Space/Place Reconsidered

This paper focuses on conceptions of space and media, and how we often conceive of space as a medium that stands as an *absolute*, above or apart from other media. It is this usually implicit assumption that lets us talk of virtual 'worlds' and of working or even living in an information 'space'. I'd like to present an opposing view, which treats space as merely one medium among the many used in everyday life, and space as *relative* i.e. only meaningful in and through its relationships to other spaces and other symbols used in human experience. I'll outline this view, and use it to critique a conceptual treatment of space well–known within HCI and CSCW, the space/place distinction of (Harrison & Dourish 1996). The view is based on experience with information visualisation, collaborative virtual environments (CVEs) and ubiquitous computing systems, as well as some borrowing of structuralist linguistics and semiotics, and philosophical hermeneutics. Part of this work draws from (Chalmers 2003).

Especially when designing systems for remote collaboration, we all too often concentrate on emulating the spatial aspects of the workplace or setting, e.g. modelling spatial forms and supporting remote communication that appears to be like face–to–face interaction. All design has to be biased in some way, and the bias towards space in CVE research may be due to it being technologically led more than sociologically, semiologically or philosophically led. The arrival of cheap graphics hardware and the eye–catching novelty of 3D images gave rise to a good deal of work that focused rather narrowly on the construction of rather decoupled and decontextualised information spaces. However, as pointed out in (Chalmers 1999), there are strengths, weaknesses and alternatives to such a bias

Newer technologically driven research is weakening or revealing implicit assumptions of space's primacy and independence. Many of the characteristic design principles and assumptions were established before the current fashion for mobile computers and ubiquitous computing. Nowadays, it possible to obtain tolerable frame rates for 3D graphics on a wirelessly net–connected handheld computer. A person can be walking down a city street with a friend, chatting about a museum they intend to visit, while simultaneously watching the avatar of another friend moving through a CVE—with that 'remote' friend also taking part in the conversation. In this case, it would seem difficult to claim that the person is 'in' the information space alone. When one considers whether the person is in digital or virtual space, or in real or physical space, but the question is based on two false dichotomies: digital media are no more or less real than older media, and computers are just as physical as buildings and books.

The workplace has always been affected by communication with people in other locations. Many traditional, everyday and non–digital media support remote interaction, for example letters, books, maps and the land–line telephone. There are already digital media in the contemporary workplace that support remote interaction, such as email and mobile telephones. Nowadays, why do we not speak of 'entering cyberspace' when we use email, as people did a decade ago? Why do we not inhabit telephone space, or speech space, or MacDonalds' employee name badge space? A principle from philosophical hermeneutics is useful here: we don't talk about these technologies in such marked ways because we have appropriated them into our everyday life and language. Email is so interwoven in our everyday life and familiar in our experience that we don't mark it out in such a dramatic way. We don't inhabit telephone space because we understand telephones, in particular how to present ourselves through them and how to present ourselves to people nearby who can perceive our use of them. Experience and understanding of such coupling lets us focus on communication rather than the tool for communication, just as a carpenter engaged in his work focuses on hammering and not the hammer.

We continually mix and couple media in our everyday communication: walking, gesturing and pointing while talking, and referring to places and what people did in them as one writes. Space is an essential part of this mix. It has its unique characteristics that differentiate it from other media, but it has no privileged position above or apart from them. It does not stand alone as a paragon for

computational media to emulate. More generally, a medium cannot be fully used or understood in an isolated or 'singular' way. People's activity continually combines and cuts across different media, interweaving those media and building up the patterns of association and use that constitute experience and understanding. A person's work or activity may be influenced by the configuration of space around them and the interactions that space affords, but also by books, telephones, hypermedia, 3D computer graphics and so forth. People act and work through the full range of media they have ready to hand. A narrow emphasis on space, especially 'digital space', as the paramount resource for activity underrates the interdependence of media. Recent technological developments, such as mobile phones and email, heighten or highlight the interdependence of media or intertextuality already familiar in the use of older media such as written text, maps and cinema, and well–explored in philosophy (Grondin 1994), semiotics (Nöth 1995) and linguistics (Saussure 1983). We take the standpoint, then, that activity and language is constituted by all the symbols and all the media one uses, with each symbol interpreted through immediate perception as well as past experience and social interaction.

For example, a city's meaning is not just in its bricks and mortar, but also in our understanding and use of the information about it. At any time, one is likely to have symbols in a number of heterogeneous media available for interpretation and use. As I walk through a train station towards a city square, the map in my hand, the voice of a friend on my mobile phone, the signs informing me of exit routes and the posters advertising exciting shopping opportunities are all open for my interpretation and action. Temporally, symbols in an even broader range of media influence me, as my activity is influenced by my past experience and my expectations of the future. Past experience may include my previous visits to that city, my browsing of a web site with good maps to print out, and my experience of magazines, books and films about urban life, and so forth. My language and culture, spanning media old and new, affect me as much as the immediate perception of spatial form. Since Heidegger and Saussure, a fundamental tenet of philosophy and linguistics has been that language is constituted by all the symbols and all the media one uses, with each symbol interpreted through immediate individual perception as well as past social experience. Contemporary neurophysiology is in strong accord with this view (Churchland and Churchland 1998; Edelman and Tononi 2000), as is the field most obviously related to the design of space, architecture and urban design (Leach 1997).

We can characterise media and treat each one as if it were an isolated individuated entity because of the senses we use in perceiving each one, and also because of our understanding of how to relate and to distinguish examples of each one. For example, it is easy to distinguish the spoken word "red" from the written word *red* because of the senses one uses in each case, and the same is true for the map of a city and the buildings there. Simple rules about what one can immediately see, hear, etc. begin to strain and then break when one considers, for example, how we distinguish homonyms such as *rose*. The written word *rose* can mean many things, including a flower and having risen. When spoken, the same syllables can also mean linear structures (rows), about or belonging to fish eggs (roe's), moving in a boat (rows), small deer (roes) and multiple occurrences of the Greek letter ρ (rhos). Consider also a church hall, used at one time for a prayer meeting and at another time for a disco. It is not the built structure alone that lets us understand whether to whisper and pray, or to dance and flirt.

A word's meaning is understood through its context—one's understanding of the other symbols co–occurring with its use—rather than perception of the word's pattern of syllables or letters. The space's meaning is understood through its context too: through the context of the perceptible activity of the people in the hall, the arrangement of furniture, the lighting of the hall, and so forth. Saussure established that a word's usage is understood through understanding and experience of patterns of use i.e. of other symbols that generally co–occur with it in use in language—and not just through the perception of the word's syllables or letters. Following Wittgenstein (1958) and Saussure, any symbol or artifact gains its meaning in this way, and this applies to written, digital and spatial symbols too: its meaning is its use in the language, where language is seem as involving all communicative media. To paraphrase Wittgenstein, the meaning

of a space is its use in the language. Its meaning *is* the patterns of use involving it, rather than merely the geometric structure or physical materials within it. This is not to say that interpretations based on geometry or physics are not 'patterns of use' or are less valid than others. The objectifying perspectives of science are human constructs: patterns of use of linguistic symbols with cultural norms and connections.

Activity continually combines and cuts across different media, building up the temporal patterns of coupling and interweaving that constitute experience and understanding. A person's work or activity may be influenced by a 3D computer graphics display in front of them, and the interactions that such a system affords, but also by books, telephones, hypermedia, furniture, buildings and so forth—and other people's use of all of these media. The context of one artifact, in a particular medium, is the other artifacts and tools in that medium—and also in the other media at hand. More generally, we understand, relate and differentiate symbols through experience of contexts of use within a culture. Gadamer's 'historically effected consciousness' (Gadamer 1989) lets us more clearly see how media are woven together via the hermeneutic circle, in which one's ongoing activity, including social interaction and spatial interaction, builds up one's subjective experience or history, and yet experience and history is a resource and a constraint on one's ongoing activity.

We can take a semiological and hermeneutic view of the discussion of *space* and *place,* brought to the attention of many in computing by (Harrison & Dourish 1996), but long discussed in geography and related philosophy. Harrison and Dourish suggest that the significance and utility of a space increases when the people people build up a past that involves it, a history of experiences that allows the space to obtain the richer quality of 'place.' This change involves supporting the development of 'appropriate behavioural framing,' the emergent patterns of human behaviour and interaction that offer understandings of the space. It is important to note that their discussion refers not only to physical environments but also media spaces, information spaces such as Usenet groups, and hybrids of the physical and the virtual. In developing technical mechanisms to support awareness, achieving this quality of 'place' is an important goal. They focus on information spaces that employ aspects of physical spaces in order to support cooperative work, and suggest that naïve mimicry of the physical world does not significantly help in making a useful place out of a sterile information space. One critical factor, they say, is "support for adaptation and appropriation of the technology by user communities." This leads to the development of a "communally-held sense of appropriate behaviour, and a context for engaging in and interpreting action."

Harrison and Dourish go on to build up a complex set of terms and concepts, such as 'spaceless places,' in interpreting issues of technology design and information representation in terms of space and place. We take a slightly different approach to understanding the development and support of awareness. We treat a space or place as a medium for significant action, and as an addition to the other media that are interwoven in our activity and language i.e. we consider spatial structure and spatial action as parts of language. We consider 'space' to be one of the physical phenomena which has the potential to be used symbolically, and so consider a 'place' to be a space interpreted as a symbol in language, given meaning by its patterns of recurrence in human use.

Their principle "Space is the opportunity; place is the understood reality" now can be seen in the same way that a pattern of sound waves can be a word, a curve of ink can form a letter, a move of the hand a subtle gesture. In each case, the former is a perceivable pattern in one or more physical phenomena, which has the potential to be used symbolically, while the latter is the symbol in language. We continually mix phenomena in our everyday communication, and spatial media are an essential part of that mix. While space has its unique characteristics that differentiate it from other media, it has no privileged position above or apart from them. Their common potential for use in language makes each medium potentially semiological, and therefore symbols in different media can become part of the same language. Hence we see 'appropriate behavioural framing' as the understanding of language, as semiological activity with social and structural norms.

This standpoint, interweaving phenomena and media such as space, data and text, also offers an alternative view of the 'complex forms' of Harrison and Dourish. The first such form is the

'spaceless place,' such as Usenet news groups. Spaceless places are navigated and used by means of relationships that are non-spatial but that nevertheless support "the tension between connectedness and distinction which leads to placefulness." As they put it, different social norms make for different places without an underlying notion of space. The concept of spaceless places seems complex when media are conceived of as disjoint, but we see language as the underlying notion of both spatial and non–spatial media. Language unites them and makes them 'placeful' or understood.

In the second class of complex forms, 'hybrid spaces,' physical and virtual spaces merge or overlap. Actions in physical space may be represented in a media space via camera images, for example. While it may be difficult for the people involved to handle symbols such as gestures and postures that have been represented in a new medium, one should consider actions in technological and 'everyday' media as involving a common set of people, objects and symbols. Difficulty stems not so much from the fact that a combination of media is involved, but that the particular representations and interactions that combine those media, i.e. the overall design, can be a poor fit with the people and their activity. Parenthetically, we note that limited or transformed representation in technological media is a feature shared by 'everyday' media. The limited field of view of the eye and the compression of perspective, a city street's constraints on view and motion, and one's finite experience and current context—these also limit and transform what one perceives and hence influence how one interprets the 'natural' world.

Rather than seeing hybrid spaces as a special case, we find it difficult to identify spaces that are *not* hybrid. Actions, words, gestures, concepts and goals that are not particular to one medium, workplace or information space are inevitably involved, and span such spaces because the same people are involved in them all. Media spaces, virtual worlds and all representations would be useless if they did not overlap with and share references to our everyday verbal, written and gestural language. As Harrison and Dourish themselves put it, "after all, a virtual world filled with virtual offices and virtual desks isn't populated by virtual people, but by real ones."

To conclude, a semiological and hermeneutic viewpoint on space and spatiality offers a link to long–standing discourse that may be useful when discussing design concepts, examining the assumptions underlying system designs, and developing new system design approaches. In computer science, it is mistaken to assume that a radical novelty of a technology implies a radical novelty in the use and interpretation of that technology. Instead, more cautious and historically grounded discussion may help us not only better understand technology in use, but better understand computer science's relationship to other, more mature disciplines.

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