Places: People, Events, Loci – the Relation of Semantic Frames in the Construction of Place

Steve Harrison[1] & Deborah Tatar[2]

[1]*Department of Computer Science and Art and Art History, Virginia Tech, 121 VTKW II – 0106, 2202 Kraft Dr., Blacksburg, VA 24060, USA (E-mail: sHarrison@vt.edu);* [2]*Dept of Computer Science and Psychology, Virginia Tech, 123 VTKW II – 0106, 2202 Kraft Dr., Blacksburg, VA 24060, USA (E-mail: tatar@vt.edu)*

Abstract. The central point of this paper concerns the way the particular contexts of people, events and loci constitute *places* through the pragmatics of being and acting in physical space and how this can give designers traction over place design. Although we focus here on meaning associated with the concept of "place", unlike some thinkers, we also believe that spaces have meaning. Our point is not to engage in a competition between phenomenologies, but to develop a rich description of the contribution to place of the *semantic tangle* of people, events, and loci as an aide in locating design alternatives. The semantic tangle consists of situated, mutually constituting resources. Patterns of moves and contexts that define and utilize those resources constitute different forms of place construction; in this paper, we focus on three: the linguistic participation of place, ritual, and ephemeral places. Approaches to CSCW may profit (1) from designing technology for multifaceted appropriation, (2) from designing specific places for specific people engaged in specific events in specific locations, or (3) by commutation, that is, a method of meaning making similar to detecting "just noticeable differences" by iteratively and self-consciously substituting related meaningful moves and contexts into the system of meaning.

Key words: place, space, people, events, loci, semantic tangle, embodied experience, social construction, social production, ephemeral place, re-place-ing space

1. Introduction

It has become common to hear people observe that "cafes have become offices" as people use laptops and cell phones whilst sipping coffee. But what does this really mean? Has the place called "café" been supplanted by one called "office"? If this has happened, by what processes has it occurred? If it has not, then why is this phrase telling about cafes – and what is really meant by it? This is a semantic tangle and information technologies seem deeply implicated in this tangle. This tangle can be explained and unraveled in many ways, but to explain how our everyday experience of place can be understood and designed to reflect that lived experience, we need to revisit the underpinnings of the situation of places.

1.1. Re-place-ing space revisited

Since Paul Dourish and the first author of this paper wrote "Re-Place-ing Space: The Roles of Place and Space in Collaborative Systems" (hereafter called *Re-Place-ing Space*) in 1996, the distinction between place and space has received considerable attention in the CSCW literature (Harrison and Dourish 1996). *Re-Place-ing Space* started from an analysis of the use of the word "space" as it occurred in HCI discussions of the mid-1990s (which revolved around the design and analysis of collaborative virtual environments and media spaces). The paper suggested that system designers were hampered by the belief that giving a virtual environment spatial characteristics via the metaphors of relational orientation and reciprocity, proximity in relationship to action, the ability to be partitioned, and qualities of presence and awareness similar to those found in the physical world, would inevitably lead to what those designers cared about more deeply, that is, creating a *place*. Similarly to Tuan's earlier work, Harrison and Dourish defined place in contrast to space. Where Tuan says "What begins as undifferentiated space becomes place as we get to know it better and endow it with value," (Tuan 1977, p. 6), Harrison and Dourish took a more active designerly perspective "Space is the opportunity; place is the understood reality." (Harrison and Dourish 1996, p. 67).

Since then *Re-Place-ing Space* has had a number of effects. It has been widely cited. It has led to or contributed to the organization of workshops and special issues such as this one. It has also helped open the field of CSCW up to many interesting, complex, and competing phenomenologies that use the concepts differently (primarily to solve different problems). Regardless of differences between phenomenologies, and in the face of considerable change in the technological situation during the past 10 years, the distinction that may be usefully described as between space and place has come to be widely recognized by CSCW designers. One reason for this was that the consequences of the space–place distinction for design and analysis were, in part, put in simple instrumental terms as *appropriate behavioral framing*. That is, the claim was that designers could help users better manage their activities (know how to act) in an environment designed with the concept of place, rather than space, foregrounded. This instrumentality helped clarify the importance of the difference between place and space; however, it obscured the importance of the epistemological argument. For some reason, subsequent discussion has dichotomized the distinction between place and space far beyond and in different directions than what Harrison and Dourish claimed (implying, for example, that they claimed that tables and chairs can only have spatial or "placial" properties and not both; Brown and Perry 2001). More importantly, it has ignored the centrality of meaning creation in their thinking (Brown and Perry 2001).

1.1.1. *Semantic tangle*

In this paper, we continue the argument first made in *Re-Placing Space* and which Brown and Perry ([2001](#)) have also partially developed,[1] by arguing that place deserves power as a concept because of the qualities that give meaning to particular places. We believe that, despite considerable controversy in the field, some of the most interesting aspects of exploring new technologies are currently being overlooked in part because of the neglect of thought about how places attain and transform meaning. In particular, while (in our terms) space is a component of or a contributing factor to the notion of place, so too are two other crucial and often overlooked elements: people and events and the meaning already associated with the space/place.

In this paper, we will introduce the term *locus* simply as an aid in clarifying the distinctions between our intended meaning of "space" and how other researchers have understood space. We will then argue that for any given instance of a place, people, events, and locus together constitute a "semantic tangle" that give meaning to that place.[2] By a "semantic tangle", we mean that these three elements together dynamically constitute the meaning of the place. We describe this as a "tangle" because while people can abstractly distinguish theoretically separable components, we cannot in fact separate them and retain the same sense of the place. This is comparable to the notion in semiotics that the signifier and the signified are constituted simultaneously.

1.1.2. *Embodiment*

We will argue that embodied physical experience is essential to the experience of both place and space. Many abstractions, metaphors, and analogies are possible. However, the core meanings of space and place proceed from embodied experience, rather than, for example, Cartesian abstractions.

1.1.3. *An introductory example*

An example illustrates what has been accomplished in prior work and begins to frame the current opportunity:

> Four people have arrived in a large conference room meant to hold twenty. A teleconferencing cart is at the end of the table away from the door; it has a remote control camera on top of a large television set. A teleconferencing speakerphone set sits on the table with a tangled phone line draped over the edge of the table.

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[1] While we deny that Harrison and Dourish treated space and place as static or that they "divided the world up between the objective physical world (space) and the meanings and viewpoints we attach to the world" (Brown and Perry [2001](#), p. 29), we agree with the larger points that technology must be understood in use and that activity is important.

[2] From a linguistic point of view, what we are describing might be more properly described as a pragmatic tangle rather than a semantic tangle. As in pragmatics, we are emphasizing the creation of meaning in practical action. However, we use semantic tangle so as to emphasize the importance of meaning and not invoke pragmatic philosophy.

One of the people in the room fiddles with the controls and the screen comes on. A room (room 2) appears on the screen. It is more or less identical to this conference room. A few chairs are visible around a conference table, but no one is visible. A voice comes out of the speakerphone, "Hi. Charley? I see you and Charlotte. Who else is there?"

"We don't see you – we hear you. Bill?" A head leans into view from the right side of the screen and the image seems to move in and out of focus. Bill leans back out of the picture. "Is it still raining up there?"

"No. Its sunny today," says Charley, "What room are we in?"

Bill responds, "We're in 212 – just down the hall from Willi's office. What room are we in?"

"Same-old, same-old."

Charley finally gets around to answering Bill's initial question, "Before we get started, just want to make sure that you can see that Frank, Charlotte, and Delta are here." He waves his hand towards the others on his right and left. All look towards the screen and are rewarded with the coincidental appearance of someone at the back of room 2, that is, the room on the screen. Charley welcomes the latecomer, "Patty. We were just getting the weather report before we get rolling." Bill's hands are now visible in the bottom of the screen and Patty is seated at the far end of the table. She is visually small – the camera is probably on a wide-angle setting.

Bill's voice comes out of the speaker, "Did you get my overheads?" Some papers with charts on them are waving around on the screen. Everyone nods, overacting the acknowledgment but not saying anything. They turn away from the teleconferencing camera towards a projector screen on the sidewall. Frank has a laptop in front of him that is connected to the projector.

"OK – we're on slide one," Frank says towards the speakerphone. Heads go back and forth between the teleconference screen and the projected image.

This is the sort of setting that *Re-Place-ing Space* addresses very directly. We see behavior specific to the place of a conference room and that the conference room is a construct of the physical space of the two rooms and the teleconferencing gear. Participants work together to establish a behavioral frame that allows them to conduct the business of the meeting, moving their interaction between behaviors that utilize and those that clarify the affordances of the joint space. They perform orientation actions which allow them later to make behavioral assumptions such as that nodding

is a sufficient response to Bill's question about the slides. The space/place account can be used to extract design principles. For example, it justifies placing a priority on promoting the visible display of attention to all present.

However, *Re-Place-ing Space*, as often interpreted by friends as well as by critics, does not describe or account for all of the phenomena of this situation that a designer or analyst might care about. Why do the participants ask what room they are in? Why does Bill stick his face in camera view to demonstrate his presence? Why does Charley wave when introducing people present in his room? Are these important or incidental features?

The answer to these questions is noted but not explored in *Re-Place-ing Space* – places are constructed not only out of *spaces*, but also by the *people* present, and the *events* occurring in them. In this example, the event "teleconference " is conflated with the place – the joint conference room – and the people that constitute the meeting. In *Re-Place-ing Space*, Harrison and Dourish tried to get people to see that space does not by itself constitute place. Now we hope to add to that the idea that place exists at the confluence of loci, people and events, and that to understand it well requires unpacking the semantic tangle that is a necessary component of any functioning place.

By unpacking of the tangle, we provide the designers of technologies interacting with places an analytic framework. But the designer will recognize that we are also arguing that the act of design in this realm is unavoidably a gesture of meaning-making for both the technology and for the network of people, events and loci. Some may not find this astonishing, but the boundaries of design often appear to be isomorphic with the overt subjects of design. And it is of great consequence to the designer to understand what is under control of the designer and what is not – even if what is not transforms or is transformed by the actions of design.

2. The concept of space

In the current paper, our deep argument is about identifying some components of the meaning of place as experienced. However, the concept of space itself, which was treated largely as background in *Re-Placing Space*, has complex meaning that may have obscured the authors' intent. Some readers may wish to skip this section, as it is not essential for understanding the rest of the paper. However, we argue that some current concepts attendant to particular notions of space are counter-productive to effective CSCW design. In particular, both the confusion of the production with the construction of space, and the confusion of spatial metaphors with metaphors that derive from being in embodied space may mislead designers and analysts. These and related ideas make *space* and *place* contentious ground; we will try to loosely organize some of the elements of this bitter landscape.

In *Re-Placing Space*, we started by responding to a common usage of the word "space" and extended the notion to include the ways that the sensory apparatus of our embodied selves could take action in mediated interaction.

Many major and minor thinkers in geography, architectural theory, planning and philosophy as well as in CSCW have approached the issue of space, and we do not detail all of their various thoughts. Instead, we categorize them roughly into four groups: those that ask how we experience space, those that ask how space relates to power, those that consider space as a social construction, and those that build on spatial metaphors. We note that our own approach differs from all of these.

2.1. How do we experience space?

Tuan, attempting to capture human physical experience of the world, moves between various conceptualizations of space. He variously characterizes space as freedom (in contrast to security; Tuan 1977, p. 3), as the thing between places (p. 12), and as freedom to move or a "rough coordinate frame centered on the mobile and purposeful self "(Tuan 1977, p.12). However, we take as central his attempt to ground his understanding of both place and space in the early experience of the child. As it happens, he builds not on evidence about the child's experience but on his imagination of what the child's experience must be. Whatever the limitations of this from a scientific point of view, in-so-doing, he touches on many facets of space and place from an embodied or experienced point of view. Unfortunately, he does not put these in a framework or system of contrasts that helps the designer distinguish the important from the incidental.

Tversky, taking a more focused experimental approach, has examined the psychological relationships (1) between map and routes representations of space, and (2) between body and directionality (Tversky and Taylor 1998; Franklin and Tversky 1990). These works establish the strong and abiding relationship between the nature of the body and experience of two components of spatial movement: directionality and orientation. By implication, our mental models of space are based in our bodily experience. The symmetric vs asymmetric experience explains why we are faster to distinguish what is in front from what it in back than we are to distinguish what is left from what is right even in an imagined space.

2.2. How does space relate to power?

Like Tuan, Soja (1989) and Lefebvre (1991) also use both the words "space" and "place". They distinguish three kinds of space: lived, imagined, and other or "thirdspace". However, rather than elaborating on the precise intention of these terms, they pursue their primary focus of understanding the power relations inherent in space. These intrinsic power relations are often hidden in the organization of space and place and discussions about them. Coming from Marxist and/or Hegelian positions, Soja and Lefebvre utilize the notion of the *production* of space. Brown and

Perry (2001) similarly argue that much of utility of technologies comes from their mass production. Paul Dourish, in his recent CSCW paper, "Re-Space-ing Place: Space and Place Ten Years On", (Dourish 2006) referencing both de Certeau (1984) and Massey (1993), also argues that space is an embodied *social production*.

It is important to realize that production is a term of art that, despite its everyday meaning, differs from the simpler notion of construction. Construction is anything that creates or gives meaning to a space (place). Production is the way capitalist culture (re)produces space as a means of control. Production exists in dialectical opposition to the unique creation or "work". One instance of production is the way Western culture insists on the use of maps involving a uniform coordinate system as the privileged way of describing space. It is very important for CSCW to understand the nature of production; however, it is also important for CSCW to maintain clarity about the difference between production and construction. While "production" emphasizes the institutional aspects of space (and therefore useful in understanding the design of systems as means of surveillance and control, for example), "construction" emphasizes local situated choices and meaning-making in the moment.

The term *social* in the term "social production" is also a narrow conceptualization, limited to society as it relates to forms of power relations. The social production perspective raises the important questions of who gets to construct space, what is central, and what is peripheral. However, because the notion of production is tied by Marxist theory to the reproducibility of spaces (rather than to unique works), the concept of social production emphasizes a broad notion of culture in the large. Therefore, discussions that stem from social production tend to veer away from the specific elements that create space in the moment or which are under the control of particular actors or designers of places (Jameson 1991).

Furthermore, while Soja and Lefebvre do utilize the idea of embodied experience, they use it only to frame their central focus on inscriptions of power.[3] From this perspective, space can be reduced to an abstract, non-embodied idea – and indeed Dourish himself diminishes the significance of embodiment in his recent treatment.

2.3. Space as a social construction

Many writers argue that space (and place) are social constructions. This idea seems true for the most part but of limited utility in the absence of further elaboration. The idea of social construction includes both too much and too little to have force. It includes too much because it encompasses both narrow processes of creating interpersonal agreement and broad questions of cultural heritage and

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[3] In order for Lefebvre's system to work, he re-invents Hegelian logic for his own interpretive purposes. No longer a strictly oppositional dichotomous thesis/antithesis/synthesis structure, he sees meaning as constructed from a tripartite structure whose process relation is more both/and. This structurally, but not referentially, echoes Charles Sanders Pierce's formulation of "the semiotic" – more about Pierce in a moment. (Peirce 1991)

their application. This breadth subordinates the question of what is considered part of sociality. Goodwin (2003) illustrates the importance and complexity of taking an act to have social significance. He describes two accounts of a famous incident in American baseball, Babe Ruth's pointing gesture before hitting the winning homerun in the third game of the 1932 World Series. In one account, only the orientation of the gesture with respect to the outfield fence matters, while in the alternative account, the number of fingers used is crucial. In other words, the meaning of the social construction depends on the meaning of the construction of the social. Arguably, the meaning of the social in particular design situations should be a primary focus of investigation.

The lack of precision in the notion of "social construction" may lead system builders away from careful analysis, into the misperception that any social construction is as useful as another. For example, Fitzpatrick's Locales Framework (Fitzpatrick 2003) references the notion of social construction and goes on to give permission to those who use it to create systems that name elements "places" which may not have deep sense of placeness and employ spatial metaphors which are not grounded in an embodied sense of space. These "places" are intended to support people simultaneously "inhabiting" multiple social worlds. Saul Greenberg reports using the Locales Framework to design a media space collaboration system (Collaboration Bar) that had no direct relationship to the apprehensible aspects of space. He reports that people did not make it their own nor did they use it to work together – in short, it was not extensively used (Romero et al. 2006).

Besides being too general, the term "social construction" is also too specific. It does not account for the entirety of lived experience of space and place. We see cats hiding behind things when stalking prey. "Hiding" may have many socially constructed meanings, but it is quite a stretch to assume that feline culture explains this behavior. We argue that it is often or even usually important to keep the lived experience in mind in design.

2.4. Space as a metaphor

The importance of distinguishing between space as an embodied lived reality and space as an abstracted metaphor emerges strongly in reading Soja and Lefebvre. Because they do not care about the importance of the embodied experience of space, they allocate some elements of embodiment to lived space and some elements to *thirdspace* (Lefebvre's term). They seem to say that "space has abstract meaning" and that the abstract, non-embodied meaning of space constitutes the notion of space.

The distinction between space as lived and space as abstracted is not important to their framework or concerns; however, other work builds on their elision and turns it back to the question of how we understand the built reality, its consequences, and opportunities.

Metaphors and abstractions of space are powerful representational tools. In Western culture, many spatial metaphors derive from Cartesian notions of

mapping coordinates that extend back to Platonic notions of the absolute. Coordinate systems, absolute direction, and mapping systems are useful in a variety of contexts and have profound intellectual connections to a range of human concerns, including, for example, Tuan's interest in geography. In another example, Hillier (represented in Chalmers 2002) like many architectural and geographic theorists, uses the idea of representing the urban space with the conceit of patterns of movement in which only nodes and path are represented; thus, a metaphor of space is used to describe physical space.

For years, Lakoff and his colleagues have been exploring the linguistic evidence for the ways in which our access to complex concepts is mediated by simpler, embodied concepts (Lakoff and Johnson 1980; Lakoff and Nunez 2001). They point out the importance of metaphor. For example, the realm of math is often experienced as remote from everyday life. Yet profound concepts in mathematics may be apprehended by their analogy to embodied experience. Mathematical sets and groups are bounded containers that employ the language of "inside" and "outside" drawn from everyday experience.

However, Lakoff and his colleagues are not designers. Their concern is with the way found metaphor is entwined with the structure of language and thought. It does not follow from their thinking that all metaphor is either profound or (separately) embodied. The case must be made in each context of use.

Several members of the "Glasgow school" utilize spatial metaphors in design. In the Recer system, Chalmers (2002) creates a rather elegant "path model" that uses a metaphor of space as a "system of linked coordinates" (with no other spatial qualities) to produce interesting emergent results. Recer uses a particular kind of spatial metaphor to give the designer power over the designed system. However, Brown and Perry (2001, p. 30) go one step beyond this to claim that "the key difference with Harrison and Dourish's usage is that space is no longer 'the physical world'; it is the many abstractions which influence and configure the world". In this view, space is no longer the lived reality at all, but exists only as disembodied. When put as a hegemonic claim rather than one among many views, this is Platonic idealism. It is quite different from the embodied notions invoked by Lakoff and while we applaud any interesting outcomes of this line of thought, it does not constitute an entire worldview.

In Brown and Perry's work as in Chalmers' and also in the Locales Framework, we see a recurring theme of confusing powerful but abstract spatial metaphors used by designers with user level extensions that derive from the embodied experience of space. We argue that (for example) a design space[4] is disembodied while a massive on-line game, a representation of the map of the

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[4] Often represented as a multi-dimensional matrix of possible features for a design, it is bounded and often rows and columns related in some categorical structure suggesting topologies of solutions. It is a powerful design tool – sometimes called a "Zwicky or morphological box.

town you live in, or even the highly stylized London Subway system map[5] are embodied extensions of the notion of space. The link-and-node model of the London subway map makes sense out of the rider's experience of the subway. However, a general link-and-node model, such as used in Recer, is indistinguishable from the abstraction of tasks and linkages in a critical-path model of project planning. These non-embodied models can be "traversed". They can be useful. But they exist in a flattened world in which links can be rearranged arbitrarily without spatial consequence. It is very difficult to experience the temporal qualities of task-relations in anything like an embodied spatial experience; the same can be said for recommendations.

We also note that, having argued for the abstraction of space and its utility, Chalmers takes a very different tactic when returning later to the question of space. He says, "We consider space to be one of the physical phenomena which has the potential to be used symbolically...." (p. 403). The implication here is that the concept of "space" is not itself seen as having symbolic meaning: "Just as a space becomes a place, a pattern of sound waves is interpreted as a word.... The former is a perceivable pattern in one or more physical phenomena...." (p. 404). This appears to contradict his own earlier treatment. And, while Harrison and Dourish said something that is superficially similar ("Space is the opportunity; Place is the understood reality."), they are not making a linguistic claim any more than Tuan is when he says, "Space is freedom."

Ultimately, space is a complex concept. Naturally, people are concerned with different uses of space and different kinds of questions. Four approaches outlined here are those concerned with experience, with power, with social construction, and with metaphor. We have argued that all of these are legitimate; however, some are more useful in their own terms ("All models are wrong; some are useful"; Box 1979). Nonetheless, we argue that when thinkers implicitly or explicitly discount the importance of embodiment as a component of space, they are in danger of missing the core power of the concept. The abstractions may be useful in context, but their meaning and generality requires examination. The conditions and boundaries on particular conceptions of space should not be taken as constituting unexamined principles for design apart from the project goals.

3. The embodied view of space, place, and locus

As we go on to discuss place in more detail, we need to clarify our own view of space. Echoing Harrison and Dourish and from our concern with conditions that constitute the creation of meaning for place, we treat *both* space and place as embodied, experienced phenomena closely related to one another. We take extent

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[5] While they work as extensions of embodied space, we have previously noted that maps are problematic for other reasons such as manipulations of power relations. The same basic question obtains, here too, that of who and how the "social construction" is constituted.

and relationship as the core embodied components of space, deriving from the human kinesthetic, integrative experience of the world. We will elaborate more on place later.

The notions of house and home are very similar to this relationship. Both are experienced, embodied, complex concepts, that have, at least in English, linguistically distinct forms, and yet which exist in relationship to one another. One may describe a house in terms of abstract properties like square footage, mass, and orientation that also apply to other sites that are not houses. One may also profitably inquire about whether a house is home-like, how to increase its homelike properties, and what detracts from those properties. We usually think of homes as having similar spatial-temporal extent to houses, but, by analogy to the design issues of concern to us in the current paper, we may seek to make a campsite homelike, or our section of a dorm-room, or a child may even experience the house-next-door as part of his home, at least in summer.

Many of the authors cited in the previous section are concerned with elements of space analogous to the design of houses. This is perfectly legitimate. However, our concern is, as it were, with homes. We focus on how meaning is constituted for participants in the moment and those design elements that are recruited to construct meaning.

Is the exact definition and distinction between house and home important? Sometimes, and for some purposes, but not always. As Edmund Burke put it, "Man may argue about the exact point at which day becomes night, but there's a tolerable difference between midnight and noon". Do we know precisely when someone is experiencing a place as a home as compared to a house? No, and yet we can usefully design for one, the other, or both. Furthermore, we may legitimately claim to be designing for the future homeowner's experience without making a specific claim that person x on occasion y will experience house z in mode w.

Neither the exact definition nor the demarcation between space and place are important to the rest of our argument. Indeed, in our view, a new place may demarcate previously undifferentiated space, may be co-extensive with an old place, or may supplant an old place. The shaping of the meaning of a place by its prior meaning as a space or place is a kind of intertextuality in which a "reading" or understanding of one is done against the reading or understanding of another. However, the notion of intertextuality is a flattening notion, in which everything can and will be read against everything else with equal claim to our attention.

Unlike the underlying post-modern assumption in the idea of intertextuality, we are looking for a pragmatic model for everyday experience. We do not deny the importance of the imaginal, or that the imaginal becomes a real part of our understanding of space and place. But we are not trying to explain the imaginal. We are trying to point out that there are ways of talking about the experienced world that push the imaginal a bit to the side and that these can serve as a pragmatic mechanism for talking about the process of design. This is not a post-

modern model, but it exists as a basis for consideration of complexities and frames that exist mostly in people's heads as opposed to in their experience. Of course, "head" and "experience" are not exclusive categories. However, just as we do not need to know the exact relationship or mutual interdependence between top-down and bottom-up processing in order to describe phenomena pertaining to each of these, we may usefully examine and characterize the experience of space/place without specifying a precise relationship to the imaginal.

3.1. The term "locus"

In an attempt to side-step some the debate about the prior meaning of terms such as space and place, in this paper, we introduce the term *loci* to describe the space-places that exists (or do not) prior to the commencement of place creation. We intend the term "loci" to designate the attended-to element that is utilized in place-meaning-making. As in Goodwin's pointing example, the elements that are important depend on the account that is given. Our argument is that in some cases loci are very important in defining a new place, while in others, it is not.

We note ties between the form of this argument and Dewey's criticism of the notions of stimulus and response (Dewey 1896 reported in Menand 2001, pp 328–329). Dewey points out that when a child sticks his finger into a candle flame, we often refer to the flame as the stimulus and the finger-sticking as the response. However, if we had looked at the child in the room with its artifacts and conditions in the moment before the crucial action is taken, we would not have picked out the candle as a "stimulus". It is the response that creates the notion of the stimulus. Likewise, loci are constituted by the way they are recruited into the meaning-making that constitutes places.

We will revisit this powerful concept after we have explored the basics of the semantic tangle. We note that "loci" may bring with them chains of associated meaning (humanly created artifacts, natural features, locations of shared attention, regions with names and regions without names, etc.).

3.2. What about artifacts and objects?

Some schools of thought define what we are calling loci as "artifacts" or only acknowledge collections of independent objects as loci, denying gestalts that bind together space and artifacts, or denying that space can be experienced without objects. These schools of thought are consistent with our definition of loci to the extent that objects conform to the simple attended-to-ness requirement that we use. We agree that objects in various settings may be part of the physical situation – and even semiotic resources in that situation. To this extent, our position is part of Baudrillard's (1968) system of objects. However, unlike the current analysis, Baudrillard's is primarily concerned with how objects acquire value. It, like the

thesis of Walter Benjamin's famous essay "The Work of Art in the Age of Mechanical Reproduction", deals with the relation of the unique object (model) to repeated instances. Both are important formulations of "value," but not explications of other aspects of meaning creation.

Further, we cannot not agree that all loci are objects. For example, if one replies to the question, "How big is the dog?" by saying, "This big" and holding out two hands to indicate the size, the hands enclosing space constitute a locus without the formation or use of any artifact. While it is possible to create in the mind an artifact from the temporary configuration of hands, this semantic stretch dilutes the utility of the term "artifact" while removing the essentially embodied sense of the linguistic move.

3.3. The term "event"

We use the term "event" to mean "activity" in the ordinary sense of the term. We do this to avoid confusion with the special meanings that "activity" has in such CSCW paradigms as Activity Theory and some ethno-methodologies. As we understand "activity" as a term of art, it implies goal-directed orientation. It also implies a certain scale of endeavor that can be characterized as goal oriented.

We use "event" as a signifier for both the temporal phenomena and the constructed meaning of the temporal experience, regardless of whether any of it is goal-directed. As we will see in the examples, "events" can vary in scale from the precise and nearly instantaneous ringing of the telephone to the extended and ill-defined "dinner".

3.3.1. *What about actions?*
Actor-Network Theory (ANT; Latour 2005) emphasizes the role of actions as compared to events. Events are simply contextualizing temporal frames. Unlike events, actions require agency. Actions and their agency are important in ANT because the analytic agenda is to explain commonalities and complex connections between the material and the semiotic (or constructed). Our purposes and assumptions are related but different. Our agenda is to provide leverage for design. Our starting place is the embodied experience that designers may utilize in designing for other people.

3.4. The term "people"

We use the term "people", again, in an ordinary way. Some thinkers might be inclined to emphasize not the people themselves in all their complexity but the roles that a particular person might bring to or serve as in a situation. Both Andersen (2006) and Goodwin (2003) are concerned with roles (although Goodwin does not use this term) in part because they are concerned respectively

with the relationship between machine and persons as actors in the world, and with how people attain and maintain expertise. We share with these thinkers a concern with transformation; however, our focus here is on the semantic tangle that, we claim, defines the role in the moment.

By "in the moment" we mean that even a role that has associated history and expectations must be constructed anew every time it comes into being. People, like events and loci, constitute semantic constituents in the course of place-making.

4. Linguisitic participation of place

Our main argument is that place is created at the confluence of loci, people and events. To understand a place well requires unpacking the semantic tangle that is a necessary component of any functioning place. We need to ground the semantic tangle of these categories and their interrelationships in real-world everyday experiences to make their force apparent. Three vignettes follow which illustrate the central and intersecting role of people, events, and locus in the evolving definition of place. In particular: (1) a locus can become a new place by virtue of the embodied human sense of an event in that place, (2) an event can be constituted by virtue of a particular set of people engaging in schematized ritual in a space, and (3) a place can be constituted in a physical or virtual environment apart from space by people and events alone. These are aspects of what we call "linguistic participation of place," that is, the participation of this particular instantiation of this particular place in the attainment of referential meaning in discourse.

We will diagram each of the vignettes with a simple abstraction of the interplay of meanings. To keep it simple, we will use two kinds of meanings: *context* and *move*. "Context" sets expectation of possible meaning. An "appropriate behavioral framing" is one kind of contextual meaning; specific deictic resources are another kind; and histories or recollections of this location are yet another. "Move" is an active association (often an action), called by out by a specific situation. A move can be thought of as a selection from the possible choices of meaning set by a context. Deriving from Wittgenstein's (1953/1998) notion that language is a game, psycholinguists like Clark use the term "move" in much the way we are using it here.

4.1. Transactions on embodied interaction: a retail purchase place

One reason that people and events are important in understanding place is that a locus can become a place by virtue of the embodied human sense of an event in that place.

In the following example of a mundane experience, also used by Clark (1996), place is used to create situated meaning in the context of a particular event

involving two people: a clerk and a customer. This meaning is then utilized in their conversation:

Its 10:15 PM at the local convenience store. The Slurrpy machine is spinning its unnaturally colored drink mix and the fluorescent lights are bright. The clerk is behind the counter, staring into the parking lot.

A customer approaches the counter with a bag of potato chips. The clerk turns towards the customer. Without saying a word, the customer drops the bag of chips on the counter between the clerk and the customer and near the cash register. The counter is slightly worn at this location from years of 6-packs of beer, bags of chips, and other purchases.

Pressing the keys of the cash register, the clerk says, "Is that all?" His attention bounces between the display of the cash register, the bag on the counter and customer, eventually remaining on the customer.

The customer taps the bag with resulting rustle of plastic and chips, "That's it." His finger does not grab the bag as the clerk hits a big button on the register and then seizes a bag from under the counter, his eyes again going from the customer to the bag and then ending on the register.

"That will be $1.47." turning back to the customer. The customer pulls out a wallet from a back pocket and hands the clerk a $5 bill. A few more pushes of register buttons and the cash drawer opens, the correct change is displayed on the register; the clerk looks up at it and the customer follows the attentional shift also looking at the register display. Holding out his hand but still looking at the register, the customer receives $3.53.

The clerk shakes the store bag open and drops the bag of chips in. The customer turns and heads out the door with the bag. While this has been going on another customer has placed a handful of candy bars on the worn spot on the counter and even as the clerk is still saying, "Have a good evening," the clerk is turning his attention quickly to the new customer and the items to be purchased.

In this example, the construction of the place in the moment of the event is bound to both the people and the events they enact in the particular space. There is the event of purchasing, there is the dyad of the clerk and customer, and there is the counter.

Placing the bag of chips on the counter is a gesture that says, "I want to purchase this." It says this because of the location. If the customer had in contrast to the behavior described here, placed the bag on the floor, if he had stood in front of the counter, but continued to hold the bag in his hand without putting it down,

or if he had tossed it at the clerk, an interactive event would probably have occurred between the people, but it would not be the same kind of event, nor would the place of the retail purchase been constituted. The counter is part of the locus. Its form matters: if the counter was covered, or not flat, or excessively high (as found in some deli's), the event would be different.

The place participates in the conversation. It participates because the conversants have a sense of an event in that place, which they indicate through their embodied relationship to the place. In demonstrating their embodied relationship to the place, they take on the roles (customer-buying, clerk-selling) that contribute to the sense-making processes of that place.

Embodied interaction uses place as a component of communication. We abstract this relationship in Figure 1. The locus (in the vignette, centered around the worn spot on the counter) establishes a context (C.1) of a set of possible meaningful events – in this case, the transaction of purchase of items that fit on the counter. Within that context, people enact communicative activities that rely on elements of the locus (M.1): the customer places the bag on the counter. This move is given meaning – "I want to buy this" – by the event context (C.2). Since the locus is employed as a "place" in the conversation by a second active move (M.2), the event proceeds through other moves that fit within the place-event's expected sequence, repeating this pattern that confirms the place of the people, event, and locus.
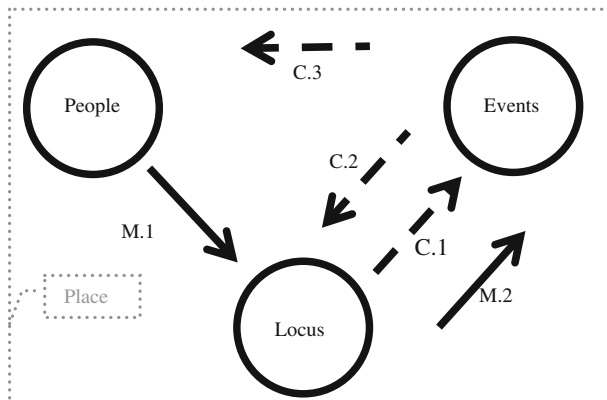

Figure 1. **How place is constructed through embodied interaction**:
C.1 the locus establishes possible meaningful events
M.1 people enact communicative activities that rely on elements of the locus
C.2 the event-schema refines the meaning of the person–action+locus
M.2 the meaning of the event is refined and the schema's expected sequence advanced
     (if appropriate) through the person–action+locus [C.2 and M.2 are simultaneously
     reciprocal]
NOTE: This only shows the *abstraction of the relationship* between elements. It does not illustrate processes or scripted dialogues. To the extent that they show events that occur over time, they show the accretion and refinement of meaning. Meaning creation is not inevitable, but is created from resources.

4.1.1. *The semantic tangle*

The first lesson to note from this example is the semantic tangle; while we may choose to treat events or people as background qualities or "givens" while focusing on place, in fact all three influence the situation and influence us as designers of novel technology. All three may be designed (or, in the case of people, influenced).

4.1.2. *Linguistic participation of place*

The second lesson is the instantiation of the meaning of this particular place at this particular time in the attainment of linguistic meaning. Others probably have used this location for other retail purchases. The participants probably have used other similar locations for retail purchases. The participants may even have previously used this particular location for retail purchases involving one another on other occasions. However, the place-ness is reconstituted and reformed in this space by their actions in the moment. The meaning of the place constituted in the moment, through situated action, becomes the context for the joint production and comprehension of language.

4.1.3. *Expectations from embodied experience*

The third lesson to note is how meaning is constructed out of expectations rooted in embodiment. A main focus of embodiment research is the dynamic relationship between physical manipulation and cognition: that is, the concept that "pure thought" is as much a of product of the ways in which sensation is acquired and actions taken in the world as it is the cleverness, structure, and performance of mental ability. Tuan (1977), Lakoff and Johnson (1980), and Franklin and Tversky (1990) all point out that our conception of place comes first from our bodies being located or arranged in a specific experience in space. So we know which way is up, that right and left are directions relative to the front of face, that we use terms like "moving forward" as metaphors for success, etc. It is in this sense that the experience of the body generates much of the constructive material for place- and event-making.

4.1.4. *Particular loci, particular places*

This example highlights the dynamic inter-relationships between a particular locus, particular people and particular events that constitute a particular place and its meaning. In subsequent examples, we will discuss the persistence and the ephemerality of place.

4.2. Event rituals: a dinner table place

Now we turn to an example of how a particular configuration of loci-people-events constructs a place by making use of shared history. As Goodwin (1989) did from a conversation analytic perspective years ago, in this, we focus on the

ways in which behavior in a dining event can be constituted by virtue of a particular set of people engaging in focused interaction. However, we emphasize the importance of schematized ritual in a locus.

Although it is reported that the majority of dinners of American families are not taken together anymore, the statistics show that at least one or two meals a week are. This is an example drawn from a particular kind of one of those.

"When are we gonna eat? I gotta get to soccer practice."

"It's your turn to set the table. Could you also feed the dog?"

"OK."

The food starts coming from the kitchen and placed on the dining table. Various members of the household drift in and out, the youngest sits down nearest the kitchen even though his sister is only halfway through setting the table. When no one is looking he quickly grabs and swallows a French fry.

"Can you tell your brother that it's time to eat?" Dad sits down after tossing the salad in the bowl in front of him.

"Get out of my seat! You know that's my place!" says the sister to Jason, looking at Dad.

Jason grumbles, "You always get to sit closest."

All five members of the household are seated around the dining table. Dad admonishes the youngest child for starting to eat: "Jason, wait for your Mother to start; you know better than that."

Serving herself some salad, Mother turns to the premature eater and says, "OK, you start now." All start to eat, but with equal parts of attention to each other and to the food on their plates.

"You know, John is coming to dinner on tomorrow," the table-setter says. (We'll see this play out in the part two of this example.) "Can we have some, you know, something good?"

Before either Mom or Dad can answer, the phone rings. Picking up a French fry with his hand and holding it just in front of his mouth, Dad gets up. He quickly chews the fry and swallows as he picks up the

phone in the corner near the kitchen door. "Pomfritte residence..... No we are not interested in permanent-colored vinyl siding. No, Mrs. Pomfritte is not available – and I doubt that she has any more interest in vinyl siding than I do. Thank you for interrupting dinner." And down goes the phone. He steps into the kitchen.

"Could you bring the milk?" the youngest calls out.

"OK. Hey how did it get to be 7:20 already?" walking in with a milk carton in one hand and a water glass in the other, but speaking to his daughter. He sits down as she stands up.

"I really gotta get to soccer practice." She departs, crunching on an asparagus spear.

This example is more abstract than the retail purchase example in that the boundaries of physical location and event are fluid. We assume that to each person the "dinner" event began and ended at different times and in different circumstances, but nonetheless would all agree that they were at "dinner". Furthermore, the linguistic participation of place is tacit. The "dinner" place is never the subject of conversation, yet it is necessary for the interaction to occur in the form that it takes.

4.2.1. *Ritual: the poetics of function*

Where people sit, when they begin to eat, who can be asked to bring things from another room and when, are not only established by loci and people, but by ritual, which are expected component actions or whole events. In part what makes this a dinner *event* is a result of a history that brings symbolic meaning to particular elements of the event even when hardly any of the participants comply with what we might call the "official rules" of a dining schema (which arguably do not encompass people coming and going, eating with their fingers, calling across multiple rooms, or interruptions from the phone). Often events are discussed in cognitive psychology as constituted of *schemas* (Bransford and Johnson 1972) or structured, repeatable plans. The utility of a schema involves the articulation and cross-individual agreement about the schema components. Certainly, dinners can be described in schematic terms. Yet more is involved in giving a rich account of the associated meanings of the place. Elements of ritual, such as the tendency to sit in the same seat every dinner, may be widespread but not articulated in remembering the elements of the family dinner event. In particular, rituals are more than schemas, they involve personalization, emotional connection and individuation of events.

Ritual is the poetry of function (Kostof 1995), or, in other words, there is meaning beyond the function of, for example, ingesting food. Sitting at the same

place for dinner may not seem poetic in the usual sense of the term, but through "poetry" we have a rich vocabulary, network of associations, and values that are evoked by the enactment of the function. The previous descriptive text probably evoked in the reader some of that poetry – both the experience of eating dinner and being a family of a certain kind at a certain historical moment. These are all components of meaning of the place of dinner for this family.

4.2.2. *Contextualizing communication*

In the first example, the place participated in the communication. In this one, place contextualizes it. As abstracted in Figure 2, a locus gives meaning to the behaviors that constitute parts of the events (C.1). The event establishes possible meanings based upon history, memory and culture (C.2). This chain of context is brought into play as the people enact the event in its many details – from eating food together at the locus to the various topics of conversation that are discussed (M.1). It makes patterns of behavior, it makes those patterns appropriate or inappropriate, and it gives them communicative force. This is a cycle since the enactment in the locus-event context is remembered in terms of "dinner" the event and "dinner" the place (C.1). Thus, the meaning of the place is tied not only to the current manifestation of events and people, but to the histories of the people and their recollection of previous events and related places. So, for example, the negotiation of appropriate behavior (such as beginning to eat too soon) becomes contextual fodder for the next enactment in this event-locus (We can imagine Jason saying at tomorrow's dinner, "I'm really hungry; I'm gonna start without you").
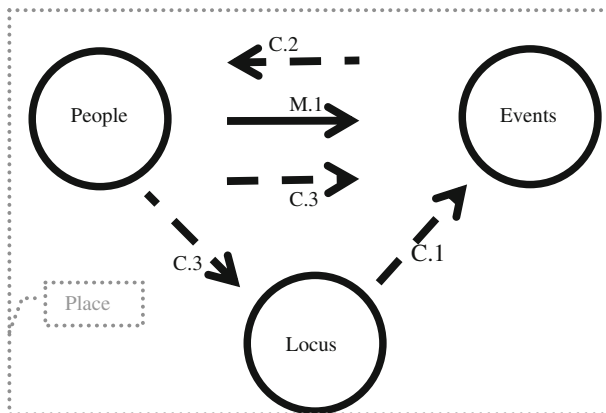

Figure 2. **How place is constructed through ritual**:
C.1 the locus establishes possible meaningful events
C.2 the event establishes possible meanings based upon history, memory and culture
M.1 people enact the event
C.3 the enactment of the ritual adds more associations to the place and the event for future meaning.

4.3. Making a place: the parade event

Our third example of the semantic tangle of people-events-loci emphasizes the way in which place can be almost entirely constituted by people and events with ambiguous or even shifting loci. Here we present one kind of ephemeral place:

The scenario is simple: you are watching a parade – or rather, you are waiting to watch a parade go by. The first units of the marchers have yet to reach your location on the street.

What do you see? A street, lined with people on the sidewalks. There is a sound of a marching band coming from the left, possibly a block or two away. For now, the street is not the parade,[6] it is a street. It has presence since you and others are oriented to it.

Among the people on this side of the street is a person with dirty, unkempt hair. He is talking to himself. There is no one standing close to him.

The marching band comes into view and begins to pass in front of you. We would call this the parade. It is identifiably like the cognitive schema (if there is one) that is a "parade". But the event has overtaken the place. The marching units, the people in open cars waving to the on-lookers, the people carrying signs, and the fire trucks are all moving at about the same speed in one direction, ignoring traffic signals, attending more to the static on-lookers than to each other. In short we see behavior that is framed by the context of the place and event "parade".

A person backs away from the edge of the street, talking into a cell phone, eyes not following the marchers, but apparently with other people – his family, perhaps – who are.

First let us consider who is at the parade, who constitutes the parade, and who makes the parade: it easy to see that the marchers in the parade are at the parade although they will only see the part of the parade that they are in. They will experience the entire parade route, however. The elements of the event experience that are most salient with respect to the place of the parade are the streets they march along, the buildings on either side of the street, the distance of the march, and the rhythm of the lines of people on the sidewalks. Now lets turn to the observers of the parade. They, too, are at the parade, but their experience is much different, seeing all the marchers go by while only seeing their little part of the parade route (but which almost entirely constitutes their place of the parade). Together the marchers and observers constitute the parade, while the marchers

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[6] In the rhetoric of *Re-Place-ing Space*, we might call the street the "space" for the parade since it is the undifferentiated field without the specifics of the actual parade.

make the parade. By lining the street in advance of the parade, the observers make the space for the parade.

The notions of place and place-making – in architectural parlance, a "gesture" – are not entirely the arrangement of spatial elements but events as experienced by people. The space fills with sound in advance of the parade and the sound diminishes after it passes. These "before" and "after" experiences are part of the overall experience, even if outside of the locus of the defining event itself. HCI might consider this "context", but we are observing that something more must be going on that gives meaning to the whole. A place is in fact "a" place because of human experience that characterizes it that way.

4.3.1. *Constructing the social*

Let us now consider two special cases of parade-watchers who were noted in the scenario: the person talking to himself and the person on the cell phone. Both exhibited almost identical behavior. The person who is talking to himself might be assumed to be unaware of the parade, but is oriented to the street like the others there to observe the parade. Is this person contributing to the construction of the parade event even though he may not be engaged in it in a recognizably contributing fashion? Conversely, the cell phoner is not attending to the parade, but is part of a party that is. Does this behavior also contribute to the construction of the event and the place? These dilemmas are similar to those faced by designers for the virtual world. They are highly influenced by details of the place. When the cell-phoner backs away, he is acknowledging and reinforcing the place. The person talking to himself is part of the place to other spectators, but note that it is not by virtue of his full acknowledgment of appropriate behavioral framing. Framing is not an inevitable consequence of place-making, just a likely one.

Figure 3 abstracts place-making – transforming space to place or one place into another. The first constituent is people constituting an event at a locus (M.1): lining the street or marching down the street. The event and the locus interact creating two contexts: (C.1) the event limits possible meaning of the locus – the street becomes a parade setting and (C.2) the locus establishes possible meaningful events – that parade moves in a public place.

4.4. Tangle combinatorics

These three examples of linguistic participation of place drawn from everyday life illustrate the ways in which people and events are necessary and intrinsic components of constituting place. Three supporting elaborations of this have been introduced, the ideas that place-ness can be and is (1) expressed by the embodied orientation of the people (embodiment), (2) associated with the ritual of the event (ritual), and (3) constituted actively through moves (active place-making). A careful reader will have noted that none of the vignettes contained only one of
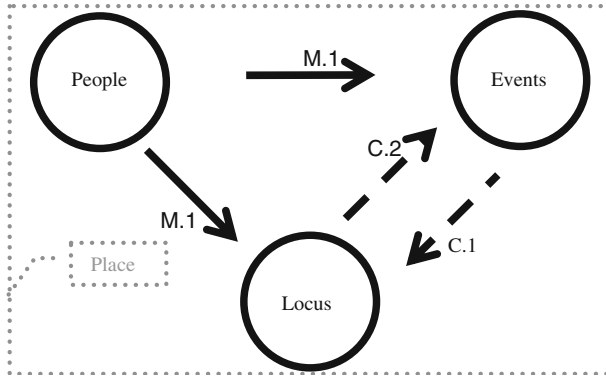
Figure 3. **The active construction of place making**:
M.1 people constitute an event at a locus
C.1 the event limits possible meaning of a locus
C.2 the locus establishes possible meaningful events
Note: The closer *C.1* and *C.2* are to each other, the more the locus and the event are thought of as one-in-the same.

these elements – they can be present in varying degrees and there are probably interactions between the three. Figure 4 shows this more complex model.

We have looked at some of the mechanisms that "construct" place out of loci, people and events, asserting that the place is a constructive element in its own making. How can we move beyond this apparent circularity? In the next section we discuss the ways in which semiotic theory helps us keep our "eyes on the
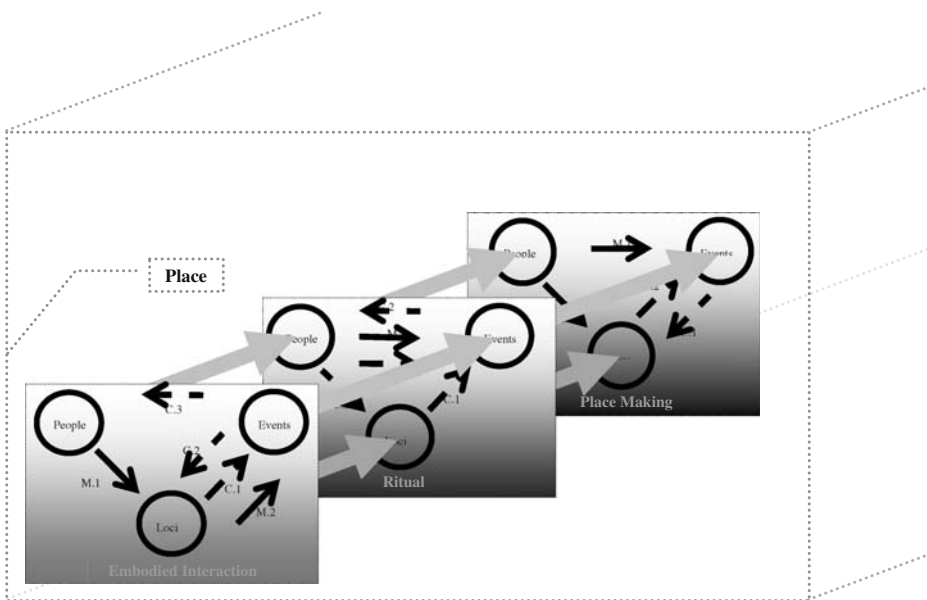

Figure 4. The combined engine of place-construction.

prize." That is, places are important to us as designers because of the meaning that they have. When we design a place, we are designing its meaning. Therefore, it is important to gain analytic purchase on the systematic constituents of that meaning.

5. A structure of meaning

In an explication of an archeological dig, Goodwin (2003) describes "semiotic resources" as physical or imaginal items that are recruited in the process of meaning creation. He identifies such resources based on evidence about how objects, locations, and practices are appropriated by event participants from moment-to-moment.

The context and moves we have described in the examples above are similar semiotic resources. Semiotics is concerned with meaning creation through language.

Goodwin is using semiotic resources for purposes of analysis. However, semiotic theory is an intellectual tool that can serve the needs of both analysis and design. We are concerned with both of the two forms of semiotic theory and their implications for the explication of embodied notions of place. At the beginning of the Twentieth Century, de Saussure argued that all language consists of systems of signs. In his "semiology," a *sign* consists of two parts, the *signifier* and the *signified*. What is particularly notable is that the signifier is an arbitrary representation such as the utterance "door" or the letters "d-o-o-r". Both refer to the object "door". Neither the sound of the utterance or the four letters come from some essence that is door – they merely represent it (de Saussure 1986). Except for a few onomatopoeic words, signifiers are arbitrary. They may be utterances, written, gestures, colors, pictures, objects, or patterns. Independently, Charles Sanders Peirce (1991 in Hoopes 1991) developed a very similar concept, that of "the semiotic" which also advances the notion of a sign. His sign consists of three parts: a "representatem", "object", and "interpretant". Representatem and object align closely with signifier and signified. The interpretant is that-through-which-the-signified is understood; this is often thought of as the sign in the mind or result. In this approach, the interpretant is the engine of action in the mind. It tells a person who sees a stop sign to stop the car, or it tells a person who thinks they might see a stop sign to keep looking until they are sure. Since the interpretant can itself be a representatem, Peirce's conception drives iterative mental processing; this is particularly important when considering the possibly endless set of associations that create enrich all meanings.

In both versions, language makes sense in part because the arbitrary (signified) can be systematically differentiated from the purposeful (signifier). The constituents of a signifier – the way in which they relate to each other as a language and their meanings – are systematically derived from their relationship to other meanings.

Saussure was also concerned, though less directly than Peirce with the notion of a mental engine. There is even a sort of calculus of semiology since signs can be combined and manipulated, and signs can be signifiers of other meanings. Furthermore, the basic formulation Sr+Sd=S (Signifier+Signified=Sign) allows for a great deal of indirection. Therefore a picture of a door is not a door, it is a picture. However, that representation makes sense because its appearance is similar enough to our visual experience of a door and the abstract signifier called "picture" is bound up with meanings of representation.

Figure 5 shows the simple decomposition of the triad nodes (people, events, and loci) to be the signifier (Sr) of a particular place and the flow of meanings (moves and contexts) to be the signified (Sd). This holds the semantic tangle as unified whole without unpacking the constituents. For designers this is misleading since it suggests that a simple process of representation of signifiers will adequately create a place through which the contexts and moves can flow. Doing so denies two important issues: (a) that each of the elements of the signifier (people, events, and loci) can be seen independently and have their own set of signified meanings, and (b) that interpretation with respect to the signifier and signified changes both the overall meaning of place and the relation of elements within it. To better understand this, let us reconsider this using Peirce's representamen (R), object (O) and interpretant (I). Figure 6 shows alternative constructions of this. Part 6a shows the common usage confusion of a locus representing place.[7] Continuing the stop sign example from before, we might say that a stop sign located beside the road, plus the painted limit line on the street indicating where to stop a vehicle, plus the length of street extending back from the limit line upon which the vehicle stops, constitutes the "locus". However, in common usage we might represent this place with just the stop sign. So, enacting the object of the stop sign – stopping the car – is both constructing the event and constructing the place. What a tangle! The meaning-construction crosses levels and therefore becomes self-referential.

We note that Goodwin and we are also *post-structuralist* to a limited extent in that he and we treat the method of reading as part of the system. Thus, the diagrams in this paper illustrate only the *abstraction* of the *relationship* between elements in the meaning of a place. They do not illustrate processes or scripted dialogues. To the extent that they show events that occur over time, they show the accretion and refinement of meaning. Meaning creation is not inevitable, but is created from resources (Eco 1979).

The analysis gets more tangled when we realize that each element that constructs the place can be seen and interpreted on its own. This is represented in Figure 6b. Many of these individuated meanings are also contextual meanings

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[7] We will explore how people and events as well as loci are used to represent place and the difficulties this implies for design a bit later in this paper.
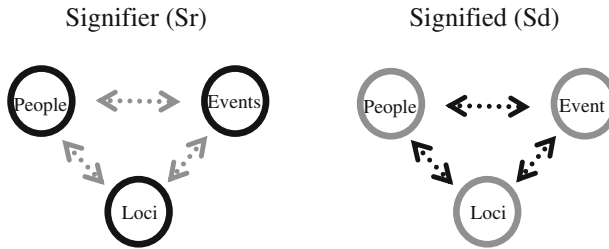
Signifier (Sr)   Signified (Sd)

People ⬅···➤ Events   People ⬅···➤ Event

Loci   Loci

Figure 5. The semiology of place. *Sr*: people, events, and loci, *Sd*: moves and contextual meanings, *Sign*: place.

within the place construct, but some stand on their own. For example, the stop sign independent of its place can be interpreted as a cultural symbol of control.

Is the single representamen/signifier the locus? In the retail purchase it seems to be the case, but what about the dinner? Where is "dinner" (the place)? Most would probably say that the "dinner is on the table". This comes from making the food being served and eaten into the event, "dinner". In the vignette, Dad gets up to answer the phone and while connected to a telemarketer is still part of dinner. But he is not entirely part of the place. One interpretation is that the boundaries of the acoustic space of dinner are not the same as the physical or visual place of dinner. But what is the relationship of these modal boundaries when the place is in question? By way of analogy, the tip of a person's nose is a fairly well defined boundary, but where does a nose stop and a cheek begin? This is yet more of the semantic tangle in another form. Notice that locus is a signifier only insofar as it participates in embodied interaction, ritual, and active place-making.[8] It is this observation that differentiates the meaning of "space" from "place". Space has meaning, but outside this dynamic.

5.1. (Re)Constructing place

As we noted earlier, our project has many resonances with the work of Goodwin and (separately) the work of Andersen. These share with our work a focus on rich descriptions of what is going on, and attention to components of language, practices of people, and embodied actions. They share with our work a focus on meaning-making. However, they differ from the current work in two ways. First, while Goodwin emphasizes the ways people constitute themselves, and Andersen focuses on how events constitute themselves, our primary focus is on the constitution of place. We see their accounts as complementary to our own. That

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[8] "OK – so how is it that Yosemite or some other scenery is a place?" It is through a form of ritual that developed in the Romantic Era, for Europeans at least. Certain aspects of natural landscape were taken to represent connections with inner self, beauty, etc.
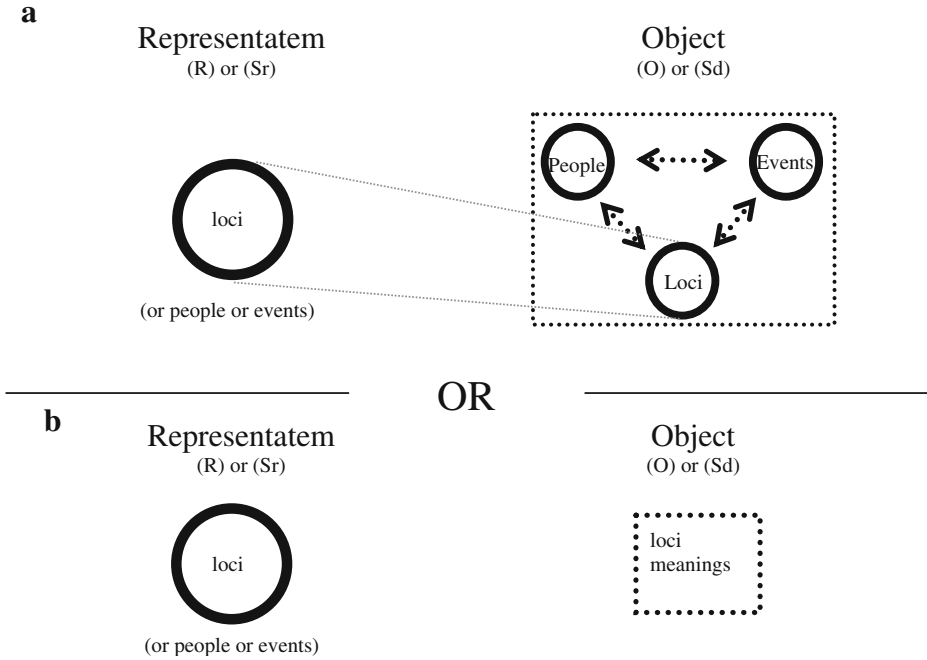
a

Representatem
(R) or (Sr)

Object
(O) or (Sd)

loci

(or people or events)

People   <····>   Events

Loci

OR

b

Representatem
(R) or (Sr)

Object
(O) or (Sd)

loci

loci
meanings

(or people or events)

Figure 6. **a Loci representing place**,
R (*Sr*): loci,
O (*Sd*): the place
I: (a) the binding of people/events/loci
        (b) the reification of the binding of meanings such as a contextual meaning like
            appropriate behavior (e.g. "stop the car")
        (c) loci-specific interpretation
        b Loci (or people or events) representing themselves
R (*Sr*): loci (e.g. a hexagonal red sign on a pole with the words "STOP" on it)
O (*Sd*): loci meanings (e.g. "this is a stop sign")
I: loci-specific interpretation (e.g. "pay attention to the stop sign's directions")

is, the statements "here are people (archeologists) working",[9] "here are the events
of a dig," and "this site is an archeological dig" are all bound together. Second,
although both Goodwin and Andersen describe semantic tangles – Goodwin
through thick description and Andersen through a system of transformational
encapsulations – neither names the complexity that interests them. By adding the
term "semantic tangle", we clarify the inevitable interdependence of the
constitutive elements.

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[9] Goodwin (2003) uses an archaeological dig as the site of his study of gesture as a semiotic resource, hence our
use here.

[10] E.g. in discussing "loci", for example, we noted the layers of meaning that come from its pre-existing space
and place constructions.

Further, Andersen and Goodwin, each in their own way, explain what we have classified as "contextual" meaning as intertwined elements in their explications. To set up the relation of context and moves in the semantic tangle, we left out the expansion of these associated meanings.[10] Returning to an observation made about Peirce's tri-partite semiotics – that the interpretant of one sign is the representatem of another and so on, and to the observation that a locus might have either or both space and place meaning – we see that our model has many nuances. Thus, the construction of the contextual meanings can be from many sources: place-meaning construction as we have described it here, space-production in the fashion described by Dourish, Soja or Lefebvre, or even some construction that is independent of space and place such as the linguistic-activity system of Andersen.

Since our project is to (a) look at the grounded meanings of place and (b) build from the embodied sense of space rather than other abstracted spaces, we are now ready to make this a more robust system: the meaning of a place evolves and transforms through a remixing of shifting contexts leaving a mark on future meaning. Thus, the checkout counter in the convenience store may "afford" the retail transaction, but it also might be a divider between a scared clerk and a nervous robber; it might be just one more thing that needs to be cleaned when no customers are in the store; or it might be the temporary location of boxes brought from the back waiting to be shelved. With technology mediating experience, this happens more quickly and with potentially greater disconnect from the larger spatial context. A PDA screen which at one moment is an IM message about being lost might also be the site of idle amusement (Weiser 1991).

5.2. Design of, with and for place

Dourish (2006) says design is a kind of strategic production of space and its use is tactical. This view calls attention to the limits of place-making by design. That is, Dourish points out that the design of technology often concerns itself with the large and reproducible (strategic) and less with the situation (tactical). But it would be incorrect to extend this claim to assert that design cannot work with the complexities of place-making. For example, Gaver and Sengers' (2006) paper, "Staying Open to Interpretation", demonstrates the value to designers of taking advantage of users' interpretations rather than fixating on designers' intentions. We agree with this position and then pose the further questions "If it is possible to design places, then what should designers do as a first move? How should they proceed?" Responding to a design situation as Gaver and Sengers advocate is fine, but designers must start somewhere. What sorts of technological interventions have what sorts of effects on the construction of place?

The strategically focused designer might know who is playing what "role", in some event (or at least what sort of application), and when (at least some sort of

goal-directed need that invokes the application). That is, the strategic design move is to use a technology to produce a space out of which only a specified sort of place may be made (This is the strategy of the Locales Framework, for example; Fitzpatrick 2003).

The more tactical designer, however, designs the technology for appropriation for which there are two possible moves: either (a) design a specific place (e.g. more of a "home" than a "house," to use our earlier aphoristic analogy)[11] or (b) design technology as an element which is contextualized by use relative to particular loci, particular events, and particular people and therefore participates in the place-meaning construction.[12] All can create a first-level tangle, but the two tactical moves present the users of the technology with a place-construction that is tractable and more capable of incorporating contextual meaning than strategic designs.[13]

Anderson et al. (2003) suggests another very different design approach: use the linguistic operation, "commutation" – the replacement of the property of a sign element with another and observing the difference in meaning as a means of mastering media. Using this approach within the construct of particular places offers the designer a method for understanding better the construction of place as well as a means of designing placial technologies.

5.3. Deeply ephemeral places

...even the dreadful martyrdom must run its course
Anyhow in a corner, some untidy spot
Where the dogs go on with their doggy life and the torturer's horse
Scratches its innocent behind on a tree.

<div align="right">Musee des Beaux Arts, Auden</div>

A concern with design is brought into sharp focus by ephemeral, fragmented and partial places. Of course, there have been ephemeral places before

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[11] Most accounts of media spaces such as PARC and EuroPARC refer often to how specific the design was for the people, locations and circumstances of the user communities and how much that sense fit enabled a sense of ownership, both of which translated to on-going appropriation.

[12] The headsets worn by retail sales people in fast-food restaurants seems to fit this description since it locates the wearer both out at the car where the order is being placed and in the kitchen where they can participate in the routine of ordering and preparing. Some of Steve Benford's mixed reality games such as *Can You See Me Now?* also have this property. (Benford et al. 2006)

[13] Dourish's account of "strategic" suggests that spaces might be produced, rather than places made. Regardless, the more important caution is that strategic moves (that is, product design) often inscribe or even establish power relations.

technology such as camp sites in the woods or "the head of the line," but with cell phones, laptop computers, and urban display screens, they have become much more of an issue.

In the parade example, we mentioned the ambiguous status of the cell phoner with respect to the main event. Quoting from Brewer and Dourish (elsewhere in this Journal) "The technologically mediated world does not stand apart from the physical world within which it is embedded; rather, it provides a new set of ways for that physical world to be understood and appropriated."

Ephemeral places are not necessarily context-specific – and certainly not always context-aware. Cell-phone calls are particular examples of this. Instead, context-awareness is one strategy for adapting to the ephemeral place. When a phone call is made or received in a public place, the caller and the phone may become a private place with a public presence for the duration of the call. Both embodiment and ritual dominate the place-making of these sorts of activities. Moves may be made by locating the phone next to the ear, not only functionally enabling conversation through the device, but signifying the real-virtual place.

In a much less obvious way, wireless connection re-constructs the meaning of a physical place. While the wireless service is constrained to a specific area by the transmitter, the range of possible events expands beyond what the physical context "says". Like the tent erected in woods, the temporary placement of technology has established a table in a coffee house as a place with complex meanings about work, reading, writing, or entertainment.

There is another kind of ephemeral place – quite unlike the camp site or the phone call – in which the representation of place is entirely manifested by people and/or events and loci are implicit.[14] When in a teleconference, it is possible to point at the screen of the remote location and call it: "212 – just down the hall from Willi's office." or "Bill" or "our meeting". All have the same base signifier – the image on a screen, but three very different signifieds.[15] Moves that cross in and out of the base signifier may become problematic. This occurs because the person/locus/event is only represented through a mediated communication. If this were a camp site, then it would be difficult to confuse the campers or roasting marshmallows over a campfire as the camp site – although they contribute to constructing elements of the campsite. Designers must account for disconnects by enabling meaning making.

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[14] We might call this "the in-your-face" semantic tangle.

[15] It is this simple observation that began our investigation into the semantics of "place", leading us to this paper's investigation of the flow of meaning between locus, people, and events. This was first noted in Bly et al. (Bly et al. 1993)

6. Conclusion

We have revisited the idea of place as understood from *Re-Place-ing Space: The Roles of Place and Space in Collaborative Systems*: (1) distinguishing between the design of a space – conceptualized as a simple physical or virtual location – and a place – conceptualized as such a location designed for human functionality – and (2) engaging in the design of places by characterizing "appropriate behavioral framing" of that place. At the time that *Re-Place-ing Space* was written, the authors' primary concern was the conception and creation of joint places through mediation. The dominant image was of a relatively unitary new place, relatively constant over time, such as the video teleconference described in our introductory example. Since then, the rise of ubiquitous and pervasive computing as a worldwide cultural phenomenon has rendered the issues associated with place construction even more widespread, important and subtle.

Mediated interaction also leads us to a concern with ephemeral places. This, in turn, leads us to explicate the construction of meaning of "place" through three kinds of relationships of "loci", "people", and "events". In particular: (1) a locus can become a place by virtue of the embodied human sense of an event in that place, (2) an event can be constituted by virtue of a particular set of people engaging in schematized ritual in a locus, and (3) a place can be actively constituted in a physical or virtual environment apart from constant locus by people and events alone. Semiotics provides one way to understand the creation of meaning in this complex system.

CSCW needs these concepts for both instrumental reasons (to aid in design), and philosophical reasons (to keep our "eyes on the prize" of meaning). We conclude with a discussion of the implications of this structure for the ongoing construction of meaning. People, events, and loci are important because they are reifiable concepts in the stream of existence, but we design for the stream itself, using these concepts as tools for communication.

We are not alone in proposing that the world can be read, of course. Roland Barthes described structuralist readings of environments and events (Barthes 1972), and Umberto Eco takes a post-structuralist reading trip through thematicized environments in *Travels in HyperReality* (Eco 1983). In *Systems of Objects*, Jean Baudrillard discusses how objects can be "read" (Baudrillard 1968). Design theorists and product design educators (Thackara 1989; Margolin and Buchanan 1996) often use this analysis to describe the referential qualities of product form. Clarisse de Souza's recent book, *The Semiotic Engineering of Human-Computer Interaction*, takes this one step further by discussing how HCI design can create consistent meaning in an interface (de Souza 2005). The current analysis goes one step further by extending the analysis into the complex construction of a social realm through a CSCW system.

Two kinds of consequences follow from this analysis – pragmatic and philosophical.

6.1. Pragmatic consequences

There are three major consequences for the design of CSCW systems:

1. Designing technology that intersects with place means contending with the semantic tangle of people, events and loci.
2. There are at least three major elements of place-centric meaning construction:
   a. Embodied interaction
   b. Ritual
   c. Active place-making

3. Designing CSCW systems is an act of meaning making (or meaning-shaping). It is not limited to the form of the technology or its immediate use, but a network of signification (this extends beyond place-centric design frames).

As we noted at the conclusion of the introduction, it is of great consequence to the designer to understand what is transformed or is not transformed by the actions of design and to relate that to what is under control of the designer and what is not. Our method of unpacking the semantic tangle provides the designers of technologies interacting with places an analytic framework that provides some clarity about this. It is detailed to a low level so as to accommodate a wide variety of situations; however, that may be unwieldy to use in the complexities and time-pressures of designing. It is reasonable for designers to aggregate patterns of people, events, loci, moves and contexts into larger categories such as embodied interaction, ritual, or self-conscious spatial differentiation which align with design interventions.

6.1.1. *The café/office*

We began by noting that people look around cafes today and see people using laptops and cell phones – even holding meetings – and saying that "cafes have become offices". The situation can be decomposed into people, events, loci, moves and contexts. But how to answer the basic placial question formed by this, "Where are we?" Events occur that are café-like: ordering, paying-for and receiving coffee; and loci are structured by spatial subdivisions: employee space/place behind counters and coffee machines, public space/place with tables, transactional space/place such as counters. There are office-like loci: particular tables and chairs used to support office artifacts or to define meeting space. It is very clear that the café has taken on aspects of offices, that the

appropriate behavioral framing has changed, and in that sense, "cafes have become offices".

But designers cannot make the strange equation of "cafes=offices" since it is insufficient and misleading. The designer needs further decomposition to understand, for example, how the loci of a table in a café relates to possible semantic moves that construct a meeting event. This decomposition guides the designer to issues of interruption, form-factor, and the social status of the conversation occurring in the meeting. Let us follow this last point since there is a specifically placial consequence: regardless of whether the people sitting at the table are there to conduct business or are old friends socializing, conversations in cafes are still conversations in cafes – possibly overheard by strangers or intruding into the acoustic space of people not engaged in the event of the meeting. It is superficial to say that office-like events enrich and expand the meaning of the place of the café; it is useful for designerly purposes to look at the specific moves that constitute a meeting in a café: which moves do the construction? Who does them? For whom is the meaning meaningful? Etc.

6.1.2. *The kit of parts*

So people, events, and loci are not engineering primitives that can be "optimized" but rather a kit of parts that can be drawn upon for pragmatic purposes using a variety of phenomenological approaches – structural or post-structural. We have shown a more structural approach using semantic moves and semantic contexts, but the basic parts are the same, regardless. It is from this commonality that we see the need to broadly reframe HCI and CSCW with respect to meaning.

6.2. Philosophical consequences

The exploration of the construction of place through the relationship of people, events, and loci in CSCW brings us to the issues facing CSCW that are also those confronting human-computer interaction. Where CSCW and HCI diverged some years ago, they may now be finding common-ground with the recognition that both are physically and abstractly constructed of representations.

Computer-supported collaborative work (CSCW) has, from its disciplinary founding in the late 1980s been concerned with the social construction of action and understanding in situations around and through information technology. This has resulted in a complex dialog between research in CSCW and that in human-computer interaction (HCI). This uneasy relationship is represented by those CSCW investigations that used a strictly information theoretic approach derived from HCI to evaluating mediated communications. Fish et al. is an example of this kind of thinking (Fish et al. 1992). Questions of the sort, "What information does video in teleconferencing convey?" leaves out questions that we would now

recognize as important: "How does an image change or become part of the place it is in?" "What is presence?" etc (Stults 1987; Bly et al. 1993).

As it became obvious that the HCI paradigm was inadequate for CSCW research, CSCW searched for a paradigm (often in the guise of "appropriate methods") and its own underlying principles. At the highest level, the dominant paradigm of HCI (cognitive psychology[16] and information theory which underpins it) has been a yardstick of CSCW research: Whether it is activity theory, the pattern language, or ethnography, all have been compared to a standard of analytic performance that HCI found in cognitive psychology.

But that dominant paradigm in HCI is shifting. In *Digital Ground*, Malcolm McCullough calls out the idea that HCI has entered a third paradigm (McCullough 2004). In his history, first came human-factors which provided a general method of optimizing human task performance, but was not concerned with or informed by a generally recognized unified theory. With the cognitive revolution came the second paradigm of HCI that is widely informed by information theory. But while very powerful, information theory does not account for aspects of cognition that are social, cultural or embodied. Furthermore, it assumes that meanings are stable.[17]

Thomas Kuhn's theory of scientific revolutions describes the notion of a paradigm shift, a fundamental restructuring of the world-view in a domain (Kuhn 1970). One phenomena he describes is that the shape of the new paradigm is not immediately obvious to participants. Elements arise here-and-there without a structuring perception of systematicity. Participants in the old paradigm often have great difficulty understanding the new paradigm. They often account for anomalies in the results produced by the old paradigm as "noise". The researchers who are assembling the new HCI paradigm are also those who took seriously the "noise" seen in HCI as data. With this shift, it becomes possible to see CSCW and CHI as blurred into a more unified whole, in which action moves for the user easily between more and less coordinated activities and events set in the stream of meaning that created by the social environment.

Just as semiotics is only one of a network of post-modern philosophies that concerns itself with the creation of meaning, there is no single philosophy

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[16] For example, Card, Newell and Moran (Card et al. 1983)

[17] It is certainly wrong to believe that second paradigm HCI and CSCW has completely ignored meaning as a topic. While always a difficult-to-accommodate idea in the cognitive model, the ecological psychology of JJ Gibson – known mostly for its concept of "affordance" gained currency at about the same time as the publication of *Re-Place-ing Space*. In some ways it is a sort of proto-embodiment since it requires that affordances be actionable by cognitive actors. It is very useful, but not very explanatory since affordances are "primitives" in the system. These are (relatively) static potentials: chairs want to be sat upon, door handles opened, windows looked through, etc. (It is just this static quality that made it more-or-less acceptable since presumably an affordance was not open to interpretation that would introduce "noise" into the measurement of performance.) Alas, ecological psychology does not account for how these are known or how they are adapted and re-appropriated. What do a chair and the stoop of a house have in common other than they both afford sitting?

underlying this unified whole. However, the absence of such a philosophy underlying the Third paradigm is only a flaw from the perspective of the Second paradigm. It is, in fact, a structural characteristic that represents the kinds of philosophy that does describe it.[18]

The emergent elements of the Third Paradigm are:

☐ embodiment. Brains come in bodies and computers in boxes. Embodiment, again as Dourish points out, solves some epistemological problems between HCI and CSCW. For example, it provides an account of attention that can accommodate not only a single person's focus but the effect of that focus on others.[19]

☐ embeddedness (or environmental context). This can be thought of in terms of technology: as ubiquitous, pervasive, or embedded computing, but more to the point, technology whose particular location and setting of use matters to its purpose.

☐ meaning, meaning-making. Many HCI settings and all CSCW settings are communicative, sometimes between people, always between technology and people. Content matters. So does form.

We end with the observation that the third paradigm is still being constructed. All elements of the paradigm are not clear yet. There are some critical philosophies to more fully understand and apply to the practical problems of technology and social settings. We trust that the reader has taken this journey to different places at many levels and will locate their research and design as part of larger program and be able to identify the power of place in particular projects they undertake.

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[18] Sorry to be so obtuse, but one of the great discoveries that applying the issues found in CSCW to HCI has been that context matters.

[19] HCI discovered embodiment at about the same time that robotics did. While it was previously obvious to robotics researchers that the processing elements and the physical attributes of a robot had to be thought of as a unit, the idea that cognition could be "embodied" in clever robotic form which would in turn obviate developing certain levels of generality in robotic models was a revelation (Brooks 1999).

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