COVER SHEET

Performing Re-mediation in Graphical Cyberspace: Mediating Agency, Body and Identity in Virtual Interactional Practices

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Comments welcome.

INTRODUCTION

This paper derives from a broader inquiry into the nature of mediation, agency, identity, artifact and embodiment in 'inhabited' virtual environments (see Cerulo 1997 and Lyman & Wakeford 1999 for reviews of the methodological issues involved in social and humanist studies of technology and virtual environments). The focus of the paper is a study of the character of selected technosocial interactions in an academic conference which was held in graphical cyberspace in November 1998. Such a novel and spectacular hybrid media event raises many questions. I find that investigating such environments opens up again in a refreshing way the complexity of what it means on particular occasions to inter-act, to inhabit, to belong and to be embodied — so much so that now familiar ways of analysing and categorising social interaction or technical systems are disturbed.

In order to tackle these issues, I am grappling with several different, but I think potentially complementary perspectives that can be applied to understanding how computer-supported communications technology is designed and used in practice. First, I draw upon the last fifteen years of research that productively examines people engaged in computer-supported activities to determine how they themselves constitute their everyday practices out of the resources and affordances of the technical setting (eg. Suchman 1987, Thomas 1995, Jordan & Henderson 1995, Heath, Luff & Sellen 1995, Bowers, Pycock & O'Brien 1996). However, much of this small body of CSCW and CMC literature is primarily based on experimental studies or high-tech prototype VR systems that have little praxiological or social significance (see many of the studies in Finn, Sellen & Wilbur 1997). I am collecting ethnographic and interactional data from several of the popular, widely distributed, low-tech, virtual environments.

Second, I am impressed with the theoretical challenge mounted by studies of science and technology (STS), particularly ANT (actor network theory) and the work of Bruno Latour (as well as Donna Haraway and Katherine Hayles). They give us a better understanding of techniques, practices and networks that intimately involve both humans and nonhumans, such as artifacts (see Latour 1999, Haraway 1997 and Hayles 1999). Third, I try to bring to bear the critical work of the philosopher of gender Judith Butler who rethinks our notions of performance, subjectivity and agency (see Butler 1997). Lastly, I have been looking critically at simplistic notions of mediation and was drawn to Bolter & Grusin's (1999) alternative model of *re-mediation*. In the context of the digital event studied, I focus on the different ways in which re-mediation is performed and their effects on agency, subjectivity and identity. With these methodologies, I hope to give a more lively and populated account of the mediation of agency, body and identity in virtual interactional practices, with virtual

participants immersed in hybrid media (which have some of the qualities of more familiar broadcast and interpersonal media) and engaged in performances of re-mediation.

THEORY

Semiotic, poststructuralist or postmodern cultural studies of the mass media have often made grand theoretical claims about simulation and inauthenticity (eg. Baudrillard), about the impact of technology on our sense of identity (eg. Turkle), and about the possibilities for a utopian transcendence of mundane life and the body (eg. Leary). Recent studies of practical interaction in new media, on the other hand, have soberly countered this tendency to see flux and fragmentation everywhere. Instead, technologies are made at home in everyday, routine social practices; that is, they are settled in and used to get things done as they are usually done. Harvey Sacks, a founder of the field of conversation analysis, has taken a position which is in marked contrast to Marshall McLuhan's slogan that 'the medium is the message'. Sacks claims that "the technical apparatus [of the telephone] is, then, being made at home with the rest of the world. And that's a thing that's routinely being done, and it's the source for the failures of technocratic dreams that if only we introduced some fantastic new communication machine the world will be transformed. What happens is that the object is made at home in the world that has whatever organisation it already has" (1992: 548).

I am attempting to steer a different course and privilege neither account. If such things could be separated, then both technologies and subjectivities are "made at home" with each other, which means that 'home' is mobile, nomadic and transformable (Urry 2000). It is too easy to separate out human social life from the inhumanity and coldness of artifacts and technologies, and then to look for the impact of one on the other, to subsume one into an explanation in terms of the other, eg. in a social constructionist account of a technology. Insights from cyberstudies (Hayles 1999) and actor-network theory (Latour 1999) in studies of science and technology can help us grapple with the complex issues of mediation, agency and artifact in a posthuman world. One consequence of this revisioning of 'the social' and 'the technical' is a conception of agency that does not privilege human actors nor the originary subject, challenging us to re-examine what it means to inter-act, to participate, and to talk in the media. If we have a more lively and more inclusive notion of agency, then we should of course reconsider the historicity of artifacts and bodies. We need to investigate what gets treated as body or artifact, real or virtual in practice. Indeed, for Michel Foucault (1980), "it is one of the prime effects of power that certain bodies, certain gestures, certain discourses, certain desires come to be identified and constituted as individuals." Moreover, we can see these assemblages as performances of social ordering,

of performing the social link, of localising and globalising. They are attempts to extend collectivities or actor-networks in and through translations, displacements, and alliances figured over new changes of scale (see Latour 1993, 1999, Law 1992).

BACKGROUND TO MATERIALS

Inhabited cyberspace

In the last ten years a number of networked 3-D worlds or environments[1], have been developed and then 'inhabited' simultaneously by geographically dispersed computer users, who can communicate in mediated text or speech and animate a virtual graphical presence, as avatars, to others in the environment (see Damer 1998 for a review of the software available). Users of the software connect over the Internet (for example, by using a modem) to a computer server which maintains information about the state of the environment.

In summary, 3-D worlds or environments include the following key features:

- They are digital, involving a wide technical network of local computers combined with a centralisation of some computing resources.
- They are networked over the Internet using standard TCP/IP protocols.
- They involve computer-mediated communication combining text, audio, video, animation and sometimes audio telephony.
- They support users remote in distance (and time).
- Users have degrees of embodiment.
- Users have degrees of presence and influence. The features of social space that can be supported are relational orientation and reciprocity; proximity and action; partitioning; presence and awareness.
- They support, somewhat crudely, a shared 'inhabited' environment.
- They are *virtual*, but not to be thought of as unreal, or opposed to real life. Pierre Lévy (1998) argues that the virtual must be understood as an historical articulation of the real, fully as actual as any other such articulation but one connected specifically with computer-mediated communication technologies. Virtualisation is not a derealisation, but "a change of identity, a displacement of the ontological gravity of the object considered" (26). He also notes that one of the principle effects of the current transformation is the appearance of a new method of communication

[1] They are categorised under names such as 'collaborative virtual environment' (CVE) or 'inhabited virtual worlds' (IVW).

within very large deterritorialised communities, which he refers to as *many-to-many communication* (140).

Active Worlds

AlphaWorld, the first version of the Active Worlds software, first went online on the Internet in 1995[2]. The basic networking principle used by ActiveWorlds is the *client-server model*. Anybody with a PC, a modem and an Internet connection can use the downloadable client software to connect to a powerful server computer that maintains a state model of the universe of worlds[3]. Individual users interact with others through the server, which distributes world and avatar state information to every client that needs it. Thus, the core database is centralised, yet users appear to be interacting semi-transparently with other users in the world they presently occupy (or project themselves into). The elusive goal is synchrony in a Euclidean space, with a complementary desire for bandwidth.

A client-user looking at the graphic display computed by the client software has a simulated first person view on other users embodied as animated characters moving through the 3-D Cartesian space of the world, and can communicate with them by typing a text message and sending it to a shared semi-permanent chat window, in which all messages sent to the server appear in sequence according to their time of arrival at the client (see the appendix for an extract from the chat window).

My concern is with concrete recorded examples (not anecdotes) of particular types of behaviour in virtual environments, as well as with cultural significations of these environments as world, home, place, inhabited space, with features such as virtual bodies, bots and movable objects, which congeal into mobile collectivities and communities.

Avatars! 98

Avatars! 98, held in November 1998, was promoted as “the first major international conference held inside cyberspace” (Damer & Gold 1999). The event, which was open to the Internet public, took place in a 3-D world specially designed for the conference (see Damer *et al.* 1999). The place was conservatively laid out in the manner of a large indoor arena with distinct zones for type of activity, including a “webcam wall” comprising updated images from multiple web-cameras and (re)broadcast live video images of CNN. The main

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[2] In January 1999, Circle of Fire Studios, the company owning Active worlds, was acquired by a company now known as Activeworlds.com, Inc. and is now a publicly traded company.

[3] At the time of the recording, 458 worlds were registered in the Active Worlds universe. A total of approximately 528 users were connected to the universe during the sequence analysed in this paper, of which 176 were connected to the AV98 event world itself. To have the possibility to build in these worlds users must pay a

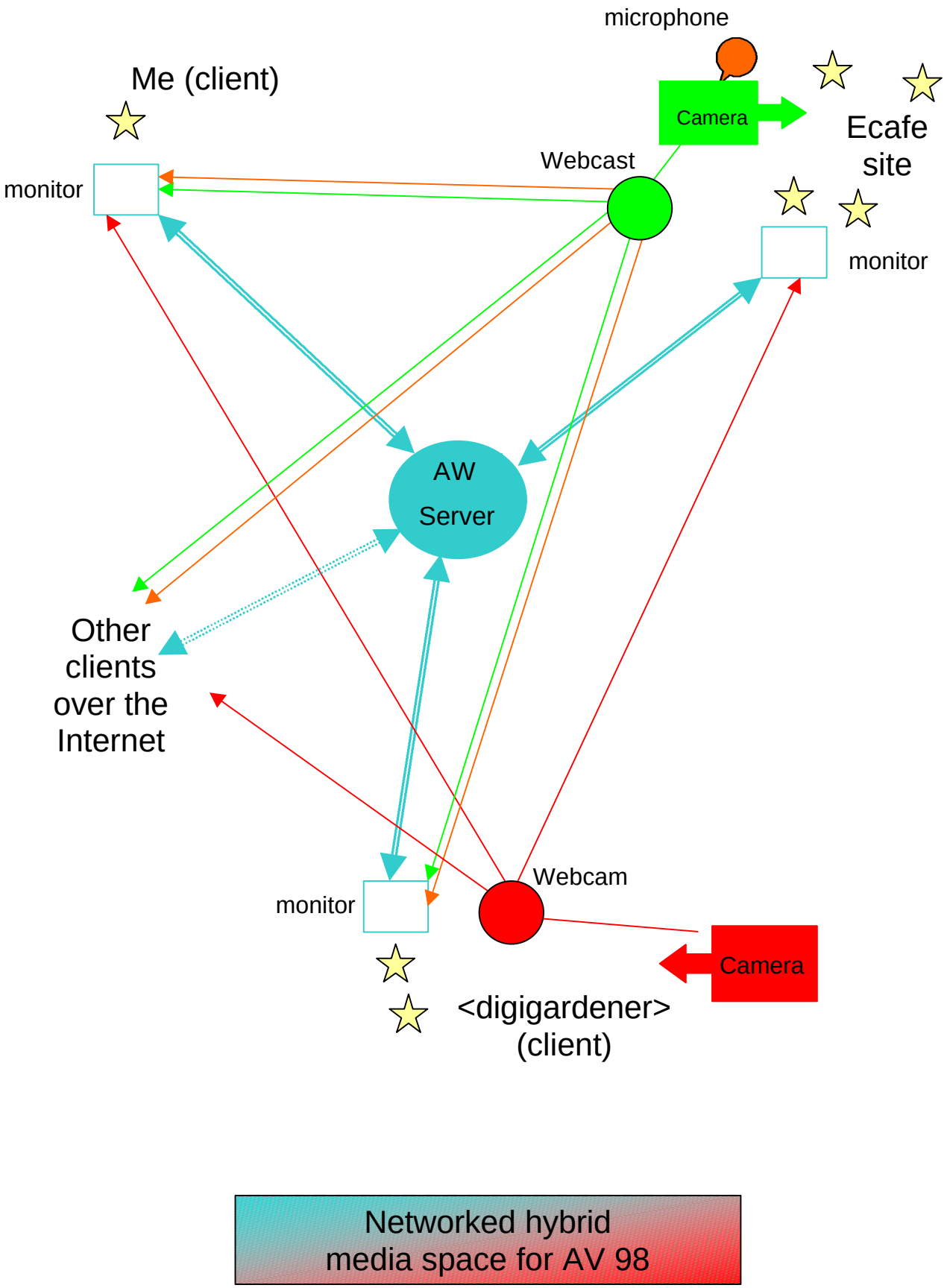
organiser and master of ceremonies for the event, Bruce Damer (aka <digigardener>), was 'broadcasting' live images of himself at his physical location in Santa Cruz. He was visible on TV-like image monitors in at least two locations in the virtual environment. In addition, one site, the Ecafe, used streaming media (RealPlayer) from their web site to 'webcast' visual and aural representations captured by video camera of participants at their physical location[4].

By overlaying the three client-server, webcam and webcast models (see Figure 1 below) we get a schematic picture of the data connections in the technical network and the flow of cast and served media representations comprising this event.

subscription fee every year. In their own publicity (from 24.2.99) the Active Worlds company claims that there are over 650 000 unique users and over 16 000 paid users <http://www.activeworlds.com/universe.html>.

[4] In the second Avatars! 99 conference, one way audio broadcasting over the web was used by many of the speakers, requiring participants to shift between the 3-D virtual conference space to a web browser video stream, which caused some confusion over the exact location of a session and the current speaker.

Figure 1 - Overlay of cast and server models of AV98



DATA COLLECTION

With an interaction analytic methodology (Jordan & Henderson 1995), the analyst wishes to observe participants in their 'natural laboratory' with human (and increasingly nonhuman) others they can rub against. I collected approximately four hours of material of the Avatars! 98 event that took place in Active Worlds. By video recording my screen activity and by logging the chat window, I have both a temporal record of verbal and visual activities and a trace of the public talk[5] that took place. The recording, however, is of *one* participant's view on the public event, limited by many factors[6] — such that a reciprocity of perspectives often cannot be presumed. In reference to Charles Goodwin's (1994) contingent distinction between social vision and professional vision, I was orienting both to taking part in relevant social interaction *and* the need to be in the right place at the right time to capture a mediated representation of pertinent and salient social action for the participants themselves. The software provides each user with a visual view or 'window' on the virtual environment. Thus, my avatar provided my ocular 'camera' or 'filmic eye' (Balsamo 1996; cp. with the cinematography in the films *Being John Malkovich* and *Strange Days*) onto a perceptual field of social order, at the same time as it provided a resource for determining and constructing that social order. For example, when I moved my avatar in the social space, the view in the window would change according to a computable 3-D geometry, and when I wished to view a particular action or activity from a different perspective, my avatar body would also move.

Public conversations were logged and activity in the public spaces recorded. Avatar names have not been changed. The logs of the typed chat have been supplemented with screen images and video recordings that help us follow the temporality of visual activities and movements in the virtual environment.

EXAMPLE AND ANALYSIS

Participants in an 'inhabited' graphical virtual environment must craft and perform social orderings out of multiple representations, not only of talk but also of embodiment and artifact. The analysis that follows explores how participants orient to the different local forms of mediated embodiment, how they manage the situated coordination of visual and verbal activities, as well as how they negotiate the nature of the event and its ritualised activities

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[5] It was possible at that time for participants to send private telegrams to other participants. I have no record of this activity.

[6] So called technical factors include what is glossed as 'network lag' [how many hops from my computer to the server and lag time], the 'bandwidth', the local processing capacity, the local memory, the software settings, the cache [how much of the scene is already downloaded].

though their served talk. In general, the analyses demonstrate the lived work through which specific assemblages of persons, technologies and networks are produced and reproduced as local orders of culturally constituted ordinary activities. To illustrate the intricacy and distributed nature of these assemblages, consider, as an example, how the situated dynamics of the software is relevant for understanding how users-as-avatars can interact and communicate.

Any client user can select how many other users-as-avatars (N) are to be displayed by the software as visual animations, ie. the software computes the closest N avatars to the user and these *proximal* avatars change their animation according to resting position, user command or movement, and thus their facing (front/back) orientation is detectable from their body position rotated around the vertical z-axis. The *distal* others (those that are further away than the closest N) are displayed as static uniform 2-D avatar shapes which always face the user's avatar as seen from the first person POV. Moreover, they can no longer be 'heard' in the chat window, so recipiency becomes contingent. This creates problems for the coordination of mutual orientation. If one moves around in the space, then one's avatar can change from proximal to distal for a particular client and therefore become verbally 'out of reach' as well as visually indistinguishable from others who are also distal.

From my recordings of last year's AV99 event, using two POV 'cameras', it became clear that there are local and dynamic spatial dialogue topographies in dense crowd scenes, ie. ordinary participant-avatars are localised into clusters of recipients associated through the computation of the nearest N proximal avatars. This computation (which helps limit bandwidth) affords a *discrete* spatialising of dialogic participation which effects a continuous overlapping of sets of dialogue spaces, each one centred around an avatar in 3-D space. At a particular moment, an user-as-avatar A may be able to 'hear' B, C and D, but B 'hears' C, D and E. Therefore, participation is both social *and* computable: it is distributed differentially across humans *and* nonhumans — users, avatars, Euclidean space, client and server software, and so on — in the desperate attempt by the designers to afford opportunities for framing interactions (and agency and reference) and synchronising mutual orientation necessary for accomplishing intelligible action. The software designers provide reversible chains of transformation, at each step losing some properties to gain others that render them compatible with already established centres of calculation/computation[7]. The result is

[7] Latour (1999: 58) argues that acts of reference rely on a regulated series of transformations, transmutations and translations giving a reversible chain, so that reference is our way of keeping something constant through a series of transformations, and reference denotes the quality of the chain. We need to align each stage with the ones that precede and follow it, so that one can trace from the last to the first.

that social participation is transformed into data at the same time as data is narrativised and socialised as an 'populated' landscape which subjects can traverse and interact in[8]. That is, both humans and nonhumans are transformed in their articulation as a heterogeneous technosocial assemblage. If I act more like software, software can act more like me!

Example — opening of Avatars! 98

I would like to examine the following example to see how participants orient to the cast webcam and forms of mediated embodiment though their served talk and visual participation. The extract in the Appendix shows some events that took place in Avatars! 98 at Ground Zero. The transcript begins earlier than the segment of interest and shows the end of a rather clumsy countdown to the start of the conference[9]. The start of the segment is marked at line 22 on the transcript.

If you are not used to these environments, then you may have trouble figuring out what is happening — for example, to identify relevant social activity and to make sense of the talk in the chat window. At first glance we see a live audience of avatars in a virtual arena in the presence of a slow webcam feed (roughly 1 frame every 10 seconds). The embedded webcam monitor is a mediated materialisation of an offline place cast over the Internet, which anchors the online virtual environment to a network of physically embodied users. If we look more closely we see that during the opening ceremony, the presenter, Bruce Damer, embodied in the virtual world as the avatar <digigardener>, visible to other similarly embodied participants in the virtual space, was simultaneously visible to the virtual audience on the live webcam, which was captioned “LIVE from the Digital Garden Santa Cruz!” Depending on one’s perspective, his speech presentation was ‘broadcast’ to an unseen audience of actual computer users *and* simultaneously ‘served’ to a minimally ‘copresent’ virtual gathering of avatar spectators who were watching a large virtual monitor on which they saw an image of the presenter ‘cast’ over the Internet. If such a ceremonial event had been broadcast through the institutional medium of television, broadcast talk would have been produced for an overhearing or eavesdropping ‘mass audience’. Instead, the digitally

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[8] Hayles (1999: 37-8) argues that in *Neuromancer*, William Gibson made two literary innovations that allow subjectivity to be articulated together with abstract data: 1) POV (point of view) is the character, so that consciousness moves through the scene leaving the body behind; and 2) he transforms a data matrix into a landscape in which narratives can happen. Spatiality is given a temporal dimension by the POV's movement through it, with the result that data is humanised and subjectivity is computerised.

[9] Due to the packet-switching protocol of the Internet, it is not easy to coordinate activities that are sensitive to precise temporal beats, such as counting in unison, but with the semi-permanence of the chat window, a semblance of sequential organisation can be recovered. In this case, the sequencing of descending numbers is rendered visible in the chat window.

mediated event comprised talk and gestures for a variety of locally differentiated recipients, bodies and artifacts.

Who Is Talking?

I briefly sketch out here some of the phenomena of ‘served’ talk as they relate to the larger issues I am discussing. In this environment, any participant can send public text messages to other visible (and proximal) participants in the immediate locale. There are certain roles and hierarchies built into the system, however, and they may influence on speaker rights. For instance, Bruce Damer (<digigardener>) is the owner of the world, and his team controls the Immigration Officer’s ‘tannoy’ messages (line 25, for example). Because <digigardener> is the owner, his utterances can be ‘served’ out to all participants regardless of distance (as can the immigration officer's tannoy messages). Tourists are limited in their avatar appearance, their names are in quotation marks (line 34, for example) and their ‘utterances’ are in lighter font than those of the paid-up members. But otherwise, since participation in the shared dialogue space is managed through participation itself, no speaker can have a monopoly on ‘speaking’. Rather than a ‘floor’ on which participants select or self-select 'next speaker' in the 'next turn', there is often a strong orientation to an ordered ‘pool’ of ‘utterances’ (or messages) by 'speakers' that can be made salient again by another or the same 'speaker' in a later ‘turn’ (eg. lines 31, 33, 44, 47, 54 in reference to <digigardener>'s statement in line 28).

In this example we can see the phenomenon I refer to as ‘Here’s Me_1 Looking at Me_2 Looking at Me_3 Talking’. As a participant observer — embodied as an avatar with a first person view of the AV98 arena — I can see the <digigardener> avatar (Me_1) in the 3-D space of Avatars! 98 looking at a webcam wall showing a 'live video' picture (Me_2) of Bruce Damer (Me_3) (aka <digigardener>) somewhere in actual geographical space looking at his monitor, which no doubt shows a (first person or bird’s eye) view from the perspective of his <digigardener> avatar (Me_1) of Me_2. Me_2 could be seen on the webcam monitor as a mostly passive spectator/user of the spectacle appearing on his monitor. In the midst of this virtual hall of mirrors — mediations of the sacred image of the same (Haraway 1997) — <digigardener> is sending messages to the shared chat window (eg. lines 28, 30, 32, 36, 37, etc.).

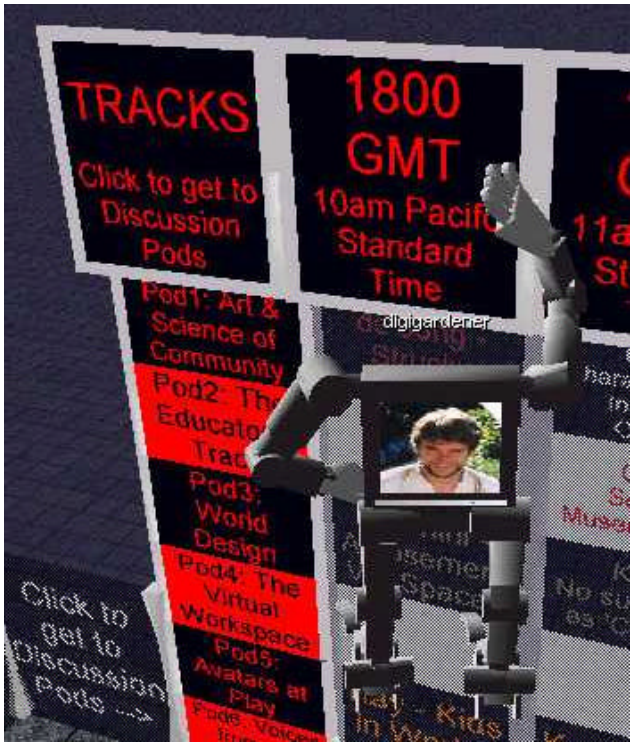
What Is Waving?

In her recent book, Katherine Hayles (1999: 205) claims that "when changes in incorporating practices take place, they are often linked with new technologies that affect how people use their bodies and experience space and time. Formed by technology at the same time that it creates technology, embodiment mediates between technology and

discourse by creating new experiential frameworks that serve as boundary markers for the creation of corresponding discursive systems." The example she uses to illustrate the importance of embodiment is the simple good-bye wave, which cannot be separated from its embodied medium, nor from its audience.

I use a participant's waving gesture during the AV98 event as my example, namely Damer's waving gesture in lines 34 to 39 and again in lines 41-43. Mike Michael (1996) introduces the concept of *intercorporeality* "to get a handle on the process by which the 'embodiment' of identity is an echo of other embodiments — in technologies, in architectures, in 'natures'" (12). In this example, Bruce Damer is intercorporeally embodied, such that multiple embodiments contain traces and echoes of other embodiments — robotic, televisual or organic. In Figure 2 below we see an image of <digigardener>'s avatar embodiment in this virtual environment, which can also wave.

Figure 2 - <digigardener>'s avatar waving (Damer 1999)



Let us examine how participants shape the collective experience of the spectacle of the webcam wave through ‘served’ talk in lines 28 to 46. What is the trajectory of the wave sequence? We could argue that the wave gesture was elicited by several prior turns, for instance in lines 16, 17 and 31, by three different participants. These participants are establishing the relevance of differential participation across this hybrid media space. Those in the virtual environment in front of the webcam stylised as a large TV monitor are to be spectators to an action by a group of copresent persons in the so-called ‘real world’, which

will be visible on the monitor. There are two separate wave sequences caught by the webcam across lines 35 to 39 and lines 41 to 43. The first is by Damer and the second by Damer and two unidentified persons in the same room as him (possibly elicited by lines 16 and 31). It is clear from lines 35, 44 and 47 that some participants are having trouble not only seeing the wave, but determining from where the wave could be emanating in the virtual space. Note also that <digigardener>'s attempt to coordinate his description of his/their embodied action with the gesture itself is fragile.

On my client, Damer begins his wave when the new 'cast' image is loaded at line 35 and continues to be displayed until the image is refreshed at line 39. Bruce Damer as <digigardener> manages to type two messages (lines 36 and 37) before the image is refreshed. The first message describes an action currently in process, "i am waving now", and the second orients to the possibility that the visibility of that action in the virtual environment of Avatars! 98 will be delayed (possibly in response to the report in line 35). The second joint wave starts at line 41 and is displayed until the image is refreshed at line 43. <digigardener> announces the onset of the second wave, but delays his description of his 'current action', "waving!!!" (line 46), to coincide with its future viewing. Unfortunately, on my client the second message appears after a new image has loaded on the webcam monitor, one in which the wave is no longer visible.

The wave extract illustrates the difficulties presented in accomplishing through 'served' talk and 'cast' media representations the rather mundane human activity of waving to other persons. Such explicit and troubled efforts to identify salient visual activity and coordinate social perception demonstrates the brittleness of gesture in this hybrid environment. Latour (1999) argues that there is no mastery of action: there is always a slight surprise, so that one is overtaken by action. "Action is not what people do, but is instead the '*fait-faire*', the making do, accomplished along with others in an event, with the specific opportunities provided by the circumstances" (288). Latour (1996) notes that "one can only share in the action, distribute it with other actants. This is as true for its manufacture, as for its manipulation" (237). He insists that we must hear the word *inter*action differently. Thus we may say that, without respite, the semblance of (co)presence and the practical metaphor of 'inhabited' 3-D worlds are *contingently* maintained and distributed through the technological apparatus and through the everyday situated practices of users, as well as the work (rendered invisible) of other actants such as electricians, server technicians, network administrators and software designers. Of course, connected to the network there are people with physical bodies who probably have homes offline. Nevertheless, participants in-world must craft their interaction out of multiple representations, not only of talk but also of

embodiment and environment. Mundane social practices and accounting procedures that are usually resilient are now put under greater stress because piecemeal 'worlds' that are designed mimetically with a handy social and cultural significance are riddled with unpredictable anomalies and unworldly quirks (such as digital artefacts, unpredictable lag times, untrustworthy embodiments).

Who Is Looking?

For Hayles (1999: 3), "the posthuman subject is an amalgam, a collection of heterogeneous components, a material-informational entity whose boundaries undergo continuous construction and reconstruction." This undercuts the idea that there is an agency, desire or will belonging to the self. Rather than focus on "the same *generalized* moral self", Michael (1996: 23) contends that what is missing is an attention to the ways that "representations serve in the mutual and durable (re)construction of the self and the interlocutor, and the ways that such representations, on the one hand, carry with them the trace of wider networks and, on the other, project the possibility of certain networks." Bolter & Grusin (1999: 233) argue for a conception of the networked self which "is made up both of that self that is doing the networking and the various selves that are presented on the network." They maintain that "the subject in virtual space is not satisfied with a single point of view; instead, she seeks out the positions of other participants and objects in that space. She understands herself as a potentially rapid succession of points of view, as a series of immediate experiences derived from those points of view" (236). What is intriguing about hybrid 'inhabited' virtual environments is that the subject can seek out other points of view from which he or she and other participants/artifacts can view the subject's body (or self) as a present or self-present object.

Damer's activity illustrates the tension between repairing a coherent subjectivity and distributing subjectivity over multiple mediations. He makes frantic claims to anchor himself (by generic appeal to the authenticity of live television) as that man who is the unique source of <digigardener>'s actions and is physically embodied in a location in California. Yet in a profound sense Damer is heterogeneously materialised over flesh, hardware, software, network, text, avatar, graphic and webcam apparatuses. Instead of triumphantly asserting his identity over and against the world, he inescapably and repeatedly is denied a fixed identity and separateness from the world[10]. Yet it is this performative reiterability (Butler 1997) and mediation, and the invisible work entailed, that enables him to appear to act

[10] On the so-called 'death of the subject', Haraway (1991: 214) prefers "to call this generative doubt the opening of non-isomorphic subjects, agents, and territories of stories unimaginable from the vantage point of the cyclopean, self-satisfied eye of the master subject."

unilaterally without transformation, to attribute a localised subjectivity from the framing of collective agency[11].

CONCLUSION

In the introduction to this paper, I referred to a particular understanding of technology in relation to the everyday that was suggested by Harvey Sacks. He claims that "what happens is that the object is made at home in the world that has whatever organisation it already has." But is it so clear what "at home" and "whatever organisation it already has" are that is so distinct from and uninfluenced by technology and mediated practices? He seems to suggest that there is a bedrock of phenomena that are untransformable, anchored in the routines of everyday life, guaranteeing a stable member subject who acts through technology, dragging it into rock of the everyday, but without either being influenced by it. In their study of a virtual environment, Bowers *et al.* (1996) claims that what they see is "the ordinary apparatus of conversation and the social interactional coordination of body movements being moulded and adapted to what the virtual environment affords so that participants can carry on as best they can with their business at hand." But, as the analysis above demonstrates, is not the sense of 'participation' and thus the subjectivity and agency of the 'participants' more seriously challenged by the posthuman?

The problem here might be with the modernist separation of 'the technical' from 'the social' (and 'the natural'), of technology from social order or society, the first of which forms a base *medium* that is tamed by the second. Mediation is often defined as "the act of intervening between two parties in order to effect/affect a relationship between them; the act of channelling social knowledge and cultural values through an institutional agency to an audience" (O'Sullivan *et al.* 1994: 176). Unfortunately, what often results is a dichotomy between the electronically mediated and the physical, proximate, copresent, situated, and emotionally close (for an example, see Moores 1999). This formulation relies on an unexamined notion of presence/absence.

Alternatively, Bolter & Grusin (1999) contend that "the events of our mediated culture are constituted by combinations of subject, media, and objects, which do not exist in their segregated forms. Thus, there is nothing prior to or outside the act of mediation" (58). Following Latour, they observe that the phenomena of contemporary technoscience consist

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[11] In what ways do these designed social spaces encourage particular forms of subjectivity, yet discourage other 'risky' forms deemed uncomputable? Waller (1997: 91) argues that "the current wave of Internet development (both practically and discursively) is driven by a desire to make cyberspace safe for essentialist subjectivities of whatever ideological/political persuasion." Consequently, systems of exploitation might be crucial parts of the 'technical content' of science.

of intersections or 'hybrids' of the human subject, language, and the external world of things, and these hybrids are as real as their constituents. For them, "a medium is that which remediates. It is that which appropriates the techniques, forms, and social significance of other media and attempts to rival or refashion them in the name of the real" (65). Moreover, they argue that with new media we are witnessing an acceleration of remediation, which is "the formal logic by which new media refashion prior media forms. Along with immediacy [the goal of transparent access to reality] and hypermediacy [reminder of the presence of the medium], remediation is one of the three traits of our genealogy of new media" (273).

From the analyses of my data corpus, it is clear that participants are engaged in local situated performances of (re)mediation[12]. As well as pursuing immediacy and transparency, they are giving sense to the refashioning of prior media forms, subjectivities and embodiments, *both* making "at home" and transforming "home". I also claim that we are witnessing the *re-mediating of talk* — talk produced that is both transparent *and* reflective on talk as medium, that refashions prior talk and our understanding of other forms of talk. Communication in virtual environments provides new opportunities for re-mediating talk, which results in a tension between reflexive awareness of the 'components' and 'troubles' of talk (to become conscious of talk as mediated communication), and the desire to make talk transparent and immediate (like the Western ideal of everyday conversation).

[12] Among other things, the design of the ActiveWorlds interface remediates the list, the roll call, the live camera POV, the desktop, perspective drawing, and so on.

APPENDIX

Example — Ground Zero (point of entry) in the AV98 world

1	**digigardener:**	RED LETTER DAY IN CYBESPACE
2	Spiderman:	7
3	Spiderman:	6
4	Spiderman:	5
5	Spiderman:	4
6	Max:	hey D
7	Spiderman:	3
8	Spiderman:	2
9	Spiderman:	1
10	Dax2:	Hey James
11	Spiderman:	0
12	**digigardener:**	LETS REINVENT CYBERSPACE
13	Actinaut:	roger, go with throttle up!
14	**digigardener:**	NO MORE LONE SURFING
15	Chaniqua:	is anyone as lost as me.....
16	Twinkle:	Bruce, could you introduce us to everyone on the cam now?
17	ALSUN:	Bruce- Could you wave to the camera???
18	Max:	saw that ...cant wait to go skiing:^))
19	**digigardener:**	NO MORE BORING TELETYPE CHAT
20	"Saber":	Lift off
21	Max:	YEAHHHHHHH

Continued over the page...

********** **VIDEO RECORDING STARTS HERE** **********

22	Zeke:	Hello !!
23	Indigoflight3:	go to pod 2 Margaret Corbett Virtual science Center
24	Max:	hey KOOL Avatar Dax
25	Immigration Officer:	MARGARET CORBET STARTING HER TALK IN POD 2
26	Packer1:	Hi
27	Rehabber:	chhh. I have a big bucket of cyberspace here in my basement

28	**Digigardener:**	ME I AM ION CAM DIGIGARDENER
29	CyborMan:	what's pod2
30	**Digigardener:**	AT MY FARM HERE IN NORTHERN CALIFORNIG
31	Spiderman:	wveryone, wave to the CAM!
32	**digigardener:**	and now i can stop shouting :)
33	Chaniqua:	what cam????????
34	"serra":	HI EVERYONE
35	Chaniqua:	i don't see anyone waving
36	**digigardener:**	i am waving now
37	**digigardener:**	but it will take a while
38	"0001010010111110":	HI SERRA
39	Time Travler:	Something is wrong with the g2 player it says it cannot access the file
40	Dax2:	yep ...i think so to

<digigardener> moves forward and closer to the webcam monitor

41 **digigardener:** ok now

42 Spiderman: Yo

43 Chaniqua: where are you digi

44 Spiderman: I cant see the CAM, it's all fuzzy

45 Indigoflight3: go to pod 2 Margaret Corbett Virtual science Center

46 **digigardener:** waving!!!

47 "Auntie Galen": Digi how can I see you on cam?

48 Dax2: 179 ppl right now...wow

49 Twinkle: webcam from a Dutch node:
http://twinkle.simplenet.com/av98.jpg

50 Indigoflight3: the next speaker ;o)))

51 Twinkle: live from the Netherlands

52 Indigoflight3: hi clark ;o))

53 Zorak: Hi

54 Rehabber: its a fuzzycam spiderman

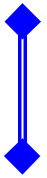
55 Max: :^))

56 Time Travler: There it goes

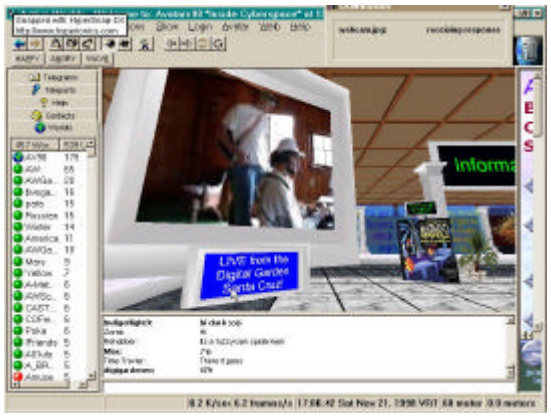
57 **digigardener:** 179

58 Time Travler: You all need to close your door there hehehe

59 Rehabber: awwwww.. group wave



Second wave duration



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