chapter 4: *netspace*

The discussion now moves into netspace. Media reuse artists here are working with the materiality and textures that the internet affords the moving image. As stated at the outset of the dissertation, the argument moves from examining macro media spaces to the micro spaces of this chapter. It gets inside the code. There are three areas of practice which interest me here: artists Wolfgang Staelhe, Tom Sherman and Jason Gee who work with webcam technology; Victor Liu See-le and Vuk Cosic who work with code, and the work of Sunah Cho and Jennifer and Kevin McCoy also will be discussed. Sunah Cho and the McCoys work at a database level, assembling and re-assembling narratives while Victor and Vuk are making apparent the underlying computing structure of the data and algorithms while reworking movies.

In all these cases discussed the network comes alive in new unimagined ways The works cited here extend the chapter three examples, particularly the **::contagion::** works. One way that they do this is that they are produced from a relatively new medium, that of the internet, another is that they are other media transplanted into this medium. Hence they are translations at a technical level and at a conceptual level. The works discussed here resonate with other forms of media, and it is in this way that they

could be said to be reusing media – they are working at the level of affiliation, resonance and contagion as well as more direct media reuse. I am particularly thinking here of the webcam works and their relation to both surveillance and reality TV.

In terms of the key themes of the thesis, the works here constitute a media space within a media space, so to speak. On the idea of 'truth to materials' what we see is an increasingly complex idea of the truth to materials concept as one media (which is already an amalgam of many different media spaces) is translated to an entire other medium. The level of complexity increases exponentially. In these cases not only is the content of one medium that of another medium, but so is the expression. Here we have cinema and television translated to the 'stuff of' the internet, in terms of the internet codecs and other data file issues, as well as the form of delivery of the internet, TCP/IP protocol for example.

The thing that is new and different about the internet is its global reality. The webcam works cited here interestingly enough actually find themselves staged in the 'hardspace' of a gallery or club, whereas the other works here are online and therefore theoretically available to be seen at any time, by anyone. They are children of the new media space of the global internet.

However, there is an increasing awareness that as one is using the networks, networks are using one. Think of cookies, huge networked databases and data mining, coupled with surveillance cameras on every street corner and road, GPS pin-pointing where you are every time you use the mobile phone, data and image collection every time you use an ATM, or go to a service station or catch a train. This is increasing globally, particularly

in the light of the war on terrorism. Artists are however turning back the gaze and a number have taken up the possibilities offered by webcam technologies.

To provide context, I would like to make reference to a resonant work from the past. Tim Griffin is senior editor of *Artforum* and this is part of his critique on the 2003 Venice Biennale:

> *That kind of memory-function conundrum found formal manifestations throughout the Biennale. If, as Walter Benjamin puts it, the revolutionary historian is one who "grasps the constellation which his own era has formed with a definite earlier one"– recognizing the underlying problematic structures that a contemporary situation shares with previous eras (no matter the superficial differences) – then Dan Graham was that historian's artist in the Italian pavilion, providing a time-space-image warp to map out Birnbaum and Bonami's concept of "Delays and Revolutions" in three dimensions. His 'Opposing mirrors and video monitors on time delay,' 1974, consists of two monitors with closed-circuit cameras affixed to their tops, facing mirrors on opposite walls. Viewers looking at either monitor end up looking five seconds into the past on the other side of the room as it was captured on camera, at the same time that they see what is happening across the room in real time and space. In effect, Graham puts the perception of the Biennale's viewing subject in perspective.*[1]

In 1974 when this work was devised video was a new medium. The first colour video was available to artists in 1975 (reel-to-reel 1/2", Sony A/V series, the next breakthrough was 3/4", and that opened up in 1976-77[2]). Artists were truly enraptured by its 'realtime' possibilities. At the beginning of artists' use the idea of video surveillance was present

and prescient. Probably the first large scale telematic performance was in 1980[3] by Kit Galloway and Sheri Rabonowitz. Called *Hole in Space*, cameras were set up looking at the street in both New York and Los Angeles, and beaming the signal to the 'other' site for replay. People spent hours just staring at the 'others' in the video mirror. Audiences were completely bewitched. This use of video by artists has grown in sophistication in the twenty-five years since its availability, and the use of webcams are a recent incarnation of the video genealogy.

webcams: reuse by affiliation

In 1999 New York artist Wolfgang Staehle opened a website in which you see nothing but the Empire State Building and a clock that marks the time. This is *Empire 24/7*,[4] watching the building 24 hours a day, 7 days a week. Here Staehle performs an operation that is the opposite of voyeurism and surveillance; he is in control rather than being controlled and directs this attention not at a corporate or institutional symbol, but at a tourist fetish. Gianni Romano writes that "The enlargement of this image in artspaces, rather than inside the computer screen, gives it further connotations. At first glance, in fact, the enlarged image of the famous skyscraper gives the impression of a projected picture: the enlargement gives it fixity of a photographic nature, revealing its true nature only to those who patiently watch and wait."[5]

As mentioned in Chapter 3, Andy Warhol 'did' the Empire State Building on film, and artist Douglas Gordon referenced this work in the video piece *Bootleg Empire* (1997). Wolfgang refers to these works indirectly in his work *Empire 24/7* but takes previous

artists' imaging this iconic American building a step further 'in time' by using live webcam technology.

On September 6 2001 Staehle used the technical facility of The Thing in New York, a server space he had set up to produce an exhibition of live Webcam images – a diptych of the New York skyline, a single view of the famous television tower in Berlin and a view of a romantic castle in southern Bavaria. These were projected at monumental scale on the New York Postmaster Gallery's walls. New York's *Time Out* said of the exhibition that, in effect, webcam technology, typically used to offer real-time voyeuristic fantasies, is converted to the aims of photography and video art, with a particular emphasis on the global reach of the Internet. Staehle said in this article "I see it as video, even as photography, since technically these are still images updated every few seconds."[6]

On September 11, five days after the exhibition opened, hearing about the World Trade Centre attack and seeing its aftermath from the roof of his apartment in Ludlow Street, Wolfgang Staehle rang gallery owner Magdalena Sawon and had her turn on the exhibition where she watched the destruction and collapse of the Twin Towers through the prism of Staehle's art. She writes:

> *Tuesday morning it looked like our world ended as the projection captured all stages of the catastrophe. Now, the smoke has settled and it's back to the transformed skyline with a disorienting gap where the towers stood before. As difficult as it is for me and the gallery audiences to see this image, the key intent of the work was (and remains) to continuously stream in an unedited and unaltered reality; updating the idea of landscape using the tools of our time. The ever important context in which art is made and shown changed irreversibly on*

September 11. To my knowledge Wolfgang's piece is the only artwork for which not only the context but the content was affected directly by the attack on the WTC.[7]

What would become the biggest news event of the decade and most played media fragment of the new century was part of this work as it was happening. In this way Staehle could be said to have made a 'preemptive strike' on media art history, however unconsciously.

The internet has embodied within it the ghosts of other older media forms. Consider McLuhan's insight that 'the content of a medium is always another medium.'[8] The early internet made use of the dominant metaphors of the look of both television and magazines. It is clear now that the prevalence of television material on the Web confirms the insight provided by media ethnographers of the importance of conversations about television in everyday life, suggesting that television plays a central role as common currency, a lingua franca. According to Ellen Seiter[9] television fans are a formidable presence on the Internet: in chatrooms where they can discuss their favorite programs or television stars; on web sites where fan fiction can be posted; and as the presumed market for sales of television tie-in merchandise. The possibility of do-it-yourself web sites unleashed thousands of die-hard television fans eager to display their television knowledge – and provide free publicity for television producers. Hundreds of painstakingly crafted home pages have been devoted to old and new television shows. She says "in fact the Web is a jamboree of television material, with thousands of official and unofficial sites constituting television publicity, histories (with plots summaries of every episode ever made) cable and broadcast schedules, and promotional contests." Ellen Seiter claims that television was one of the first topics people turned to when trying

to think of something to interest a large global and anonymous group of potential readers or viewers – other Net users.

It is also clear that television and print were dominant design modes for the early internet. By 2003 this has shifted somewhat and it could be argued that the web has influenced television graphics substantially. For example, the 2003 Iraq war television graphics had the look and feel of live stream video, streaming into say, two windows – one with the journalist or anchor person and the other with the correspondent on site.

Televisual community spaces as discussed in chapter 1 have challenged previously held assumptions about geographic, spatial temporal limits. They have their clear parallels in internet space. Take the case of Australian net artist Francesca Da Rimini as detailed in the book *Fleshmeat* who, from 1994-1997, was 'living online' from Adelaide, Australia. She was basically awake all night Australian time in order to live and play in northern hemispheric time. Many people in Australia are doing precisely this as the mass of internet activity is concentrated in the northern hemisphere/US zone, making such people somewhat polyphrenic in relation to an idea of national identity as derived from living in the same geographic zone. How and under what kind of circumstances is someone living in such space still an 'Australian' in the classic Benedict Anderson sense of national identity springing from an "imagined community?"[10] New spacetime zones exist in particular netspaces, shared by people who in their own culture are more and more out of time, discombobulated, though joined at the hip in some weird online nation of their own making.

A future 'imagined community' could revolve around a television program which takes live feeds from a variety of global domestic or work-sited webcams, just looking at

whatever is going on in the frame, for hours. During the late night *Big Brother* transmissions, the camera would sometimes be focused on a row of sleeping people, sometimes on a completely empty room, where nothing happened. The idea that people at home were watching nothing was so…Warholian, so *fluxus performance*.

The webcam has clear resonances with contemporary reality television. As Nicki Robertson-Peek, curator of the London exhibition *Are You Looking at Me* writes:

> *The concept of 'big brother' has become a recognisable motif with widely acknowledged connotations, detached from its Orwellian context. In the wake of C4's Big Brother series, the growing popularity of docu-soaps and the iconic value of the surveillance image in the media reporting of the Jamie Bulger, Rodney King and Damiliola Taylor incidents, the emergent overt big brotherism has become a significant aspect of popular visual culture. The use of covert video surveillance images in consumer watchdog programmes or Hollywood films (which perpetuate the notion of totalitarian state surveillance) creates a climate where the iconography of CCTV has become an either naturalised or fetishised aesthetic of visual culture.*[11]

In the 2002 work *Sub/Extros* (Appendix: Image page D), Canadian artist Tom Sherman has combined the video streams of scores of private webcams with the music of NY-based group Christian Science Minotaur and that of Vienna's Bernhard Loibner. This series of 'vidsonic' compositions offers a provocative update on the state of global personal communication in 2001. Tom Sherman says "Millennium culture is virtually synonymous with personal communication as mobile telephony and wireless computing spread like wildfire. With faster machines and line-speeds the picture-phone has finally

arrived and with it there are new forms of behaviour and attitude."[12] He contends that "today's webcam operators are simultaneously pinned down and in control. The video chat-line is the domain of submissive extroverts," hence the title of the work: *Sub/Extros*.

Sherman feels that the people captured in his webcam portraits have created their own self portraits by the way they chose to frame their surroundings – how they decorated the space with significant objects, special lighting, and mirrors for example. Sherman writes that he finds a strange "real emotional tone in the distanced, distorted, muted contact."[13]

In a text by Sherman called *Dead Faces*, he writes about fictional webcam meetings he had with office staff for some months:

> *Personally I find the time just before and after these webcam meetings to be the most revealing moments in the life of the corporation. If you look at the daily meeting schedule and log on ten or fifteen minutes before a meeting commences, you will find that some of the participants sign on early. They are usually sitting there in their cubicles dealing with on-screen data or attending to their personal e-mail or telephone conversations. It always strikes me how dead their faces look before the meetings start up and they put on their perky corporate personalities. It's the same after a meeting when they're working alone again.*
>
> *If people would look carefully into their video mirrors, they would notice a certain deadness in their faces. People sitting at computers for long hours have this extra gravity in their expressions, especially in the muscles around their mouths.*

When I look in on people getting ready for a meeting, or just after, it is striking how they appear emotionally mute. This vacant, drained appearance triggers my own depressing introspection. I've become aware of my own depression through the numbing fatigue around my mouth, the way my face looks and feels heavy when I have that sinking feeling.

This is what I've learned from working in a organization linked by webcams. I've learned that we're networking a certain level of depression. I don't really believe the machines are draining us, but there is something desperate about the explosions of laughter that erupt when we're interacting on camera.[14]

These are terminal subjects, dependent upon their links to the world via technology. Edward Tenner cites a professor of architecture who contends that "all chairs deform the body by straining the spine and weakening the muscles of the back." Tenner himself observes: "as sitters become accustomed to the support of a backrest, their back muscles weaken and they must recline even more. The chair is a machine for producing dependency on itself,"[15] as the webcam is now. It is part of the spine of our system. Webcams extend the space and time of machinic capture. We are symbiotically linked to the network (well, not all. A huge proportion of the world's population have no access to even a telephone. This scandal is outside of the scope of the dissertation).

Sydney artist Jason Gee in the work *The Big House,* 2002-2003 (Appendix: Image page E) captures the telematic spaces of personal webcams and online voice chat transmissions. He "explores the phenomenal growth in these technologies and the neo-surveillance lifestyle," reworking the traces left behind in these private/public spaces. The images captured are resonant with network decay. Their textures are a result of

their journey as information bitstreams, traveling by paths not known in advance, every time different though in tune with the vagaries of the network, to reassemble at their final destination. He states that "these webcam streams were transmitted on the internet, with the subjects intention that these were to be private transitory moments. The subjects are unaware of their lives being recorded", like the webcam people in *Sub/Extros.* The webcam images which make up *The Big House* are then transformed into full-screen large video projections and presented in a multi-channel installation. "The magnification and juxtaposition of these moments allow the subjects to impose their own narratives on the viewer."[16]

A 2000 work which crosses categories here is *Airworld* (Appendix: Image page F) by American artists Jennifer and Kevin McCoy.[17] *Airworld* is a site for the reinterpretation of a number of modes of information on the internet, from corporate identity to webcams to financial data. It is the webcam section that interests me. The artists have compiled a database of Web pages where cameras watch places of work – offices, grocery stores, homes and transport hubs and 're-air' the live image stream from their site. Some of these are old streams so must be coming from a database of clips, but other streams appear to be live, and it is random which is which. A link launches a window where four streams play and are constantly updated with new streams. Some of the cameras are for security, others were installed by people who just want us to see what they are doing. *Artforum*'s David Frankel writes of these streams that our "voyeurism is inverted again by a cryptic overlay of text showing the Internet traffic route between the computer we are using and the computer sending out the image – telling us we are traceable."[18] I would posit not only do they tell us that we are traceable, but this text adds another layer of materiality to the image, a translation of data which is intrinsic to the materiality of the

works realization. This translation has resonances with the work of, for example Andrew Gadow discussed in chapter 3.

internet database works

Airworld artists Jennifer and Kevin McCoy have been cutting up TV shows like *Starsky and Hutch* to construct DVD interactives. Interviewed by Josephine Bosma about *Airworld*, Kevin McCoy says:

> *The idea of automatic content creation is the next problem brought on by global, real-time computer networks. The speed and capacity of these networks are outstripping the human ability to provide material to supply them. …. Now the net, as the vehicle for the information economy, is catching up. There is a real need on the part of media businesses to create abstract, machine-driven algorithms that can produce material that is readable and meaningful to humans. It is cheaper, faster, and more efficient for business. The media are the last refuge of the craft trades: Writers, editors, artists, musicians, and filmmakers are like the blacksmiths, carpenters, potters, etc., of previous centuries.*
>
> *I am not in any way in support of this trend, but I do see it fast approaching – even if we are in the earliest stages of automated content creation. It is another facet of the post-human world we are entering …..As an artist I want to explore this trend. By trying to create such systems I feel like I am showing their*

limitations and, at the same time, putting myself in this future world in order to report back on what it is like.

In a similar way, another project by the McCoys, *201: A Space Algorithm,* 2001 (Appendix: Image page F) is an online software program which provides methods of re-editing Kubrick's science-fiction classic. Here "running time is compressed or expanded, juxtapositions are generated synthetically, and shot selection becomes a collaboration between you and the computer." [19]

Another work which deals with automatic content generation is Sunah Cho's project *Learning Asia*.[20] Its starting point is the Western view of Asia, as well as Asia´s own self-representation, as mediated by the internet. Lev Manovich says "After the novel, and subsequently cinema, privileged narrative as the key form of cultural expression of the modern age, the computer age introduces its correlate – the database."[21] In this case and in the webcams found by the McCoy's, the whole internet is the database. Manovich thinks it is possible to see the entire world as a database, and this could be the model for the "computer society"[22] which sees the world as an endless and unstructured collection of images, texts, and other data records.[23] A search in the installation version of Sunah Cho's work results in a movie sequence – which speaks in some way to the net construct 'Asia' – generated from the videoclip materials found in the internet. These come from private sources, clubs, organisations, government institutions and firms with varying professional and technical production levels. These clips are put together into sequences by a set of parameters which were designed by the artist to be vague and random. She says that "the brevity of the videoclips found inside the internet results in concentrated and graphic representations. Through choosing, cutting, and composing

the materials, the elements are transferred into a new context from the original, producing an order and structure that yields a reading not apparent in the original material."[24]

machinic aesthetics of code

> …the creative discovery that looking at anything intently did not lead to a fuller and more inclusive grasp of its presence, its rich immediacy. Rather, it led to its perceptual disintegration and loss, its breakdown as intelligible form; and that breakdown was one of the conditions for the invention and discovery of previously unknown relations and organisations of forces.[25]

The next two works to be discussed do precisely this – they look at the medium of the internet in *microdetail* and by doing so, make its structure and organization apparent.

delter, 2000 (Appendix: Image page G) by Victor Lui See-le[26] works at a deeper technical level of materiality, inside the body of the data if you like, in the compression codec – the bones of data transmission. It is software which exposes the structure of the MPEG inter-frame compression scheme. MPEG-1 is a streaming codec. Java code running in the browser in the home viewer's computer decodes the MPEG-1 packets as they arrive from the network. The MPEG-1 compression scheme enables the efficient transport of digital motion imagery (that is, movies over the internet) and is responsible for the characteristic 'blocky' visual artifacts in these movies. *delter* uses a modified MPEG-1 codec. The artist doctored a sample MPEG-1 decoder implementation in Java

originally written by Dr. Ing Jo'rg Anders at Technische University of Chemnitz. This code is released under the GNU General Public License. For many new media artists open source code is their preference.

Victor claims that the software "works in the interstitial space between the frames of an MPEG movie by extracting and rendering only the inter-frame motion vectors. In the resulting playback, the objects in the movie are effaced, and only the ghostly traces of movement remain."

When you enter the *delter* site you are given a number of movies you can 'delter'. You can also link to an MPG-1 movie of your choice (on the web), and apply the delter software to it. Once the stream is coming in, you see a 'movie' which is continuously breaking down, resolving then breaking into fragments again and again. One can set different parameters such as zoom and the speed of delay which radically alters the image one receives. There are four movie choices on the site: a drive through Paris, a girl with a hula hoop, a ping pong ball being bounced and the shower scene from the Hitchcock film *Psycho* (in black and white).

If we consider the idea of narrative as articulated by Tzvetan Todorov, as involving the passage from "one equilibrium to another,"[27] the question arises: what are the minimal conditions of narrative in this work? It is an abstract field. Every time you see it, it is different and original because of the network. With MPEG, as the packets are transmitted they can get out of order. This, combined with the unique network congestion at the time of launching the movie, as well as the bandwidth you are viewing it on, means that the work is never really the same twice – it is using the network itself as part of its *materiality*. Its facture and construction are to be seen. The artist chose

fragments from the new mediated natural world, in this case one medium (the moving image – complete with its load of memory and cultural baggage) transferred to another (the server, then relayed to the home computer via the internet).

These works are not fixed, instead they are dynamic but never the same twice. And this is the essence of artworks which 'live inside' the network, and the genius of artists who first seized on the internet as an artistic medium. Lev Manovich in *The Language of New Media* says the visual culture of a computer age is "cinematographic in its appearance, digital at the level of its material and computational (that is software driven) in its logic."[28]

The final artist to be discussed is drawn from those who could be called 'original' net artists. Along with JODI, Vuk Cosic makes works, like Victor Lui See-le's, which are software driven in their logic. These artists 'stage' or perform new media's properties by bringing out its status as digital data rather than hiding it. They perform a facture: the act, process or manner of making anything, a construction, by revealing the work's constructed bones, or nervous system embodied not just in the content but in the expression or form of the work, its *materiality*. In a similar way to Lorenzo Piano's Pompidou Centre which rather than hide the infrastructure exposes it to view.

To be discussed here from Cosic's large body of work are the ASCII movies, 1997 to 2000 (Appendix: Image page H). In Cosic's 'ASCII history' scenes from classical films are run through a custom player application that converts moving images into ASCII code. Emerging live over the internet the result is something that looks as though it were weaved.

In the essay “Cinema by Numbers” Lev Manovich discusses these ASCII works. What he does in this text and elsewhere, most notably in *The Language of New Media* is trace the entwined history of cinema and computing. Manovich claims that if the history of analog cinema officially begins in 1895 with the Lumières, the history of digital cinema, which he says is yet is to be written, starts in the late 1930s. From 1936, and continuing into the Second World War, German engineer Konrad Zuse had been building a computer in the living room of his parents' apartment in Berlin. Zuse's machine was the first working digital computer. One of his innovations was a program control by punched tape. And here is the point of convergence, because for the tape, Zuse used discarded 35mm movie film, a critical and original case of media reuse.

Manovich writes that “one of these surviving pieces of film shows binary code punched over the original frames of an interior shot. A typical movie scene – two people in a room involved in some action – becomes a support for a set of computer commands. Whatever meaning and emotion contained in this movie scene are wiped out by this new function as data carrier.”[29]

Zuse’s experiments foretell the convergence that is to come some half a century later when media and computer merge into one. Of Cosic’s ASCII movies Manovich contends that “the ASCII code that results when an image is digitized is displayed on the screen is as satisfying poetically as it is conceptually – for what we get is a double image, a recognizable film image and an abstract code together. Both are visible at once.”[30] With the coming of the internet, number of artists in the later nineties did what came to be known as ASCII art, often distributed in the body of emails via mailing lists.

In the case of ASCII code, its use echoes McLuhan's insight that "the content of a medium is always another medium."[31] ASCII is an abbreviation of American Standard Code for Information Interchange. The code was originally developed for teleprinters and in the 1960s was adopted for computers. The teleprinter, a twentieth-century telegraph system, translated the input from a typewriter keyboard into a series of coded electric impulses which were then transmitted over communications lines to a receiving system. They were then decoded and printed as a message onto a paper tape or other medium. Teleprinters were introduced in the 1920s and were widely used until the 1980s with telex the most popular system. These were gradually replaced by fax and computer networks. Manovich writes "By juxtaposing this code with the history of cinema, Cosic accomplishes what can be called an artistic compression: it brings together many key issues of computer culture and new media art together in one rich and elegant project."[32]

These works demonstrate the increasing complexity within media art. Not only do we now see reverberations at the level of content but incredible reverberations at the level of expression, of code – the materiality within digital environments. This complexity will only increase. Such works are manifestations of what Deleuze and Guattari call the abstract machine, in the sense that "an abstract machine is neither an infrastructure that is determining in the last instance nor a transcendental idea that is determining in the supreme instance. Rather it plays a piloting role. The diagrammatic or abstract machine does not function to represent, even something real, but rather constructs a real that is yet to come, a new type of reality."[33]

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[1] Tim Griffin, "Three Views on the Venice Biennale," *Artforum*. (cited online 3 September 2003) http://www.Artforum.com/inprint/id=5330&pagenum=7
[2] Private email from Tom Sherman, December 15, 2003
[3] Private email from Tom Sherman, December 15, 2003. See also http://www.ecafe.com/getty/table.html Sherman added that Edward R. Murrow and one

of the major networks did the same piece using land microwave in the late 1950s, showing bridges in NYC and San Francisco in the same television frame.

[4] http://www.thing.net/empire.html.

[5] Gianni Romano, "The future is under construction" *Media Connection,* Edizioni Scheiwiller, Milano 2001 book + cd rom (cited online 5 June 2003) http://www.postmedia.net/mctxt.htm

[6] Bill Jones, "Art for a new world Internet-art pioneer – Wolfgang Staehle captures our moment", Time Out NY: Sept.27-Oct.4, 2001, Issue No.313 (cited online July 2003) http://www.postmastersart.com/archive/staehle_press.html

[7] Magdalena Sawon, Postmasters Gallery New York, September 20, 2001 (cited online July 2003) http://www.postmastersart.com/archive/staehle_press.html

[8] Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media*, Cambridge (Mass.): The MIT Press, 2000, pg 45

[9] Ellen Seiter, "TV as conversation piece on the web", email posted on 10/30/00 to the Eyebeam forum (cited online in July 2003) http://www.eyebeam-television.ucsd.edu/massmedia.html

[10] Benedict Anderson, *Imagined Communities: Reflections of the Spread of Nationalism*, London New York: verso, 1983

[11] Nicki Robertson-Peek, essay for the "*are you looking at me*" exhibition (cited online 3 August 2003) http://www.dontfakethefunk.com/areyoulookingatme/nickyrobertsonpeek.htm

[12] Private email from Tom Sherman, June 2003 (http://ams.syr.edu/video/sher.html and http://www.allquiet.org)

[13] Private email from Tom Sherman, June 2003

[14] Text attachment to private email from Tom Sherman, June 2003, also posted to thingist@bbs.thing.net 8 Jan 2001 by Tom Sherman

[15] Jonathan Yardley, "Technology, technique and physique: Jonathan Yardley on how new skills and tools have changed the way we use our bodies," A review of Edward Tenner's *Our Own Devices: The Past and Future of Body Technology*. *Australian Financial Review*, 11 July 2003, pg 3. First published by *The Washington Post Book World.*

[16] Private email conversation with Jason Gee, 5 June 2003

[17] http://www.airworld.net/

[18] David Frankel, "Openings: Jennifer and Kevin McCoy," published in *Artforum*, November 2001 (cited online on August 13, 2003) http://www.mccoyspace.com/press/artforum.html

[19] http://mccoyspace.com/201/

[20] Sunah Choi, *Learning Asia* (cited online February 2003) http://db.swr.de/imkp/contest.out1?p_lw=e&p_kwid=510

[21] Lev Manovich, *The Language of New Media*, Cambridge (Mass.): The MIT Press, 2001, pg 218

[22] Manovich quoting Jean-Francis Lyotard, *The Postmodern Condition: A report on Knowledge*, cited in Lev Manovich, *The Language of New Media*, Cambridge (Mass.): The MIT Press, 2001, pg 219

[23] Lev Manovich, *The Language of New Media*, Cambridge (Mass.): The MIT Press, 2001, pg 219

[24] Sunah Choi, *Learning Asia* (cited online February 2003) http://db.swr.de/imkp/contest.out1?p_lw=e&p_kwid=510

[25] Jonathan Crary talking about Cezanne in *Suspensions of Perception: Attention, Spectacle, and Modern Culture,* Cambridge (Mass.): MIT Press, 1999. pg 288
[26] http://www.n-gon.com/delter/
[27] quoted in artist George Legrady's catalogue *Transitional Spaces*, Siemens Cultural Programme, pg 5
[28] Lev Manovich, *The Language of New Media*, Cambridge (Mass.): The MIT Press, 2001, pg 180
[29] Lev Manovich, "Cinema by Numbers: ASCII Films by Vuk Cosic" (cited online 5 June 2003) http://www.ljudmila.org/~vuk/ascii/lev_eng.htm
[30] Ibid.
[31] Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media*, Cambridge (Mass.): The MIT Press, 2000, pg 45
[32] Lev Manovich, "Cinema by Numbers: ASCII Films by Vuk Cosic" (cited online 5 June 2003) http://www.ljudmila.org/~vuk/ascii/lev_eng.htm
[33] Gilles Deleuze and Felix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, Minneapolis: University of Minnesota Press, 1987, pg 142