includes cyborgs and goddesses working for earthly survival.

-Donna J. Haraway⁴

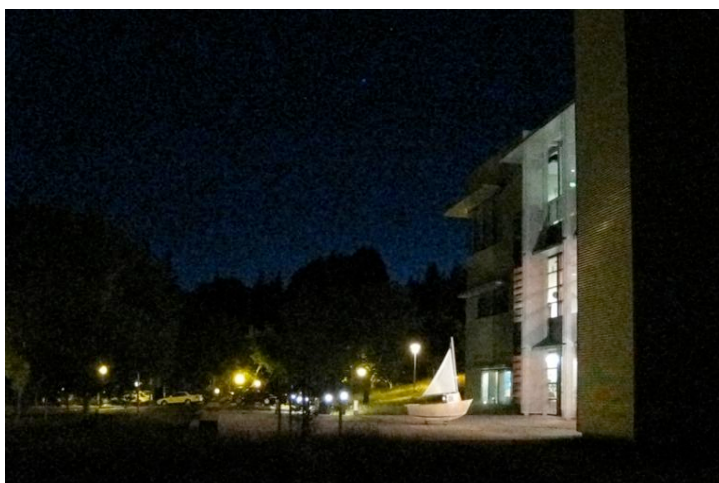


Figure 1 *Elsewhere* outside UC Santa Cruz's Digital Arts Research Center, April 2010.

**Where is elsewhere?
How do 'we' get there?**

Elsewhere is a modular installation situated in and around a laughing and life-sized toy sailboat. Participants are implicated into playful re-imaginings of location,

connection, and collaboration. Within the context of a digital and new media art practice, *Elsewhere* offers a critical position from which to think through and engage with the entanglements of materials and discourse that mediate and substantiate an

⁴ Donna J. Haraway, "Introduction: A Kinship of Feminist Figurations," in *The Haraway Reader*, (New York: Routledge Press, 2004), 3.

imaginable community.⁵ This performative position, inspired by the work of Donna J. Haraway and Karen Barad in the field of feminist science studies, enacts some vital re-conceptualizations concerning the “nature” of the material world, discourse, knowledge and embodiment.⁶

Starting with her unintentionally canonical “Cyborg Manifesto,” Haraway’s writing figures significantly in the formulation of my practice in the field of digital art and new media.⁷ Haraway’s work describes a motley gathering of hybrid creatures, the renowned cyborg among them, whose particular idiosyncrasies figure together a joyfully feminist articulation of the always-already conjoining of the natural, cultural, and the technical. The liminal position of Haraway’s critters encourages me to

⁵ By “imaginable community,” I am extrapolating upon the pivotal work of Benedict Anderson. While Anderson connects the emergence of nationalism and the nation as an imagined community to the development of print technology and distribution of print materials under capitalism, I am extending the notion as a way to consider the possible imagination of community through the sharing of any material media in order to suggest that media is what makes a community imaginable and, in addition, the particularities of that imagination are enabled, shaped quite literally, by the specific inherent qualities of the materials and our understanding of them.

⁶ While performativity will be discussed at length further, for the immediately curious, I’d like to make clear that my use of the term here draws specifically upon Karen Barad’s development of the term in her work, *Meeting the Universe Halfway*. Barad’s concept begins with J. L. Austen’s linguistic performative wherein speech acts perform or make happen the very things they say (As in a marriage ceremony when one says “I do,” the act of saying is what performs the act of becoming married.) Barad then substantially elaborates upon Judith Butler’s re-application of the term with respect to human gender performance by extending the notion of performativity beyond the human to the material world at large.

⁷ Haraway writes, “A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction. The international women’s movements have constructed ‘women’s experience’, as well as uncovered or discovered this crucial collective object. This experience is a fiction and fact of the most crucial, political kind. Liberation rests on the construction of the consciousness, the imaginative apprehension, of oppression, and so of possibility. The cyborg is a matter of fiction and lived experience that changes what counts as women’s experience in the late twentieth century. This is a struggle over life and death, but the boundary between science fiction and social reality is an optical illusion” (Haraway 1991, 150).

disrupt curiously and play productively with the constitution of the boundaries between the technical and the human, the material and the discursive, the scientific and the social. *Elsewhere* is intended to forefront the lively and inextricable relationships between what we say (discourse) and how we say it (materials) as the condition for the possibility of a community we call 'us.' *Elsewhere* asks, what are the conditions that make a coherent, sensible 'we' imaginable, sustainable, and therefore possible? In "The Actors are Cyborg, Nature is Coyote, and the Geography is Elsewhere," Haraway writes:

I think 'we'—that crucial riven construction of politics—need something called humanity and nature. This is the kind of thing Gayatri Spivak calls 'that which we cannot not want.'... 'We,' in these discursive worlds, have routes to connection other than through the radical dismembering and dis-placing of our names and our bodies. We have no choice but to move through a harrowed and harrowing artifactualism to elsewhere.⁸

"Elsewhere" is, specifically in Haraway's terms, a way of naming and thereby reckoning the sharing of certain geopolitical desires through a reformulation of the contingencies of our relationships. Elsewhere inspires the practice of re-membering and re-placing the connections between names and bodies, matter and discourse, in the service of elsewhere's more earthly possibilities. Refigured in this instance as a life-sized toy rocking boat, *Elsewhere* is a consideration of how this collaborating and multifarious kin group might conspire to find, recognize, and cooperate with one

⁸ Donna J. Haraway, "The Actors are Cyborg, Nature is Coyote, and the Geography is Elsewhere," in *Technoculture*, eds. Constance Penley and Andrew Ross (Minneapolis: University of Minnesota Press, 1991), 25.

another in order to articulate commitments and forge common visions of the possible that could be called and become ‘ours.’

Why a boat?

A life-sized toy sailboat purposefully situated within the context of digital and new media art is certainly as much about the frequently encountered question of ‘Why a boat?’ as it is about the boat itself. The work teasingly disrupts common expectations of digital art in order to call participants’ attention to them. Part of the answer, then, to the question of why, lies in my intention to create a critical art practice that habitually challenges expectations in order to examine the assumptions that produce them. *Elsewhere* is full of questions. As a heavily material presence with minimal reliance upon the electrical, let alone the digital, *Elsewhere* is intentionally puzzling—a little riddle. Why a boat?

The other part of the answer, and perhaps some of the riddle’s solution, is that *Elsewhere* is inspired by the bodily and emotional instabilities forefronted by the liquidity of water’s unpredictable movements and by the occurrence of water, sea, and nautical terminology in language about the digital as it is characteristic of new media and.⁹ The ticklish toy rocking boat is tactically conceived as a poetic vehicle in

⁹ In part, given digital technology’s reliance on the electrical and the electrical’s material and discursive correlation with water and hydraulics as well as the globalizing “world wide” effects produced by the Internet on par with Europe’s sea faring “Age of Discovery,” digital media is frequently subject to language which reflects watery and/or seafaring terminology (e.g.

the service of cyborgs, goddesses, and their kin working seriously, but also humorously, toward elsewhere.¹⁰ As an assemblage of materials informed by a global history of communication technology that furnishes and includes the digital (e.g. wind, wood, bamboo, people, voice, boat, textile, sail, paper, text, type, cardboard, software, microprocessor, integrated circuit, and digital audio), *Elsewhere* playfully sets forth a material condition for a discursive adventure and simultaneously a discursive condition for a material adventure. Both Barad's notion of "agential realism" and Haraway's articulation of "situated knowledges" assert the mutual and inseparable entanglement of matter with discourse. Therefore, in the case of *Elsewhere*, these adventures are one in the same. It is possible, given the particularities of Barad's and Haraway's investment in the relationships between knowledge making with the material world, to offer some useful precedents of 'the nautical' in new media scholarship that illustrate the key concepts of "situated knowledges" and "agential realism" which have guided the theoretical formulation, practical development, and public presentation of *Elsewhere* as a work of art.

current, wave, surfing, anchor, phishing, piracy). Additionally, the perception of paradigm change, like that often attributed to new media, is usefully described with water in the sense that paradigm change is invoked to describe transformations from widely familiar and therefore stable rules to entirely new and hence much less predictable states of affairs.

¹⁰ The use of the term "elsewhere" pervades Haraway's writing. In another instance she says, "I want the readers to find an 'elsewhere' from which to envision a different and less hostile order of relationships among people, animals, technologies, and land ... I also want to set new terms for the traffic between what we have come to know historically as nature and culture" (Haraway 1989, 15).

3- THEORIES

Balancing Acts

As a large life-sized toy, *Elsewhere* avails itself for physical and imaginary play. The boat sets a scene that entails embodied experiences of boarding and balancing, practices of navigation, as well as alternative routes and destinations adventurously opened by the idea of water travel. Positioned in the context of digital and new media art, the concept of the toy and the notion of the boat together invite consideration of the shifting embodiments, understandings, and newly imaginable worlds suggested by contemporary technology. In *Theatricality as Medium*, media theorist and humanities scholar Samuel Weber, explores a similar set of considerations that illustrate the significant performative and epistemological possibilities revealed through a theatrical performance of a boat.

In *Theatricality as Medium*, Weber examines the productive conditions of “the real” through a history of theatricality that begins with Plato’s Cave and culminates with contemporary digital media. In the introduction to his work, Weber suggests that “a stand, having or finding firm ground under one’s feet, has surely constituted one of the oldest concerns of Western modernity.”¹¹¹² He then proceeds with a descriptive

¹¹ Samuel Weber, *Theatricality as Medium*, (New York: Fordham University Press, 2004), 22.

¹² In the footnote to this comment Weber cites Heidegger quoting Hegel writing about Descartes: “With him we enter into a philosophy that is genuinely independent, stands on its own two feet, which knows that it comes from reason, moving on its own two feet and that

comparison of the use of land, sea, and stance in Western mythology with a dramatic example found in traditional Chinese Opera. The primary example Weber offers is from an “Autumn River” scene staged by the Liyuan Theater in Beijing. The scene takes place between a jocular elder boatman and a love struck nun named Chen. Here, Chen has defiantly escaped the convent in pursuit of her lover and must cross the river with the boatman’s help if she is to reach her beloved:¹³

With the boatman’s swaying, water invisibly enters the scene, taking (its) place less “on” than as the stage... [The] boatman urges a hesitant, timorous Chen to take the leap, give up the security of land and entrust herself to the boat, the water, and his skill.¹⁴

In describing the actors’ performance, Weber’s intention is to first describe the performed differences in physical embodiment—the balancing acts—required between standing on land and standing on a riverboat; and, second, to correlate metaphorically the ontological and epistemological differences between them. Land, in this instance, is the fixed, the stable, the well known, and the predictable—qualities,

self-consciousness is an essential moment of the true. Here, we can say we are at home, and like sailors after long wanderings on a stormy sea, we can finally call out, ‘land ahoy!’ (Weber 2004, 370).

¹³ It is worth quoting Weber’s uninterrupted narration of the actors’ performance in order to fully envision the scene and follow the nuances of the actors’ performance: “With the boatman’s swaying, water invisibly enters the scene, taking (its) place less “on” than as the stage. A bantering dialogue follows, in which the boatman urges a hesitant, timorous Chen to take the leap, give up the security of land and entrust herself to the boat, the water, and his skill. He holds the sole prop, the oar, and extends it to her so she can hold on to it and use it to steady herself while timorously trying to climb into the boat. What ensues is a remarkable “ballet” of standing, swaying, and almost falling, in which the relation of land, sea, stability and precariousness, is demonstrated through bodily gestures indicating the fear of losing one’s balance. At the same time, the fear of falling (into the water) compels Chen to seek a different sort of equilibrium, one that no longer looks to terra firma but rather responds to the never entirely predictable rise and fall of the waves” (Weber 2004, 28).

¹⁴ Samuel Weber, *Theatricality as Medium*, (New York: Fordham University Press, 2004), 28.

not just of land as geological material, but sought after in the traditional historical projects of Western knowledge production. For Chen, boarding the boat and exchanging the solidity of the river bank for the uncertain wobbling support of the riverboat and the boatman requires undergoing fundamental re-adaptations of body, being, and knowing; i.e. physically enacting quite literally new *under-standings*.

What ensues is a remarkable “ballet” of standing, swaying, and almost falling, in which the relation of land, sea, stability and precariousness, is demonstrated through bodily gestures indicating the fear of losing ones balance.¹⁵

Weber’s argument is that water in comparison to land provides an apt metaphor for the instabilities, possibilities, and consequent uncertainties presented by moving from a familiar medium to an unfamiliar one.

Sharing the vehicle of the boat requires, “a different sort of equilibrium,” higher levels of awareness, trust, and responsiveness to the motion of the water and, significantly, to the physical presence and movement of others. In heightening awareness of one’s entangled physical relation to others and by entering into the more fluid material conditions of the river, boarding the boat becomes an ontological and epistemological leap, one that entails a transformation not only of Chen’s being but also her way of thinking and acting. This is an act of emotional trust as much as it is an act of physical skill. Moreover, the scene describes performativity as a kind of material ontology, as a way of being in and with the material world. Weber describes

¹⁵ Ibid., 28.

this transformation as “the true memorable ‘drama’ of this scene,” where Chen is momentarily suspended between,

the fearful dependence upon the support of the ‘land’ and the courage to search for another kind of balance, a balance and movement that is defined in terms of responsiveness, rather than those of stability and security, much less spontaneity.¹⁶

Elsewhere proposes, in a fashion similar to “Autumn River,” a physical-conceptual exchange of the independent perpetual stability of the familiar for an active immediate responsiveness to less predictable and more interdependent relationships. In addition, offered as a “life-sized toy,” *Elsewhere* also draws upon a sense of theater and staging, suggesting itself as a prop for participants’ own imaginative negotiations between land and sea, familiar and unfamiliar media.

Additionally, Chen and the boatman’s performance of equilibrium relies upon continuous negotiation and responsiveness, not only to the movements of the boat and the river, but to each other. “The choreography of that balancing act is the result, not of the doings of a single performer, simply, but of the remarkable *interaction of the two*.”¹⁷ Though they are differentiated by significant markers of difference in “gender, age, class, costume, habit, and culture,” Chen and the boatman are also mutually entangled, attending and responding to differences performed as one another’s movements *and* the shared condition of the boat on the river. Therefore, besides demonstrating the distinct ontological and epistemological

¹⁶ Ibid., 28.

¹⁷ Ibid., 29.

conditions of land and water, Chen and the boatman demonstrate a revealing physical and social performativity inherent to sharing a boat. “Reciprocity,” in this case, Weber states, “has more to do with the interplay of distinct rhythms than with the identity of the persons involved.” This “interplay” is notably suggestive of the notion of gender performativity proposed by Judith Butler.¹⁸ The riverboat reveals the differences between Chen and the boatman as an actively reiterative process of assertion and negotiation of their different positions within the context of the boat. Weber concludes, “[Chen] and the boatman bob up and down together, but always inversely, in the shared but separate movements that constitute their common rhythm—and situation.”¹⁹

The “situation” of the boat implicates its passenger-performers into a mutual embodiment of entangled interdependence that forefronts what *Elsewhere* proposes as a promising possibility of community: The situation and understanding of the boat reveals participants’ always already performative relations of dynamic dis/equilibrium and though those relations may be marked by significant differences in position, power, and/or privilege, those differences do not relinquish participants’ responsibilities to one another. Quite the contrary. Those differences precisely describe and position *response abilities*—including the ability to sense and acknowledge that being together, articulating and becoming a ‘we’ in the world, in name, in body, involves common vulnerability—rocking precariously but mindfully along in the same boat.

¹⁸ See Judith Butler, *Bodies That Matter: On the Discursive Limits of Sex*, (New York: Routledge, 1993).

¹⁹ Samuel Weber, *Theatricality as Medium*, (New York: Fordham University Press, 2004), 29.

Navigation Systems

Lucy A. Suchman's preface, "Navigation," to the book *Plans and Situated Actions* offers another pivotal example of water and boats in new media scholarship.

Her example suggests a notion of performativity comparable to Weber's yet more explicit in addressing the particularities of knowledge making practices revealed vis-à-vis the situation of a boat. If Weber's example showed



Figure 2 Traditional Inter-Island Canoe in Chuuk Lagoon. Photo courtesy of Chuuk Historic Preservation Office.

the vulnerable embodiments and performative mutual effort required to share a boat, Suchman's approach highlights the complementary skills involved in guiding the boat from one location to another. Suchman makes an ethnological comparison, not of metaphor and stance between land and water, but of sea navigation methods between European and Chuukese sailors.²⁰ Suchman's thinking and writing on the

²⁰ Suchman's preface begins with a citation from the work of anthropologist G. Berreman: "Thomas Gladwin (1964) has written a brilliant article contrasting the method by which the Trukese [sic] navigate the open sea, with that by which the Europeans navigate. He points out that the European navigator begins with a plan—a course—which he has charted

environmental factors of cognitive processes has laid significant groundwork for contemporary research on artificial intelligence (AI) and human-computer interaction (HCI). Interestingly, the claims she makes about knowledge and embodiment resonate usefully with Weber. Together their examples inform *Elsewhere's* design as a suitable vehicle for exploring significant aspects of "situated knowledges" and "agential realism."

The Chuuk are among the indigenous inhabitants of the Micronesian islands in the southwest Pacific Ocean. Suchman compares the techniques of Chuukese sailors to European navigation techniques in order to show variations in effective strategies of human intelligence. In decentralizing the European model of knowledge making with the significantly different but successful Chuukese model, Suchman is able to offer broadened insights for how human intelligence and directed action may actually work.²¹ Her preface begins with a quotation from the research of anthropologist G. Berreman:

according to certain universal principles, and he carries out his voyage by relating every move to that plan. His effort throughout the voyage is directed to remaining "on course." if unexpected events occur, he must first alter the plan, then respond accordingly. The Trukese navigator begins with an objective and responds to conditions as they arise in an ad hoc fashion. He utilizes information provided by the wind, the waves, the tide and current, the fauna, the stars, the clouds, the sound of the water on the side of the boat, and he steers accordingly. His effort is directed to doing whatever is necessary to reach the objective. If asked, he can point to his objective at any moment, but he cannot describe his course" (Berreman 1966, 600).

²¹ Suchman explains, "The subject of this book is the two alternative views of human intelligence and directed action represented here by the Trukese [sic] and the European navigator. The European navigator exemplifies the prevailing cognitive science model of purposeful action... That is to say while the Trukese navigator is hard pressed to tell us how he actually steers his course, the comparable account for the European seems to be already in hand, in the form of the very plan that is assumed to guide his actions. While the objective of the Trukese navigator is clear from the outset, his actual course is contingent on unique circumstances that he cannot anticipate in advance. The plan of the European, in contrast is

[Gladwin] points out that the European navigator begins with a plan—a course—which he has charted according to certain universal principles, and he carries out his voyage by relating every move to that plan.²²

The Europeans' reliance upon and preoccupation with "universal principles" illustrates what Weber described earlier as "having or finding firm ground under one's feet." Central to the theoretical work done by science studies scholars in the late twentieth and early twenty-first centuries is the contention that the predominant concerns of European knowledge making have characteristically been with the development of objectivity and the subsequent 'discovery' of universal abstract principles; and, moreover, that those 'discoveries' are, rather than universals, actually the result of very specific social, historical, and geographical contingencies.

In Suchman's example, the European navigator, in his reliance upon "universal principles," is attempting to apply a medium and situation independent technique, where "[his] effort throughout the voyage is directed to remaining 'on course.' If unexpected events occur, he must first alter the plan, then respond accordingly."²³ Although conditions at sea do not allow for the course to remain unaltered, the European navigator's technique is enacted as if it were. The European navigator is working from a prescribed plan, "independent of the exigencies of his

derived from universal principles of navigation, and is essentially independent of the exigencies of his particular situation" (Suchman 1987, 600).

²² G. Berreman, "Anemic and emetic analyses in social anthropology," *American Anthropologist* 68(2)1 (1966), reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge: The MIT Press, 2003), 600.

²³ *Ibid.*, 600.

particular situation.” In contrast, the Chuukese navigators, “having no such ideological commitments, learn a cumulative range of concrete, embodied responses.” The Chuuk sailor relies upon an intuitive, visceral, responsiveness qualitatively informed by the conditions of his current position in combination with his own and his predecessors past experience. While the sailor has a destination in mind, there is never a prescribed course:

The Trukese [sic] navigator begins with an objective and responds to conditions as they arise in an ad hoc fashion. He utilizes information provided by the wind, the waves, the tide and current, the fauna, the stars, the clouds, the sound of the water on the side of the boat, and he steers accordingly.²⁴

Suchman goes on to suggest that while “European culture favors abstract, analytic thinking, the ideal being to reason from general principles to particular instances,”²⁵ all actions, in fact, even analytic ones, like those of the European navigator, are actually more akin to the actions of the Chuuk sailor—“fundamentally concrete and embodied”²⁶ as opposed to intellectually abstracted and mapped in advance. The significant implication, for Suchman, is that even though the European method relies upon and repeatedly returns to plans derived and revised from a consideration of abstract principles; and the Chuuk approach, by contrast, is physically and intellectually enacted moment to moment; both are involved in goal-

²⁴ Ibid., 600.

²⁵ Lucy A. Suchman, “Preface: Navigation,” in *Plans and Situated Actions: The Problem of Human-Machine Communication* (Cambridge: Cambridge University Press, 1987), reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge, The MIT Press, 2003), 600.

²⁶ Ibid., 600.

directed planning and how-to “instrumental action” (i.e. The destination is there; conditions are thus; move the boat this way.). In Suchman’s terms, whether planned or improvised, all actions are “situated.” She explains that “purposeful actions are inevitably *situated actions*. By situated actions, I mean simply actions taken in the context of particular concrete circumstances.”²⁷

The notion of situated action is relevant for several reasons. It challenges the tacit ethnocentric assumption of the European style of navigation and European knowledge making practice more generally and so, unsettles, to recall Weber’s terms, Western modernity’s “terra firma,” the belief that knowledge is the discovery of fixed and pre-existing universal principles and their proper application in abstract reason. Suchman claims, however, that this epistemological premise of “terra firma” is never actually realized in the practical case—not for European sailors, Chuuk sailors, nor anyone (or anything) else trying to get somewhere: “[One] could argue that we all act like the Trukese [sic], however some of us may talk like Europeans. We must act like the Trukese because the circumstances of our actions are never fully anticipated and are continuously changing around us.”²⁸

²⁷ Ibid., 601.

²⁸ Ibid., 601.

'Boatiness'

The comparison of the Chuuk and the European methods of navigation evocatively parallels the performance of Chen and the boatman. Both instances are concerned with three things. First, Suchman and Weber are relying on ethnological, Western/non-Western, comparisons to explore alternative epistemological possibilities given the advent of digital media. In Weber's case, he is concerned with the experience of "the real" as it is transformed by new media. Chen and the boatman's performance is a metaphor for transition from the familiar to the new, from the stability of knowing in a Western sense to something else, "another kind of balance." For Suchman, the goal is the development of more successful HCI and more intelligent AI. The European method, Suchman explains, "exemplifies the prevailing cognitive science model of purposeful action." Developing viable alternative models requires looking elsewhere.

Second, Suchman and Weber use very similar language to characterize their "non-Western" results as distinct demonstrations of performativity. Their alternatives emphasize physical sensation, the assertion of the body, spontaneity, improvisation, and contextual responsiveness to immediate and unpredictable conditions. When Chen attempts to board the boat, "[what] ensues is a remarkable 'ballet' of standing, swaying, and almost falling," where the "relation of land, sea, stability, and

precariousness is demonstrated through bodily gestures.”²⁹ Chen is compelled to find a new kind of balance, one that “responds to the never entirely predictable rise and fall of the waves.”³⁰ The drama of the scene involves the search for “a balance and movement that is defined in terms of responsiveness, rather than those of stability and security, much less spontaneity.”³¹ Likewise, the Chuuk sailor “responds to conditions as they arise in an ad hoc fashion.”³² Suchman describes that “[his] actual course is contingent on unique circumstances that he cannot anticipate.”³³ The sailor learns “a cumulative range of concrete, embodied responses.”³⁴ He uses information relayed by his senses not principles; “information provided by the wind, the waves, the tide and current, the fauna, the stars, the clouds, the sound of the water on the side of the boat.”³⁵

The third concern is the particular material situation. In both cases, the authors consider human bodies, human abilities, human behaviors and in drawing their conclusions, the authors rely upon the unique conditions of water travel as opposed to land. As such, both authors start usefully at and now return us productively to the prerequisite (but now notional), situation of a boat. The authors’

²⁹ Samuel Weber, *Theatricality as Medium*, (New York: Fordham University Press, 2004), 28.

³⁰ *Ibid.*, 28.

³¹ *Ibid.*, 28.

³² G. Berreman, “Anemic and emetic analyses in social anthropology,” *American Anthropologist* 68(2)1 (1966): 346-54, reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort, (Cambridge: The MIT Press, 2003), 600.

³³ Lucy A. Suchman, “Preface: Navigation,” in *Plans and Situated Actions: The Problem of Human-Machine Communication* (Cambridge: Cambridge University Press, 1987), reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge: The MIT Press, 2003), 600.

³⁴ *Ibid.*, 600.

³⁵ G. Berreman, “Anemic and emetic analyses in social anthropology,” *American Anthropologist* 68(2)1 (1966): 346-54, reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge: The MIT Press, 2003), 600.

conclusions require not so much the physical situation of the boat but the idea of the boat. Suchman takes the practices of sea navigation and extrapolates them to intelligence and purposeful actions in general. Weber—in fact never even had an actual boat. Recall that “Autumn River” is a stage performance. The actors use their bodies and an oar as their sole props. What is so delightful and compelling about the staging of the scene is the way in which the performers, using only their physical gestures, convey *boatiness*—the coordinated movement and balance of bodies, boat, and river—without a boat.

Suchman and Weber show that boatiness is an evocative concept for illustrating and thinking through the ontological and epistemological possibilities of new media particularly within the context of globalization. The paradigmatic material differences between being on water as opposed to being on land, particularly the



Figure 3 *Elsewhere*'s completed hull. February 2010.

unsteady fluctuation of water and its potential hazards, result in distinct physical and intellectual requirements. The uncertainties of being on water raise immediate ontological awareness of position, emotion, action—

the senses of embodiment needed to maintain balance on and of the boat. In

addition, boating is a highly skilled activity practiced under extraordinary circumstances. Navigation of the vehicle, through a precarious and highly variable medium subject to inconstant and complex environmental conditions, calls attention to the development and application of knowledge. How navigation is accomplished demonstrates sophisticated understandings of location, locomotion, climate, mechanics, and physics. Because boating, water travel, and navigation are widespread phenomena, these activities exhibit an incredible geographic and cultural variety of epistemological approaches to a common set of problems. When considered in relation to these alternative paradigms, traditionally Western perspectives and practices reach and reveal their discursive limits. It is at this limit that significant research and theorizing is produced in the field of feminist science studies and it is beyond this limit that newly imaginable worlds and communities, including elsewhere, can be formulated.

I turn now to Barad and Haraway as way to explore boatiness further, particularly the concepts of materiality, performativity, embodiment, and knowledge, introduced here via Weber and Suchman. While Weber and Suchman justify *Elsewhere's* boatiness as useful for the consideration of new media, it is actually Haraway and Barad, through feminist science studies, who provide the primary critical inspiration for *Elsewhere's* conceptual and material development. Whereas Suchman and Weber undertake ethnological comparisons, Barad and Haraway examine the histories of science, including deeply seated Western ontological and epistemological assumptions, in order to articulate revised approaches to being,

understanding, relating and acting in the world. I stated earlier that *Elsewhere* offers a critical position from which to think through and engage with the entanglements of materials and discourse that mediate and substantiate an imaginable community. This positioning of *Elsewhere*—now as much a point of departure as a beckoning destination—is advised by Haraway’s notion of “situated knowledges” and Barad’s proposed posthumanist performative critique of representationalism which she calls “agential realism.”³⁶ Taken together, these concepts offer vital and exciting reconceptualizations of what constitutes knowledge and community, the understanding of ‘our’ material and discursive experience as being-in and being-with the world and each other.

How-to ‘Sea’

Recall Suchman’s contentions that “European culture favors abstract, analytic thinking, the ideal to be to reason from general principles to particular instances” and that navigation is “derived from universal principles” which are “essentially

³⁶ Barad describes representationalism this way: “The idea that beings exist as individuals with inherent attributes, anterior to their representation, is a metaphysical presupposition that underlies the belief in political, linguistic, and epistemological forms of representationalism. Or to put the point the other way around, representationalism is the belief in the ontological distinction between representations and the things they purport to represent; in particular, that which is represented is held to be independent of all practices of representing” (Barad 2007, 46). Barad’s critique of representationalism hinges upon her assertion of the non-independent (what she would call ‘intra-active’) relationship between “representations and entities to be represented” (ibid., 46).

independent of the exigencies of [the] particular situation.”³⁷ The project of feminist science studies has been not just to simply discredit as Eurocentric or patriarchal the uncritical reliance upon abstraction, objectivity, and universal principles in scientific practice; but, given scholars critical exposure of the specific political, social, material and historical contingencies that shape and produce science, the most crucial questions involve how to continue to make strong knowledge claims about the world without maintaining the pretense of an disembodied position outside of it.

Haraway formulated “situated knowledges” as an intervention into what had been the practical and rhetorical dilemma staged in the early years of feminist science studies scholarship. At the time, universal principles, objective observation, unbiased evidence, disembodied abstraction—the totalizing epistemological ‘god-trick’ tool kit of European derived scientific practice—were confronted with feminist critiques of social construction. Social construction, however, easily dissolved into an ineffectual tail chasing relativism. If everything is socially constructed, it becomes rather difficult to claim that anything is actually true or real. Haraway compares relativism and totalization this way:

both deny the stakes in location, embodiment and partial perspective;
both make it impossible to see well. Relativism and totalization are

³⁷ Lucy A. Suchman “Preface: Navigation,” in *Plans and Situated Actions: The Problem of Human-Machine Communication* (Cambridge: Cambridge University Press, 1987), reprinted in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge, The MIT Press, 2003), 600.

both 'god-tricks' promising vision from everywhere and nowhere equally and fully³⁸

Vision is the metaphorical entrance of choice for Haraway to address and intervene between relativism and totalization. Haraway is keenly interested in the embodied particularities of visualization, from the biological to the semiotic to the technical, and it from this perspective (pun intended) that situated knowledges can come to matter. Haraway suggests that

'our' problem is how to have *simultaneously* an account of radical historical contingency for all knowledge claims and knowing subjects... *and* a no-nonsense commitment to faithful accounts of a 'real' world.³⁹

Situated knowledges *are* objective knowledge claims, not made from some idealistic transcendent place, but claims which articulate precisely the position—*the situation*—the specific historical, social, biological, technical, and geo-political bodies, from which they are made, how they are seen. Haraway explains, "We need to learn in our bodies...how to attach the objective to our theoretical and political scanners in order to name where we are and where we are not"⁴⁰

In each instance, this position is necessarily finite and partial. No one plays an all-seeing god. But accumulated together, taken in through a diverse community of earthly practitioners, situated knowledges (note always the plural) can provide for

³⁸ Donna J. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1988), 191.

³⁹ *Ibid.*, 190.

⁴⁰ *Ibid.*, 190.

collaborative projects of objectivity that create reliable accounts of the world. In turn, these reliable accounts can become a workable foundation toward a fair, sustainable, and collectively imaginable world—a world with a livable and desirable future.

Partiality is a key component for forging reliable collaborative knowledge, Haraway says, “We do not seek partiality for its own sake, but for the sake of the connections and unexpected openings situated knowledges make possible.”⁴¹ This plural, partial, vulnerable, and embodied accounting of perspective is crucial in order to get on with the work, “that which we cannot not want.” There can be an elsewhere. Not coincidentally, the ‘we’ who endeavor toward elsewhere, unwilling to be led astray by god-tricks of universal principles of navigation, might successfully consider setting sail along the lines of the Chuuk and listen for the water at the side of the boat rather than redrawing all our maps. But, before ‘we’ go, everyone will need to know exactly where they are coming from. Haraway reminds us that the “only way to find a larger vision is to be somewhere in particular.”⁴² Thus, *Elsewhere* suggests not only the beckoning destination of a collectively wrought desire, but that seeking this goal relies inherently upon a thorough understanding of where we already are. The name of the boat, *Elsewhere*, fulfills a triple function describing the means, the medium, and the end of the journey—a vehicle, its geography, and its heading. Taken together, they describe the ontological and epistemological position from which we are each invited to reconsider our material and discursive

⁴¹ Ibid., 196.

⁴² Ibid., 196.

surroundings in order to formulate newly imaginable communities and ways of getting there.

We Sail: Material-discursive Seas

At this point, well on the way toward elsewhere, 'we' have developed *boatiness*, a wobbly, but promising, conceptual vehicle and "situated knowledges," a combined and partial sense of bearings for collaborative 'navigation'. In order to fully develop the critical position from which *Elsewhere* works, the next step is to consider a little more carefully, before moving on, what 'we' are moving in and moving into. That is to say, the geography—not a map—but a physical terrain of performative inscriptions that requires a careful attention to the way matter and discourse work together to mediate and substantiate a sense of being in the world. This is primarily a question of medium and keeping 'our' balance depends upon it.

Until now, I have tried to adhere to the conventional distinction between ontology, the study of being and existence and epistemology, theories of knowledge. However, following Haraway's momentum just a little further and inviting Barad on board, it becomes evident that the distinction is more conventional than actual. Being in and understanding the world, in order to act within it, is a mutable and mutually informing co-constitutive process. Things are less tidy and less steady than they used to be, but also livelier and more accountable. If elsewhere should be

anything it should be a lively and accountable community. This ought to be worthwhile.

Recall the metaphorical centrality of vision for Haraway in considerations of knowledge and particularly her material and discursive emphasis upon how we see as a way to consider how we know. The way one sees involves layers of mediation, the biology our of vision and our emerging technologies of vision, from eyeglasses to web cams to the power-laden discursivity of language that allows us to formulate what we see. From such a position it is evident that there is nothing neutral about vision or knowledge. Looking and knowing are powerful acts of framing and constituting, not an innocent noting of a passive world. Committing to a practice of situated knowledges entails acknowledging deeply and bodily the power inherent to these practices and, in the spirit of justice, empowering the objects of knowledge as active participants in the constitution of what we would like to call a reliable knowing. Haraway explains that

Situated knowledges require the object of knowledge to be pictured as an actor and agent, not a screen or a ground or a resource, never finally a slave to the master that closes off the dialectic in his unique agency and authorship of 'objective' knowledge.⁴³

That is to say that reliable and situated knowing is an ongoing negotiation wherein all the participants are actively implicated in a responsive and dynamic material conversation of knowledge production that recalls Chen and the boatman's dance of equilibrium.

⁴³ Ibid., 198.

Filling the space between subjective knower and object of knowledge with the material and discursive stuff that makes knowledge and recognition possible allows for a complex and vibrant, potentially ticklish, onto-epistemological coming together of subjects and objects. The traditional ontological divisions of subject and object, knower and known, word and thing are the functioning axes of *representationalism*. According to Barad, representationalism is the belief that the world is made of discrete entities, that those entities have fixed and inherent characteristics, and that the human knower-subject is positioned uniquely to describe and represent transparently the object-world through language.⁴⁴ This is the style of the European navigation. It has a specific history and it is not, as the Chuuk show, the only way of understanding and getting around in the world.

In *Meeting the Universe Halfway*, theoretical physicist and feminist science studies scholar, Karen Barad, approaches the early science studies dilemma between objectivity and relativism (where Haraway intervenes with situated knowledges) with a critique of objectivity and relativism's common reliance upon representationalism. Barad insists upon a still very real materiality of the world but suggests "realism without representationalism."⁴⁵ Like Haraway, Barad concludes that "one must inquire into the material specificities of the apparatuses that help

⁴⁴ Like Suchman and Weber, Barad claims there are useful alternatives to the traditional Western epistemological practice. She states that "the asymmetrical faith we place in our access to representations over things is a historically and culturally contingent belief that is part of Western philosophy's legacy and not a logical necessity...It is possible to develop coherent philosophical positions that deny the basic premises of representationalism" (Barad 2007, 49).

⁴⁵ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 50.

constitute objects and subjects.”⁴⁶ Taking Haraway further and building simultaneously upon the work of physicist Niels Bohr⁴⁷ and theorist Judith Butler, Barad proposes, as alternative to representationalism, a *performative* understanding of how material differences are produced by enacted processes rather than as inherent states of being:

⁴⁶ Ibid., 27.

⁴⁷ I offer a brief sketch here of Barad’s close reading and interpretation of Niels Bohr’s quantum theory of indeterminacy. At issue, for Bohr is the study and behavior of quantum particles. At the very very very small scales of particle physics, the familiar laws of Newtonian mechanics are inapplicable. The precise measurement of the behavior of an electron, its position and momentum for instance becomes impossible, due to the interaction of measurement with the object being measured.

According to Werner Heisenberg, Bohr’s colleague and disputant concerning this issue, the problem is one of *uncertainty*. That is to say that one cannot know with absolute certainty the position and momentum of the electron because of the uncorrectable disruption caused by measurement. Bohr, however, strongly disagreed. For Bohr, the issue concerned the fact that one cannot know the position and the momentum of the electron simultaneously because each measurement required a fundamentally different kind of apparatus. (Knowing the position and momentum both would allow for the correction of the disruption caused by measurement.) *Indeterminacy* is the understanding that the qualities of position or momentum do not in and of themselves exist without the articulation of the measuring apparatus.

That is to say, for Bohr (as read by Barad), the apparatus of measurement produces not just the actual position or momentum of the electron, but more subtly and significantly, one cannot say that the concepts of position or momentum exist in and of themselves prior to measurement as inherent characteristics of the electron. Until the apparatus is enacted through the specific *performance* of measurement, the position and/or the momentum must be said to be indeterminate. It is not the measurement that is uncertain, it is that the characteristic one is attempting to measure does not exist determinately prior to the selection and application of a measuring apparatus.

Though the distinction with Heisenberg may be subtle for those unfamiliar with the nuances of quantum mechanics, fundamentally the issue is one of representationalism. Heisenberg’s uncertainty principle rest upon the assumption of representationalism; the electron is an object with inherent characteristics (e.g. position and momentum). Bohr, quite remarkably, calls this assumption deeply into question by suggesting what Barad describes as a performativity of intra-relationships. The object of study and the apparatus of measurement together produce not knowledge about ‘things,’ but of ‘phenomena’—the specific entanglement of the object with a particular apparatus of measurement. Barad’s significant contribution to Bohr’s insight is to call into question, in Haraway-ian cyborg fashion, the boundaries of the measuring apparatus.

It is possible to develop coherent philosophical positions that deny the basic premises of representationalism... A performative understanding of scientific practices, for example, takes account of the fact that knowing does not come from standing at a distance and representing but rather from *a direct material engagement with the world*.⁴⁸

Barad's work is intentionally and ethically committed to a distinctly realist ontology that affirms the inherently material and observation independent existence of the world. "The point is to make a difference *in the world*," but not in the way that representationalism would have us believe. Performativity, in Barad's case, elaborates upon Butler's humanist notion of gender performance in order to extend it in a radically post-humanist sense. Like Haraway, and attending carefully to Bohr, Barad makes clear in her writing how unclear the boundaries among humans, their objects of knowledge, and their technologies can actually be.

A performative account makes an abrupt break from representationalism that requires a rethinking of the nature of a host of fundamental notions such as being, identity, matter, discourse, causality, dynamics, and agency to name a few.⁴⁹

When representationalism goes, so does the ontologically privileged position of the human. The notion of the human emerges as a contingent process of differentiation from notions of the non-human. By turns, the ontological status of the non-human has been described with a wide and at times violently loaded set of names—object, machine, plant, alien, animal, slave, woman, enemy, other. The distinction between

⁴⁸ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 49.

⁴⁹ *Ibid.*, 49.

non-human and de-humanized is an act and arbitration of power, an ethical issue, and with respect to *Elsewhere*, critical for what becomes imaginable in community.

Unlike representationalism...a performative account insists on understanding thinking, observing, and theorizing as practices of engagement with, and as part of the world in which we have our being.⁵⁰

Both Barad and Haraway, in attending to the same dilemma between objectivity and relativism, arrive at very similar conclusions. In order to make knowledge claims and maintain the 'reality' of the world, without reproducing the transcendent god-tricks of objectivity and representationalism, two things have to happen. First, the strength of our knowledge claims must rest upon the quality of our accounting and our ability to recognize the specific technologies, the material-discursive apparatuses we use in attending knowledgeably to the world. Second, accepting the inherent partiality of situated knowledges and un-privileging the ontological status of the human results in the realization that the non-human is an active agent in the production of knowledge. In Barad's terms, this performative posthumanist account of the world is described as "agential realism."

Performativity is offered by Barad as an alternative to representationalism. Rather than presuming a world of discrete objects that can be "known" through material and discursive technologies of observation and representation, performativity suggests that differences emerge through material-discursive

⁵⁰Ibid., 49.

processes of intra-active relation.⁵¹ Objective difference is not inherent, it is a phenomenon iteratively produced through the repeated entangled performance of materials and discourse together.⁵²

*All bodies, not merely 'human' bodies, come to matter in the world's iterative intra-activity—its performativity... Bodies are not objects with inherent boundaries and properties; they are material-discursive phenomena... 'material' is always already material-discursive—that is what it means to matter.*⁵³

The material and discursive become entangled when we acknowledge that knowing-about is not separate from being-*in* the world.⁵⁴ This was the fallacy of representationalism. Performativity, in Butler's sense, however, is no longer sufficient given the obligation to extend agency to the non-human.

If one is attentive to the shattering implications of Barad's work, the results include a thorough permeation of the body by both matter and discourse and a continuous collapsing of the 'I' into a 'we' that includes the intra-actions of the human and the non-human at every scale from the molecular to the global to the cosmic. The privileged sense is no longer the eye's vision, which saw so clearly a world of discrete objects, but instead involves touching and responsiveness as a sensitivity to

⁵¹ Barad uses the term *intra-active* in order to disrupt the representationalist assumption of ontological difference in the term *interactive*.

⁵² See footnote 36 for background on Barad's description of phenomena via Bohr.

⁵³ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 152-153.

⁵⁴ Barad writes, "Discursive practices and material phenomena do not stand in a relationship of externality to one another; rather, *the material and the discursive are mutually implicated in the dynamics of intra-activity*. The relationship between the material and the discursive is one of mutual entailment. Neither discursive practices nor material phenomena are ontologically and epistemologically prior to one another" (Barad 2007, 152).

textures, forces, changes in pattern, kinds of patterns. Everything is a kind of touching and being touched. Listen for the water at the side of the boat. This immersive, sensational exchange includes both materials and information, substance and knowledge. Once, we've stepped off the river bank of representationalism, so to speak, we find ourselves in something that looks a lot like "Autumn River", but now in addition to the performance of Chen and the boatman, we are invited to include the performativity of the river and the boat.

Boatiness, in the agential realist sense, means that the idea of the boat is intimately entangled with the notions of water, world, and body. Boatiness, is meaningless, without the attendant ideas of wateriness, worldliness, and embodiment. The implication of water is what makes *Elsewhere* especially suited for its task. Elsewhere is not a bicycle, a train, a helicopter, a spaceship nor a hot air balloon. The being-with-the-world offered by Haraway's and Barad's work is significantly and intentionally different from the terra firma of Western representationalism, but still decidedly Earthly. Representationalism has tremendous stakes in the claim of how things are—held in a timeless, immutable, totalizing condition called universal principle. Situated knowledge and agential realism have stakes in the active iterative processes that constitute becoming. The climate conditions, to which sea navigation is subject, is an undeniable field of forces, a large complex of shifting material processes that call upon the very best of our abilities to understand, respond, and negotiate. The sea has in legend and in fact an obvious material agency. Certainly, these things can be said for land as well,

but they do not touch or elicit in the same way. The familiar is too easily for granted, its touch too easily ignored. Barad, in describing the agency of the world, says that “there is a sense in which ‘the world kicks back.’” Here, the laughing rocking boat is ‘our’ reminder.

In agential realism, materiality fundamentally is what ‘we’ share. Materials interpellate their own communities in an entanglement of performative phenomena—not things—that is called mattering and coming to matter. This is the entwining of the material-discursive together. ‘We’ is the subjective state of affairs. ‘I’ has its process of differentiation, but ‘we’, truthfully, is where it’s at.

To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent self-contained existence. Existence is not an individual affair. Individuals do not preexist their entangled intra-relating.⁵⁵

This does not mean that ‘we’ dissolve into some all-good soup of one-love. There is too much relativism and not enough accountability for that to be palatable. ‘We’ has terms of engagement. Materials have specific properties that inform the possible productions of discourse, sharing, and exchange. When I say ‘we’ who hears me? The utterance and hearing is conditional upon the material media that carries the message, but also upon the agency of those who hear and claim (or ignore) its call. These conditions are the ‘able’ in *imaginable* community. Togetherness is a specific material-discursive process of affiliation and differentiation. How are ‘we’ able to

⁵⁵Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), xi.

imagine together? No one reaches elsewhere alone. The boat as vehicle is about destination—'Where are we going?' But, the life-sized toy rocking boat literally doesn't go or get anywhere. The question is really about the 'we' not the 'where'. The imaginable community, the agential realist implication for the possibility of relation—this is what *Elsewhere* involves, who 'we' are, who 'we' aspire to become and how 'we' are able to connect in and with the world.

4- PRACTICE

In an agential realist sense then, artwork is not so much about things, but rather about entanglements—the relationships that produce things and, conversely, the relationships that things produce. When I make something, it is not exactly or merely a thing I have in mind. Instead, I am strategically attempting to open, illustrate, and create a play of connections—an imaginable community—that involves human and non-human collaborations: the materials and their discursive possibilities, the suppliers, the technical skills, the work, its audience, its historical conditions and contemporary inspirations and, most importantly, the then necessarily entailed possibility of overturning my own expectations about the process and the results. *Elsewhere* is open, or rather, an opening for unexpected connections. Surprise is the trembling risk of joy to be found in creating the work.

The boat as sculpture is composed of natural and industrial materials that are assembled to trouble mischievously identification with a singular geographic origin. The design of the hull is derived from Portuguese style fishing dinghies. The mast and boom are made from bamboo. The sail rigging is replicated from contemporary recreational sailing boats. The cabin, constructed from cardboard and modeled from historic tugboats, gestures toward the ubiquitous packaging medium for worldwide material transactions. Thus, installed theatrically as a playful prop, *Elsewhere* offers

itself for transnational imaginaries and stories that may speak to and from global histories and movements.

Like Weber and Suchman, I am aware of and inspired by the ethnologic potential inherent in the widespread historical and geographic distribution and development of water vehicles. I am not, however, so interested in drawing conclusions from Western/non-Western comparisons. This type of rhetorical move too quickly re-instantiates the categories upon which the distinctions insistently rely. Suchman's and Weber's works are invested in the development of Western thought through the additional contribution of non-Western methods. While their aspirations are global and well intended, their point of departure is firmly routed in Europe and the West. *Elsewhere* by contrast, departs, as it were, after representationalism and the thorough destabilizing of Western epistemological foundations. In presenting *Elsewhere* as a toy with unspecific origins, the work calls forward playful and child-like imaginations about being in the world through a material synthesis of multiple entry points for familiarity. When taken in altogether this assemblage induces a slight uncanniness. That is to say, from the combination of materials to its physical sitings to its conceptual predicament with digital art, *Elsewhere*, is an effort of equal service to the familiar and the strange, not for the purposes of elucidating one at the expense of the other, but to return participants to the question of expectations. The familiar is easy. But if something is strange, why is it strange and for whom is it strange? The disorientation *Elsewhere* arouses is meant to encourage processes of

re-orientation, to call up and call attention to our navigation systems. *Elsewhere* would like us to situate our knowledges.

Aesthetic Matters

The prominence of materiality, the expression of variety through assemblage and the vocabulary of handmade craft in the work is meant to enhance the unexpected placement of a boat in the midst of a digital art new media context and to highlight the significant transformations in aesthetics and limitations of embodiment this context often entails. These transformations and limitations are significant, not only in the presentation of the work, but in its production as well. Therefore, *Elsewhere's* appearance shares as much of its process of physical fabrication as possible.

Elsewhere is a hand-crafted material object. It is made of wood and cloth and glue and screws. Crafting it makes clouds of sawdust and the wood gets moldy if left out for too many damp seaside mornings. When the wood is cut, it smells like trees. *Elsewhere* made from birch, pine, bamboo, and Douglas fir. When the weather is good, one can build a boat outside. Building the boat is a lot of work, physically demanding, a bit dangerous, and sensitive to changes in the weather. Once a hole is drilled or a cut is made, it can be repaired or redone, but not unmade. When the wood is bent and fastened in place it creates a lot of torque and slowly, as

the wood fibers stretch, the form relaxes and releases palpable tension. At seven-feet four-inches long, eight-feet tall and nearly four-feet across the beam, *Elsewhere* takes up a sizeable amount of physical space and is sufficiently large as to require more than one person to build and move her. Thus *Elsewhere* advocates the practice of offering and acceptance of physical help in the spirit of cooperation and heavy lifting. *Elsewhere* cannot be confined to a personal computer, though she turns there often for advice. Alongside her Internet origins, *Elsewhere* insists upon gravity, spackle, dirt, and fingerprints—the evidence of her material being in and with the world.

The fabrication of the boat in the context of a digital art practice highlights some very fundamental distinctions between how ‘things’ get ‘made’ and the kinds of marks our decisions leave behind. ‘Digital making’ easily erases evidence of mistakes and erases them thoroughly. For some, this can be part of the pleasure of digital aesthetics. The computer mediates and eliminates the evidence of the trembling hand hungry



Figure 4 *Elsewhere* in the studio with cabin addition in progress. April 2010.

for lunch or the imperfect measure of the eye at the end of a very long night. The

signs of the body and the evidence of decisions and re-decisions that leave traces in hand-made material craft are not inherent to what is commonly presented as digital art.

If one were to closely examine *Elsewhere*, one would find plenty of lovingly cursed ‘mistakes’-filled holes, wiggly cuts, patched cracks, dent marks, muddy stains, improvised repairs, and lessons learned. As a viable destination, elsewhere is an act of making and a process of collaboration in the world. “Cyborgs and goddesses working for earthly survival.” In all making and collaboration, of course, there are mistakes. Mistakes are part of the risk of making, the joy of the unexpected, and the hard of hard work. Mistakes are evidence of learning, attempting, repairing—all vital skills if elsewhere is our goal. *Elsewhere* wears the evidence of her naïve construction immodestly. *Elsewhere* encourages us to learn from previous mistakes as much as successful executions as way to reconsider the terms of success. Paint free, she would like participants to know, or at least be able to discover, precisely how she came to be—wood, sealant, tape, thread, screws, hand, eye, care—because that is how she came to be, through making, partly digital, and passionately material.

It is true that in order work poetically, *Elsewhere* relies upon representation. Barad’s critique of representationalism does not mean to argue that representations do not exist or that representations are bad, only that an approach committed to situated knowledges and agential realism reveals representations as produced by particular material-discursive apparatuses. Representations do not exist in and of

themselves and the conditions of their production are relevant and meaningful evidence of power differentiated relationships. Barad's critique of representationalism demonstrates that the material world is iteratively produced through performative phenomena. Thus the appearance of *Elsewhere*, from the traces of making in the materials to the Internet hyperlinks of the website, is intended to show openly the processes of her production. In another sense, *Elsewhere* is more than a representation of a boat. Significantly, *Elsewhere* is a representation of a *toy* boat. This important but subtle distinction is what interpellates participants into the production of the work *beyond representation*. In inviting play, *Elsewhere* includes participants necessarily as part of the production of the work. The physical and imaginative engagement of participants through play subverts representation and instead the work becomes a performative intra-action of phenomenal boatiness.

Step 1: Hull

Prior to the fabrication of the object, I had seriously contemplated selecting and modifying a readymade boat, but the readymade object conceptually and materially hindered the development of *Elsewhere's* non-specificities. Given the special ontological and epistemological conditions of their nautical habitats and the often intense emotional entanglements produced with their passengers, boats readily develop agency and personalities. They are considered beings in their own right,

agential realism's enthusiastic corroborations aside. This is why, traditionally, at least in the West, boats are so often named. Thus, selecting a readymade, would have forced me to confront specificities I wished to avoid. Even the process of selection simply is already in advance determined by notions of type—"What kind of boat are you looking for?" Additionally, I confronted the facts of history that thickly come to bear upon every possible model of boat. Each one has a rich and highly detailed story inscribed into its location, materials, engineering, and design. Though I am in other parts of my art practice eagerly attentive to the stories resonating within appropriated objects, in this instance, *Elsewhere* needed to be able to clearly tell her own slightly ambiguous story as well as openly inspire and receive participants' own projected imaginations. Therefore, the form I had in mind—a simple, toy-like, subtly 'generic' boat shape with curved sides and a pointed bow—a form that would connote 'boatiness' without referencing an overly determined type, was best achieved by starting from scratch.

To insist upon non-specificities or multiple familiarities intended for *Elsewhere's* design is not to suggest that *Elsewhere* has no origin—rather it is only to suggest productively an indeterminate single, locatable origin. In fact, the provenance of her design and fabrication is among the intriguing aspects of the work. The pattern for the hull was created and posted for free on the Internet by boatmaker Hannu Vartiala of Finland. "As simple as it can get" proclaims his website."⁵⁶ I found his site by entering the words "make your own boat" into the Google's image search

⁵⁶Hannu Vartiala, "Portuguese Style Dinghy," Hannu's Boatyard: Free Boat Plans, <http://koti.kapsi.fi/hvartial/dinghy1/simboii.htm> (accessed February 14, 2010).

engine. Proudly, *Elsewhere* claims birthrights, not just from the Internet, but from a transnational digital network culture of free, open source information, and DIY can-do-confidence and she has her own website to prove it.⁵⁷

Step 2: Sail and Scale

Beside rockers, it was also in the early conception of the work, that the boat include a mast and a sail. While a boat in water is already sensitive to environmental conditions, the addition of the sail re-established several important conceptual and material commitments. Conceptually, the sail invokes the presence of air in addition to water which suggests a more manifold sense of environment. There is an ad hoc quality in the addition of the mast and sail to what had originally been a row boat that reiterates the improvisational mandates of sea travel as well as expands, literally and imaginatively, the possible breadth and conditions of travel. The intention was to maintain the performative rocking qualities of the riverboat in “Autumn River” while introducing the environmental conditions and navigational possibilities demonstrated by the Chuuk sailors.

A rowboat of *Elsewhere's* size positions the individual as the locus of locomotion and requires that the scale of the boat fit the size of the individual. A sailboat, on the other hand, situates its passengers in conversation with the water,

⁵⁷Elizabeth Travelslight, “how-to/where-to: build an elsewhere,” *Elsewhere*, <http://elsewhere.elizabethtravelslight.com/howto-where-to.html> (accessed April 29, 2010).

wind, and the boat. Additionally, because of their primary reliance upon wind rather than human muscle for power, sailboats historically developed in a huge variety of sizes and became better suited for the kind of mass transport we find in intercontinental voyages. Thus the sailboat allowed for closer connection with histories of globalization and more flexibility in the exploration and exploitation of scale in the design. By confusing participant's sense of proportion and embodiment in relation to the object, the notion of a large-scale toy is intended to resonate with the uncanny combination of materials and enhance the unsettling of expectations. In encountering the work, it is unclear if *Elsewhere* has been scaled up from a small toy or scaled down from a large boat which produces simultaneous or swiftly interchangeable physical sensations of being too big or too small.



Figure 5 Interior of cabin in progress. April 2010.

Due to the textile qualities of the sailcloth, the sail also successfully invited a wider diversity of materials into the work which was important for devising a critical art practice around the notions of conversation and performativity. The textile nature of the sail required a differently gendered set of

manual skills from boatbuilding which enriched my own mutating senses of embodiment. The crafting of the hull and the rigging involved significant amounts of power tools, woodwork, trips to the hardware store and lumberyard. All of which, in my own experience, are traditionally masculinized pursuits. The sail, by contrast, involved what for me were historically feminized tools and activities; sitting, weaving, looms, typing, sewing, sewing machines, and trips to the fabric store. To be clear, I do not mean to suggest that men do one and women do another, only that I sensed in the materials variously gendered influences and that I intentionally undertook the combination of them in order to introduce and confront, not in an unpleasant way, variation in the possible experiences of my own gender performance as an embodied



Figure 6 Detail of fabrication materials. May 2010.

learning experience of situating knowledge.

The image on the sail, a mixed-media, mostly paper, text/textile weaving is a high-resolution digital print on polyester silk. The original assemblage includes hand written music, ribbon, newspaper clippings, textual citations, forest leaves and IBM punch cards. In metonymically recombining these multiple media materials into a single woven fabric, the sailcloth, like the boat

itself, explores another kind of widely distributed global communication technology that avails itself visually as both familiar and strange. Also following the toy-boat design, the textile weaving plays freely with senses of scale. As a material assemblage translated and enlarged into a digital print, the sail is a wide swath of fabric wherein the tiny warps and woofs of fabric appear microscopically magnified. The insinuation of text in varying sizes also disrupts a coherent sense of scale and materials, complicating the relationship between fabric weaving and paper page, legibility and illegibility.

Steps 3 and 4: Cabin and Interior

In addition to the hull and the sail rigging, the materials constituting the cabin and the interior of the hull are selected and assembled for their poetic and historic associations with domesticity, toys, and communication technology. In order for the audio aspects of the object to work, participants need to feel comfortable physically touching and rocking the object. The 'toy-like' appearance of the boat is designed to greet participants as a playable structure, one that engages them bodily through the rocking movements and laughing sounds of the object and conceptually by raising questions around materials, communication, mobility, and stability. This physical connection is meant to bring participants tangibly into the production of the work as

way to demonstrate further Haraway and Barad's post-representational being with the world. *Elsewhere* is a performance of 'being with boatiness in the world'.

While practically it is not possible to freely allow the public to board the boat, *Elsewhere* is still inviting and excites the possibility and imagination of boarding. Encouraging participants to rock it gently is a friendly and rewarding compromise. *Elsewhere's* candy-like colors, plush carpet, glass knob, sturdy plastic and worn, warmly wooden familiarities encourage hands-on playful engagement. This includes features appropriated from found cabinetry, a bright pre-school colored orange carpet, pale green glow-in-the-dark tape, cardboard, nylon bolts, and plexiglass. The qualities of 'domesticity' offer another play of tensions between the familiar, in this case the interior comfort of home, and the unfamiliar possibility of taking and/or making the home elsewhere. In addition, the home as vehicle reinforces the triple entendre of the work's name. *Elsewhere* is the vehicle, the geography, and our destination.

The cabin is modeled after the shape of a tugboat cabin, curved with large rectangular windows. Though the visual lexicon of boats is vast, there are a smaller handful of boat styles that connote a sufficiently indistinct, playful 'boatiness'. The tugboat is a common model for toy boats that accomplished this effectively and could be modified easily to fit the pre-existing contours and proportions of the hull. The cabin developed functionally as a way to house the electronic components of the motion triggered audio system and aesthetically to enrich the interior experience of the boat as its own space of curiosity and exploration. The wood and steel

letterpress type and the audio player components provided a 'discoverable' cargo when peeking through the plexiglass windows. The type, having large tactile numbers and letters on block like shapes kept playfully with the theme of materiality and communication technology.

The tape and cardboard construction of the cabin were integral for sustaining what had become a central principle guiding the fabrication of the object—to seek a kind of liminal material-aesthetic position of the object-as-concept; a critical position with respect to representationalism that situated itself between 'toy boat as thing' and 'boatiness as playful performative idea.' Thus the cardboard and tape suggested the improvisational making of enclosed play spaces from discarded boxes and perpetuated the bare wooden modesty that characterized the hull. In addition, the cabin created a sculptural profile, a suggestive head and face. This encourages the possible personification of the boat that is a lively part of playing and engaging with things as toys and according them their agency. The windows become part of *Elsewhere's* visual apparatus—part rosy, part clear, part reflective—and give participants visual access to her light bulb illuminated 'cognitive interior', the space in which she situates her own knowledge. The two round speakers, placed ear-like on the sides, demonstrate *Elsewhere's* sense of listening and sense of humor.

Step 5: LOL

Because *Elsewhere* transacts in laughter, the speakers create an audible and embodied loop between participants and the artwork. We laugh to together. The audio component, then, is *Elsewhere's* way of sharing and exciting the affect she would like to 'hear' from others. *Elsewhere* calls and recalls, listens and laughs. The sound of laughter, triggered by the movement, perpetuates the sense of physical embodiment and play in the work and in its audience. Aesthetically, the laughter, much like the indeterminate origins of the boat, complemented the global but still imaginatively open and geographically indistinct appearance of the boat. The sound is distinctively human and attentive participants are able to discern audible clues about age, size, and gender, but not the primarily visible markers of difference that may cue race, class, and geography.

Laughter as an emotional expression of the physical body offers one solution to the heightened emotional awareness that comes with stepping on to a wobbly waterborne vehicle. While instability can be worrisome and frightening as it was with Chen, *Elsewhere's* instability is an opportunity to re-imagine our relationships in and with the world. *Elsewhere* invites participants to consider instability and uncertainty in a spirit of play. The laughter is an encouragement to try humor when confronted with the ontological and epistemological vulnerabilities inherent to situated knowledges' finite partial positions and agential realism's unstable and entangled

intra-actions. Because the audio of the work cordially joins with the laughing engagement of participants, the shared social embodiment of laughter in the absence of actual water becomes the material-discursive medium upon and through which *Elsewhere* works.

Humor, which figures so prominently in Haraway's writing, is a critical component in being able to share and sustain the effort required to maintain our approach toward elsewhere's ambition. She says:

Acknowledging the agency in the world in knowledge makes room for some unsettling possibilities, including a sense of the world's independent sense of humor.⁵⁸

Done well, humor can mitigate uncertainty's risks—mistakes, disappointment, injury and loss; humor mitigates the tones of conflict and disagreement that are an unavoidable aspect of collaboration and diversity; humor addresses pain, activates compassion, and promotes joy. Listen to the laughter at the side of the boat.

⁵⁸Donna J. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1988), 199.

5- CONCLUSION

Elsewhere is not a boat, in more ways than one. Nor is elsewhere precisely a place. The work, emerging from the field of digital art and new media practice, offers a critical position from which to think through and engage with the entanglements of



Figure 7 *Elsewhere* beta test for nighttime display of video. May 2010. Photo by Nick Lally.

materials and discourse that mediate and substantiate an imaginable community. The work is intended to mischievously address the terms in which the field of new media is described by asserting challenges to commonly held expectations and yet still working seriously with some its most interesting conceptual issues and naming some desirable goals. This includes questions raised about the body, the material world, the impact of new technologies, new kinds of knowing, and the possibilities for community and livable worlds.

Inspired significantly by the writing Donna J. Haraway *Elsewhere* is the offspring of humans entangled enthusiastically with our technology and being in love

with world. Weber and Suchman demonstrate the usefulness of boats and the nautical in expanding upon our experiences of the familiar and how intelligent actions are made. Historically, land has figured metaphorically for the epistemological commitments of the West including objectivity, universality, and representationalism. Because of the specific material and environmental conditions inherent to boats and the sea, boats substantially raise our awareness of embodiment and entanglement in particular and revealing ways. Boats and the nautical play centrally in our thinking about change, adventure and possibility. They call upon us to improvise in uncertain situations. The development of new media invite the possibility of new ways of thinking, new forms of connection, and so newly imaginable possibilities for community and way of being-with others in the world.

Elsewhere is a geography, a material and discursive inscription of desires within and for the world. These are not any old desires, however. Elsewhere is not anything we want it to be. It is not heavenly, not utopia, not “relativist escape.” Elsewhere cannot, in this context be about infinite promise. Unlimited desire does not do justice to *Elsewhere's* commitments to situated knowledges, agential realism, or

faithful accounts of a ‘real’ world, one that can be partially shared and friendly to earth-wide projects of finite freedom, adequate material abundance, modest meaning in suffering, and limited happiness.⁵⁹

⁵⁹Donna J. Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1988), 187.

Elsewhere beckons beyond the material inequities and discursive limits of certain, still deeply pervasive ideologies—the gains of which come at a considerable price. Call them White Privilege, Capitalism, Patriarchy, Empire. For those among us for whom the gains of these ideologies are wrought at too a high a price, we call them (to be polite) ‘problematic’.

As such, the journey forth, beyond, otherwise requires a critical consideration of these ideologies as fundamentally dependent upon a continued faith in representationalism. This is the world we are in.



Figure 8 *Elsewhere* with exhibition participant and the artist at “Things that are Possible” UCSC’s Digital Arts New Media MFA show. May 2010. Photo by Nik Hanselmann.

There is no outside from

which we make our claims. Haraway reminds us that the “point is to make a difference in the world, to cast our lot for some ways of life and not others. To do that, one must be in the action, be finite and dirty, not transcendent and clean.”⁶⁰

Elsewhere is a strategic experiment in creating an imaginable community. It is formulated discursively and crafted materially to produce a play of mutual connections that invite and involve human and non-human collaborations along more respectfully gained terms of engagement.

⁶⁰Donna J. Haraway, *Modest_Witness@Second_Millennium.FemaleMan@_Meets_Onco-Mouse™* (New York: Routledge,1997), 36.

Accounts of a 'real' world do not, then, depend on a logic of 'discovery', but on a power-charged social-relation of 'conversation'.⁶¹

There can be an elsewhere. The actual details of how or with whom 'we' would like to imagine elsewhere's becoming are the hard and likely lifelong work of collaboration. If there is any discovery to be had in the adventure *Elsewhere* inspires, it is not of some other place over there, it is in fact about ourselves and our ability to find and forge a 'we' that honors and is enlivened by diverse desires committed to broadening the hope and doing the work for more livable futures.

⁶¹Donna J. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1988), 198.

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APPENDIX 1

Audioplayer with Accelerometer

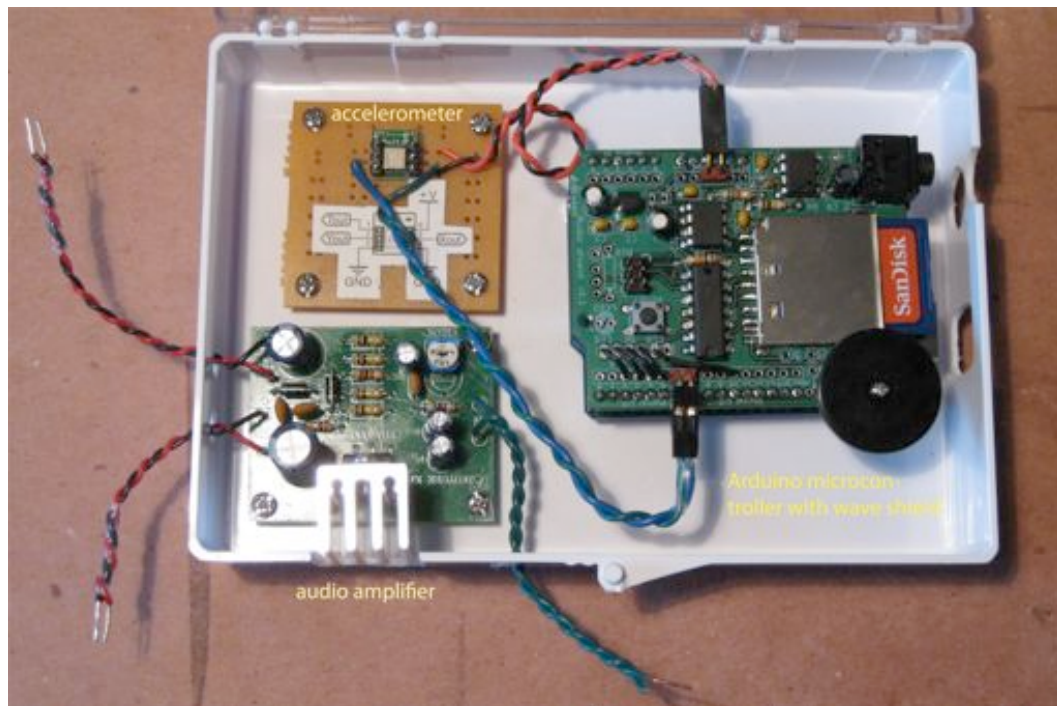


Figure 9 Accelerometer triggered audio player with amplifier. (Speakers and portable power supply not shown.) May 2010.

The hardware and software to play the audio files were assembled and refined over the course of several weeks. The hardware consists of six primary components:

1. A Memsic 2125 Dual-Axis Accelerometer sensor which detects motion and outputs x and y data indicating changes in the position of the sensor.

2. An Arduino microcontroller which takes the x and y data from the accelerometer inputs it into the custom software (See Appendix 2.) and triggers the sound depending upon the position of the boat.
3. An Arduino Wave Shield which includes an SD card and card reader for holding the sound files, volume control, and a mono audio output for connecting speakers.
4. A small 8W mono power amplifier for boosting the sound.
5. Two 8 ohm 6W audio speakers.
6. A portable power supply, including one nine-volt battery for the Arduino and one twelve-volt battery for the amplifier, for powering the system when the boat is staged outdoors.

Building most of the hardware components from kits was an opportunity to engage in another kind of fabrication process with very different materials. It allowed me to work closely with micro-circuitry, electricity, wire, solder, and code— a very differently embodied labor compared to the boat building or fabricating the sail. Both the hardware and the software design, much like the boat itself, were improvised and re-worked from a large number of resources culled from the Internet. More details are posted online at: <http://elsewhere.elizabethtravelslight.com/howto-where-to.html>.

APPENDIX 2

Code for Arduino Microcontroller⁶²

```
/*
 * elsewhere_accelerometer_audio (Version 1.8)
 *
 * Built with Arduino 15 on April 27, 2010
 * by Elizabeth Travelsight
 * for "Elsewhere" (http://elsewhere.elizabethtravelsight.com)
 * & "Things that are Possible"
 * the Digital Arts New Media MFA Exhibition
 * at the University of California Santa Cruz
 * April 29-May 9, 2010
 *
 * Based upon examples from ladyada's "WaveHC with 6 buttons"
 * (http://www.ladyada.net/make/waveshield/libraryhcplay6.html)
 * and nick lally (http://nicklally.com/code/sensor\_inputs.pde)
 */

//load these libraries.
#include
#include
#include
#include "WaveUtil.h"
#include "WaveHC.h"

SdReader card; // This object holds the information for the card
FatVolume vol; // This holds the information for the partition on the card
FatReader root; // This holds the information for the filesystem on the
card
FatReader f; // This holds the information for the file we're play

WaveHC wave; // This is the only wave (audio) object.

#define DEBOUNCE 100 // button debouncer

const int xPin = 6; // X output of the accelerometer
const int yPin = 7; // Y output of the accelerometer

int t = 3000; // sets delay time between laughs

int pulseX; // variables to read the pulse width from accelerometer
int pulseY;
```

⁶² More details and all the audio files are posted on line at:
<http://elsewhere.elizabethtravelsight.com/how-to-where-to.html>.

```

int accelerationX; // convert the pulse width into acceleration;
accelerationX and accelerationY are in milli-g's; earth's gravity is 1000
milli-g's, or 1g.
int accelerationY;

long randNumber; //declares variable for random number with min/max range

/*create array of wav file names. (these people laughed for me! some of the
audio files
are commented out because the software got buggy when I listed more than 18
files.
i don't know why. if you do, i'd love to hear all about it.)*/

char* fileName[] = {
"amber.wav",
"david.wav",
"donny.wav",
"eric.wav",
// "jaydee.wav",
"jomer.wav",
"kayla.wav",
// "leah.wav",
"leah2.wav",
"lisa.wav",
"mark.wav",
"maya.wav",
"maya2.wav",
"mom.wav",
// "mom2.wav",
"nicole.wav",
"ruth.wav",
"tobias.wav",
"tobias2.wav",
"wolf.wav"
};

// this handy function will return the number of bytes currently free in
RAM, great for debugging!
int freeRam(void)
{
extern int __bss_end;
extern int *__brkval;
int free_memory;
if((int)__brkval == 0) {
free_memory = ((int)&free_memory) - ((int)&__bss_end);
}
else {
free_memory = ((int)&free_memory) - ((int)__brkval);
}
return free_memory;
}

void sdErrorCheck(void)
{
if (!card.errorCode()) return;
putstring("\n\rSD I/O error: ");
}

```

```

Serial.print(card.errorCode(), HEX);
putstring(", ");
Serial.println(card.errorData(), HEX);
while(1);
}

void setup() {
  // set up serial port
  Serial.begin(9600);
  putstring_nl("elsewhere_accelerometer_audio_1_8");

  putstring("Free RAM: ");          // This can help with debugging, running
  out of RAM is bad
  Serial.println(freeRam());        // if this is under 150 bytes it may spell
  trouble!

  // Set the output pins for the DAC control. These pins are defined in the
  library
  pinMode(2, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);

  // pin13 LED
  pinMode(13, OUTPUT);

  // initialize the pins connected to the accelerometer as inputs.
  pinMode(xPin, INPUT);
  pinMode(yPin, INPUT);

  // if (!card.init(true)) { //play with 4 MHz spi if 8MHz isn't working
  for you
  if (!card.init()) {           //play with 8 MHz spi (default faster!)
    putstring_nl("Card init. failed!"); // Something went wrong, lets print
  out why
    sdErrorCheck();
    while(1);                   // then 'halt' - do nothing!
  }

  // enable optimize read - some cards may timeout. Disable if you're having
  problems
  card.partialBlockRead(true);

  // Now we will look for a FAT partition!
  uint8_t part;
  for (part = 0; part < 5; part++) { // we have up to 5 slots to look in
    if (vol.init(card, part))
      break;                       // we found one, lets bail
  }
  if (part == 5) {                 // if we ended up not finding one
:(
  putstring_nl("No valid FAT partition!");
  sdErrorCheck();                 // Something went wrong, lets print out why
  while(1);                       // then 'halt' - do nothing!
  }
}

```

```

// Lets tell the user about what we found
putstring("Using partition ");
Serial.print(part, DEC);
putstring(", type is FAT");
Serial.println(vol.fatType(),DEC);    // FAT16 or FAT32?

// Try to open the root directory
if (!root.openRoot(vol)) {
    putstring_nl("Can't open root dir!"); // Something went wrong,
    while(1);                            // then 'halt' - do nothing!
}

// Whew! We got past the tough parts.
putstring_nl("Ready!");
}

void loop() {
    //putstring(".");                    // uncomment this to see if the loop isnt
    running

    int pulseX, pulseY; // variables to read the pulse width.
    int accelerationX, accelerationY; // variables to contain the resulting
    accelerations.
    int randNmbler; // variable to select wav file at random.

    pulseX = pulseIn(xPin,HIGH); // read pulse from x- and y-axes:
    pulseY = pulseIn(yPin,HIGH);

    // convert the pulse width into acceleration; accelerationX and
    accelerationY are in milli-g's; earth's gravity is 1000 milli-g's, or 1g.
    accelerationX = ((pulseX / 10) - 500) * 8;
    accelerationY = ((pulseY / 10) - 500) * 8;

    randomNumber = random(0,18); //choose random number between 0 (inclusive)
    and 18(exclusive).
    Serial.print(randomNumber); //print the number.
    Serial.println();

    Serial.print(accelerationX); // print the x acceleration.
    Serial.print("\t"); // print a tab character.
    Serial.print(accelerationY); // print the y acceleration.
    Serial.println();
    delay(100); // wait 0.1 seconds

//this is where the accelerometer triggers the audio player
if (accelerationX < -150 || accelerationX > -80){ // these number depend
upon the resting position of the boat.
    playcomplete(fileName[randNumber]); //if the accelerometer is moved
from its resting position... select a random number and play that file.
    Serial.print(randNumber); // print that number
    Serial.print("\t");
    Serial.print(fileName[randNumber]); //print the file name
    Serial.println();
    delay(t);
}
}

```

```

}

// Plays a full file from beginning to end with no pause.
void playcomplete(char *name) {
    // call our helper to find and play this name
    playfile(name);
    while (wave.isplaying) {
        // do nothing while its playing
    }
    // now its done playing
}

void playfile(char *name) {
    // see if the wave object is currently doing something
    if (wave.isplaying) { // already playing something, so stop it!
        wave.stop(); // stop it
    }
    // look in the root directory and open the file
    if (!f.open(root, name)) {
        putstring("Couldn't open file "); Serial.print(name); return;
    }
    // OK read the file and turn it into a wave object
    if (!wave.create(f)) {
        putstring_nl("Not a valid WAV"); return;
    }

    // ok time to play! start playback
    wave.play();
}

```

APPENDIX 3

Exhibition Take-Away Postcards



Figure 10 Postcard design front and back. Photo by Nick Lally. May 2010.