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MATERIAL AND THE PROMISE OF THE IMMATERIAL

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Imagine. *A map, circa late-18th century, somewhere in the New World. The map begins to burn, from the centre out.*

Scene 2. *Vast plains, an expansive horizon, a fading sunset. Hold that image. From off in the distance, the sound of galloping horses, gradually approaching. Faintly at first, far away, you hear music. You think you recognize it, it has a familiar strain. Quietly, then at full volume, you hear the soundtrack from the 1960's television series Bonanza. Hum along if you like.*

Jump cut. Scene 3. *New image. Vast, black empty space...outer space–stars and planets, a shooting star, enormous silence...Out of this silence, a voice...Space, the final frontier. These are the voyages of the Starship Enterprise. Its continuing mission is to explore new worlds. To boldly go where no one has gone before.*

Scene 4. Imagine. *A large white boot descends from a silvery ladder and touches the surface of the moon. One small step for man, a giant step for mankind.*

Scene 5. *Fingers poised over grey plastic keys, shoulders hunched in dim light, an uncomfortable chair. The world reduced to a fifteen–inch square emanating blue light.*

The rhetoric around digital technologies is infused with the utopian promises of deliverance and progress – the promise of another frontier, an original uncharted space, virgin territory, a clean slate, another chance to "get it right". This notion of the frontier has almost mythic proportions in the language and literature of the West. From the 'promised land' offered in the Bible, to the lost Garden of Eden, from Columbus' arrival in the Americas, to the cowboy and Indian films of the 1950's and the space adventure films of the 1980's and 1990's, the notion of the frontier continues to engage the imagination of the West. This adoption of a frontier mentality toward the landscape and vocabulary of cyberspace provokes some interesting observations on how our visions of the future are predicated on the structures of the past.

At a time when resources are diminishing worldwide, when natural frontiers are disappearing, when outer space has not yet proven to be an hospitable and supportable environment for human life, cyberspace provides, however fallaciously, the last frontier. The frontier myth is an enduring one and its adoption into the rhetoric of the digital sphere has serious implications - myths of transcendence and separation between the mind and body, nature and culture, have a long and complicated history and their unacknowledged passage into cyberspace is a disturbing one.

I have titled my contribution to this text "*Material and the Promise of the Immaterial*" because it suggests to me, one of the fundamental contradictions of our time – what we might define as late 20th century, emerging 21st century, the post-colonial, post-industrial, post-modern era – namely, the contradiction between the material and physical conditions of our daily lives and the promise of immateriality or transcendence advanced by the rhetoric around emerging digital and tele-virtual technologies.

Technology is shaped by and is a product of forces that are deeply imbedded in economic, political and cultural structures. In this paper, I would like to examine the discourses and rhetoric around both textile and computer technologies (central to this paper is the view of textiles as a technology), and to explore the ways in which these practices are scripted in contemporary culture and the values and attributes that are ascribed to them. What is the gap between a technology's apparent role, history, perceived use, its expected user, and its actual role, function and history? Why is weaving considered antiquated, artisanal, slow, gendered female? Conversely, why are computers considered as fast, new, state of the art, virtual , gendered male?

The currency or more accurately, lack of currency of textiles as a technology is rather pointedly illustrated in a recent advertisement in *Wired* Magazine for an Internet provider. In the ad, a sexy red head poses provocatively against a computer. The accompanying copy reads, "let's just say that you won't find me on the knitting newsgroup." Clearly, knitting is for doddering old grandmothers, not for foxy cyberbabes or hip infobahn warriors.

Textiles as a practice is still quite firmly rooted in the popular imagination as an artisanal activity, a sometimes quaint, historical craft, one of the 'gentle arts' usually associated with women whose site of production is historically the home, an antiquated process that operates outside the 'real' economy of commodity goods and exchange. It embodies both the nostalgia and historicity surrounding many perceived economically redundant technologies. In a youth obsessed culture with an almost pathological fear of aging, to be old is extremely undesirable. This scripting of textiles and weaving as both a feminine activity as well as an outmoded practice is not unexpected, but it is hugely inaccurate given the seminal role of textile production in both the industrial and digital revolutions of the 19th and 20th centuries respectively. This romantic vision of textiles is further undermined by the global scale of contemporary industrial textile production and the ongoing and enduring presence of sweatshops in the first and developing worlds.[1]

After all, it was in the textile industry as well as the transportation industry, that the Industrial Revolution was most strongly felt. The textile industry - including weaving and spinning - was one of the first industries to be mechanized. This mechanization of textiles had an enormous impact socially, culturally and economically. The mechanization of textile mills involved the transfer of workers from the home to the factory, from the country to the city via the newly developed railways powered by the steam engine, and worsened the already deplorable conditions of textile workers. As Karl Marx wrote, "the hand-loom gives you society with the feudal lord; the steam-mill, society with the industrial capitalist."[2]

The invention of the steam engine, although uneconomical and inefficient to operate by contemporary standards, necessitated a consolidation of resources and machines. Textile machinery, whether a loom or a spindle, is comparatively light and uses little power. For steam power to be effective, the machines need to be assembled in large factories where many looms and spindles can be powered from one steam engine. The only available means of transmitting power in the mid 19th century were mechanical, through the use of shafts, belts and pulleys. Later, with the invention of the electrical motour, machines were driven individually and no longer required mechanical and by extension, spatial connection. But the desire for a consolidation of workers under one roof was not solely necessitated by technological requirements. It was reflected in the 19th century management's desire to maintain discipline and control over workers, something easier to achieve when the workforce is localized and not dispersed. 20th century labour conditions in the textile and electronics industry are distressingly similar. The appalling work conditions of the multi-national electronics industry rival the deplorable conditions of the 19th century textile mills. The shift in population from an agrarian life to an urban, industrial life necessitated by the Industrial Revolution is mirrored today in the large movement of people in the Third world – those who Barbara Ehrenreich and Annette Fuentes have called the world's new industrial proletariat: young, female, Third World, whose existence is signaled through a label or imprint - made in Hong Kong, Taiwan, Korea, the Dominican Republic Mexico,[3] – who are forced to move geographically from country side to the city rupturing social and cultural traditions. Ironically, in the developed World where computers are used but not assembled (with a few exceptions), computers have had the opposite effect of dispersing the population, allowing individuals to work anywhere a telephone line and modem can be hooked up.

Within the digital revolution of the 20th century, the role of textile technology is equally seminal. One of the many ironies, as any first year computer science student is well aware, lies in the fact that the forerunner of the first computing machine – Charles Babbage's *Differentiation Engine* – was based on the early 19th Century Jacquard loom.[4] Joseph-Marie Jacquard's system of pattern punch cards to store and process information for his automated loom were translated into the first computer punch cards.[5] Weaving after all, is a process of information storage, a binary system of interlocking threads, mirroring the 0 and 1's of computer programming. Yet the image of a weaver in 19th Century Lyon, France, let alone 20th Century America, is strangely at odds with the image of the contemporary computer hacker.

This gap between a technology's perceived and actual function and history, is well illustrated in artist Gwen Zierdt's *The Unabomber Manifesto*, a piece which translates the Unabomber's Manifesto into cloth and pattern. It is a handwoven textile, measuring two by four metres, consisting of horizontal woven strips which translate the first four paragraphs of the Unabomber's Manifesto into a pattern. Within each horizontal strip of cloth, grey and white squares in vertical blocks represent 8-bit binary numbers. These numbers correspond to the text as it is stored in computer memory. The Unabomber's text was downloaded from the Internet and represented by patterns that correspond to the 0's and 1's that are used to store text in computer memory. This pattern was then converted into weaving instructions and woven with a computerized dobby loom.

The Unabomber's Manifesto also known as the "Industrial Society and Its Future," is among other things, a tirade against technology and an exhortation for society to return to a level of technology similar to the one that preceded the Industrial Revolution. In hand weaving the Unabomber's Manifesto in conjunction with computer technology, Zierdt's work offers an ironic commentary on the location of practices in the popular imagination. That weaving, one of the most ancient technologies, a technology that has been at the forefront of both industrialization and digitization, the site of early labour exploitation and later labour organization, should be viewed with the romanticism of hand work inherent in The Unabomber's treatise is ironic. As Zierdt amply demonstrates, the discrepancies and distinctions between textile and digital technologies are not as distinct as they have previously been defined.

Zierdt's *Unabomber Manifesto* also questions the seemingly arbitrary nature of pattern as a collection of random decorative marks and units. *The Unabomber Manifesto* offers a striking contrast between the speed of digital telemedia against the slowness of hand production. The very visible labour of hand weaving is contrasted with the invisible labour of digital technologies and points as well, to the invisibility of the labourers who create textile goods and those who assemble computer goods. These seemingly disparate fields share the commonality of origins and a largely anonymous labour force.

In a 1995 collaborative project entitled *Fault Lines: Measurement, Distance and Place,* Barbara Layne and I explored the complex relationships and interrelationships between hand and high technologies. Our objectives were to incorporate digital technologies into material practices, to link disparate sites through electronic transmission, and to reconsider boundaries, whether based on geography, philosophy, access, to examine the contexts, associations and expectations of the apparently distinct media of weaving and telemedia technologies. The narrative traditions particular to both textiles and technology provided another interesting link in the *Fault Lines* project. Textiles has a very long tradition as a carrier of social and cultural messages: the Bayeux Tapestry, produced in the 11th Century, narrates the tale of the Norman Conquest; in the tales of Ovid, Penelope and Philomela tell their often horrific tales through hand woven cloth; and the contemporary Names Quilt documents the deaths from AIDS. Laurie Anderson has suggested that "technology today is the campfire around which we tell our stories."[6]

Fault Lines involved the simultaneous production of two textiles in two distinct locations, Montréal, Québec and Santa Monica, California, that recorded, measured and transformed the daily seismic activity of those cities into a woven record. Seismic data from Montréal and Los Angeles was uploaded daily by the geological labs at the Canadian Geological Survey in Ottawa, Canada, and the California Institute of Technology in Pasadena, California, to FTP sites on the Internet. The data was exchanged from one site to the other via the Internet to computers attached to each loom. This information was then translated by custom designed software into a woven structure. For a period of one month, weavers at both sites operated the computerized looms and wove the daily seismic record of the other city, creating two continuous lengths of cloth that recorded the shifts of the earth as well as the gestures of the weavers. At the conclusion of the project, two bolts of cloth were produced. Each cloth was 12 inches wide and approx 55 feet long. Woven in black and white yarn, the days were separated by shots of yellow or red yarn and tagged and dated. They were accurate renderings of the seismic data but their truth value was considerably diminished by virtue of their presentation in textile form. The same information presented as a computer print out or a video still image has greater truth value to an observer today than the same data presented in textile form. The information itself has not changed, but its method of representation had. This called into question the seeming neutrality of various forms of representation. Clearly, all representations are mediated and information cannot be independent of the contexts and media in which it is presented.

Textiles are characterized by their haptic qualities and strong visual and tactile presence. The haptic quality of textiles reminds us of our own material origins and the often problematic physical conditions of our daily lives. This tactility and materiality appears to be in direct opposition to the almost antiseptic sterility of the design of computer hardware. To note this is not an attempt to indulge in nostalgic longing for the loss of the haptic, nor to fetishize the labour intrinsic to most textile work, nor to make a claim for the superiority of the haptic. It is to examine the nature of materials and their location within a signifying realm. For what factors determine that textile looms are fabricated in natural woods and not in stainless steel? Conversely, what factors determine that computer hardware is fabricated in heavy duty grey or black plastic melamine rather than in wood? Why isn't fake wood grain an option? It would seem that the choice of materials to house these technologies is based on their associations as signifiers rather by any strictly functional imperatives.

What is at stake in the scripting of technologies as 'old' , "new', 'hot', 'cold', 'authored', 'anonymous'? And what is at stake with the dismantling of the frontier myth of digital technology? The physical, the material have an uncanny ability to remind us our bodily origins, that messy, leaky terrain of wetware that the rhetoric of digital technology so desperately seeks to escape. We are reminded that even in our newest technologies we remain firmly rooted in the structures of the past.

Endnotes

[1]For an excellent resource on contemporary labour conditions in the textile industry, see *No Sweat: Fashion, Free Trade, and theRights of Garment Workers*, ed. Andrew Ross, New York: Verso, 1997.
[2]Karl Marx *The German Ideology*, 150.
[3]Barbara Ehrenreich and Annette Fuentes, "Life on the Global Assembly Line" in *Feminist Frameworks*, ed. Alison M. Jaggar & Paula S. Rothenberg, (New York: McGraw-Hill, 1984), 280.
[4]The abacus, it could be argued, is one of the first computing devices and its history has been traced back as far as ancient Greece and Rome. The abacus, which looks very much like a child's toy, consists of beads strung on rods mounted in a rectangular frame. As the beads are moved back and forth on the the rods, their positions represent stored values. It is in the positions of the beads that this 'computer' represents and stores data. An individual is required to position the beads - data input - and is also required to observe the bead position -data output. But the abacus alone is not technically a computer, is a merely a data storage system since it relies on a human operator to create the complete machine.
[5]See Sadie Plant's "The Future Looms: Women, Weaving and Cybernetics" in *Clicking In*. ed. Lynne Herschman, Seattle: Bay City Press, 1996, for an indepth look at the social, historical and cultural relationships between weaving, women and technology.
[6]Laurie Anderson, *Wired Magazine*, March 1994