"If you fall in love with a machine there is something wrong with your love-life. If you worship a machine there is something wrong with your religion." - Lewis Mumford.

In matters of technology, as in matters of sex, it is easy to assume one's own preferences are universal and normal, and to regard others' tastes as somehow debased or improper. One legacy of the historical exclusion of women from science education, technological design, and decision-making about research and development is the tendency to assume the universality of styles of learning and expertise cultivated in canonical (male-centred) science and technology training, where the emphasis is on discovery as a risk-taking adventure, rationality as abstract and disembodied, and knowledge as top-down mastery and control.

Enthusiasm over new electronic media can override the lessons about difference and multiplicity supposedly learned from feminist and ethnic movements over the past twenty years. For example, pronouncements like "Virtual reality (VR) is the future" assume there is only one future and ignore the ways fascination with virtual bodies and spaces represents a continuation of traditional Euro-masculinist tendencies to disembodiment and technological fetishism. As artist Nola Farman sees it, the rapid expansion of artistic possibilities through computers caught many artists by surprise; some men have been tempted to abandon earlier leftist/critical perspectives on technology and now promote 'neofuturism'. Neofuturists recognise only one style of dealing with the new media: unambivalent, technofetishistic, post-critical. Anything less than devoted technofetishism can be seen as incompetent or backward. This article aims at countering such presumptions by a preliminary exploration of the different relations artists can take up with technological media.

Although feminist theories of technology and science might suggest that girls and women are put off by the demands of traditional rationality for an abstract detachment from the objects of knowledge, this doesn't quite apply for high-tech objects like the computer. Here the research evidence is that girls and women can become very attached to technology - a phenomenon that equates high technology with 'the future', as well as the strongly narcissistic attachments some men have to the machine as a 'second self'; the technological brainchild that substitutes for the baby they can't produce from their own body; the feminised and sexy tool that's more controllable and less emotionally demanding than real people.

As a corrective to false universalism in discussions of technology, the philosopher Don Ihde has categorised human-technology-world relations into different 'genres'. Specific technologies may favour certain kinds of relations; alternatively, different people may relate to the same technology in different ways. The relational genres are: Embodiment relations (technology as body/prosthesis); the technology is an extension of our organs or senses, a more or less transparent mediator through which we perceive and act on the world (e.g. blind person's cane, hammer). The embodiment dimension of computers, for example, is mainly manual, through a keyboard, mouse, joystick, or in VR developments, a data glove or body suit.

Hermeneutic relations (technology as sign or text): the technology is read or interpreted as a text through which a state of the world or technical system is inferred. Maps, dials and gauges, and prototypically reading/writing are examples of hermeneutic - or 'representational' - technologies.

Alterity relations (technology as second self); the technology as a thing in itself is more important than its connection to the world; we relate to it as to a quasi-human entity. The self-contained linguistic and logical qualities of computer technology - not to mention narcissistic investments in artificial creation and brain-womb fantasies - foster the experience of the computer as a second self, a technologically competitive, or a system to beat.

Background relations (technology as world); the technology is experienced as an integral part of the world, or as the world itself (e.g. the background hum of domestic machines; 'technological cocoons' such as environmentally-controlled buildings, space stations, postmodern war vehicles).

Horizontal instances (limit cases): At the limits of embodiment and alterity relations, the self-other distinction breaks down: bodies and technologies may fuse, as in teeth fillings, edible technologies (e.g. the contraceptive pill), or cyborg phenomena. At the limits of hermeneutic and background relations, the technological text may become the world itself - as in computer microworld and virtual reality phenomena, or, the culture of hyperreality and simulation, the world itself appears as (technological) text, a representation.

I interviewed a sample of women artists in technological media about their relationships with and attitudes to technology and found examples of work placing different emphases on these relational genres.

Embodiment relations with tools are central in craft-based arts, for example, the painter's brush and knife, the sculptor's chisel and rasp. In a more general sense, embodiment involves a projection through the tool to achieve certain ends. This relation is prominent in the work of holographer Paula Dawson, who according to her biographer Kevin Murray is primarily interested in using technology as a medium or means to an end. She will use whatever technology is needed to make her light-pictures, where the specific properties of the holographic medium are deployed in explorations of memory and 'emotional astigmatism', such as can result from viewing simultaneously a scene captured at different moments in time (e.g. her New Year series). The ultimate fantasy in the technics of embodiment

AGAINST 'NEOFUTURISM':
WOMEN ARTISTS IN TECHNOLOGICAL MEDIA
Zoe Sofia

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that the tool will become a perfectly transparent medium for acting on or perceiving the world - may be discerned in Murray's description of the artist as 'a mole of dust on a ray of light', a wonderful evocation in which the clunky equipment and time-consuming exactitude of labour for actually making holograms have disappeared, leaving a perfect communion between artist and 'world' in this case, the immaterial 'world' of light itself.

Generally speaking, any kind of artform might be considered in hermeneutic relations; as a communications device, a text and technique representing actual or envisioned worlds. In a more specific sense, artworks featuring technologies that expressed or reported on the states of some system would highlight hermeneutic relations. Joan Brassil's installations are exemplary here. From an explicitly phenomenological perspective that accepts the 'thereness' of technologies in the world, Brassil works to inspire reflection upon the knowledges and perceptions of nature made available through technoscience; "sound beyond hearing, sight beyond seeing, memory beyond recall". Thus, in Randomly Now and Then (1990), rock drill core samples with transducers affixed were suspended from microphone stands. Their own specific resonance transformed into audible sounds, which with the random timing interventions of a computer made "the sound of a million years singing". In this and other of Brassil's works, technoscience renders real and technologically available the "dream of a million years singing". In this and other of Brassil's works, technoscience renders real the world which we otherwise would be unaware.

Mastery of the equipment is not a primary concern for Brassil, who works intuitively, beginning from a poem which is 'implanted' in the installation along with the specific technologies, the latter deployed in consultation with technicians, engineers and research scientists. Accepting technologies as "just there" in the world does not mean simply celebrating them. Brassil looks at technology with a 'caress' in a gentle and more feminine counter to the history of militarised technologies which have brought us to "look at disaster". Her work expresses the hope that technologies from out of this history can be deployed within other frameworks of looking, hearing, and understanding.

Artworks emphasising alterity relations would feature the technology as a thing in itself more or less independently of contextual references, perhaps requiring beholders to operate or directly interact with the equipment. Alterity relations are thematised in the work in progress by VNS Matrix, a group of four women artists based in Sydney and Adelaide (Virginia Barratt, Francesca da Rimini, Julianne Pierce, Josephine Starrs). In fact, their work has to do with horizontal instances of both alterity and background relations in computer culture, specifically the cyborg and the microworld. The group's four light-boxes and accompanying soundtrack exhibited at TISEA (1992) introduced the setting and characters for a proposed interactive video/computer game in which the character All New Gen is the cyberfeminist counterpart to the popular children's handheld video game 'Gameboy'. The next development will be an installation "constructed as the interior of a Gameboy, as the viewer enters, they actually enter into the terminal itself - they become an integral part of All New Gen". Viewers will be encouraged to identify with a technological 'second self' (the 'gamegirl', All New Gen) and simultaneously to fight against the high-tech rationale of the system 'Big Daddy Mainframe'.

In contrast to Brassil and Farman, these artists place importance on mastery of the equipment, and resort to using technicians only where necessary. According to Julianne Pierce, they have adopted as one of their slogans 'Not nervous of technology'. However, VNS Matrix members are not 'techno-junkies'; they may enjoy working with high-tech equipment but do not make huge sacrifices to obtain the biggest and best. VNS work is notable for its critical and ironic edge, informed by contemporary philosophy, feminist theory and popular cultural practices. The thematisation of technological selves and spaces is part of a deliberate future-oriented exploration of Haraway's notions of a feminist 'cyborg politics', where critique, empowerment and enjoyment converge for themselves and their audience.

Background relations such as shelter technologies and technological cocoons are involved in many artworks, especially in display. The traditional gallery space is a particular kind of 'shelter' suitable for paintings and sculpture, but as curators will tell you, it is not a sufficiently 'smart' technospace for electronic artworks, with their stacks of machines and vermicular cables.

Installations in general emphasise background relations by creating an environment, high-tech or otherwise. As the works of Joan Brassil and VNS Matrix illustrate, installations can feature other varieties of technics (e.g. hermeneutic, alterity relations). Nola Farman is an artist whose installations play with both background and alterity relations. Many interactive artworks, Farman argues, offer false choices, restricting actions to using a mouse to make selections from pre-programmed menus within a self-contained microworld. She prefers technologically-based works where there is 'randomness before it goes through the computer'; she is fascinated by interactive 'robotic environments' in which people's actions set off chained sequences of other events. Like the members of VNS Matrix, this artist is keenly interested in contemporary theory and philosophy, but technical mastery of the diverse environmental, visual and acoustic technologies used is not a priority for this self-confessed 'technomoron' who would "rather be reading" than labouring to acquire expertise which trained specialists can be hired to provide.

Farman is concerned with what technologies, or interactive technospaces (like the planned whispering wall project) can tell us about ourselves. Farman sees her role as an artist as helping us 'digest' technologies, that is, to explore the implications and alternative directions for technological innovations, which have proliferated at speeds that outstrip our understandings and critiques of them. For this reason, and out of her general suspicion of neofuturism, Farman argues that its not necessary for artists to acquire the most expensive state of the art equipment; there's plenty to be done with things "off the shelf of a good electronics store", or by redeploying earlier generation technologies - light switches, surveillance technologies, cars - in other than intended ways. 'Doubling up' of technologies can heighten the intensity of this critical processing, as in the Car Sick installation (1992; with Anna Gibbs, Helen Britton and Brad Clinch), where the 'utopian space' of the automobile is exploded, and rusted parts of this transport technology are linked with audio and visual technologies, some of which give a dystopic effect (like the headphones carrying loud sounds of a rusty car slowly disintegrating), and some (like the doubling of small video images within the rear view mirror) that can get the viewer "sucked in to a vortex of critical reflection".

From even this small sample of artists, we gain an appreciation of a diversity that defies neofuturist presumptions about the best and only approach to high-tech media. The holographer Paula Dawson...
has a practical interest in the tools of her craft: "What technologies and techniques are needed to realize my visions? Where do I get hold of them?" The artists whose work thematise technology do not suppress their ambivalence about it, but ask: "Given the military and corporate background of the technologies in which we are implicated, how can we as artists respond creatively, critically, and responsibly?" For VNS Matrix, whose works play with partial and plural technological subjects, objects and spaces, there is an explicitly political questioning of high technology: "How can we, as feminist artists, encourage critique of the dominant technological formation while empowering ourselves through the new media?" Their strong political line is probably needed, for it is precisely around these areas (e.g. alterity relations) that masculinist voices clamour to speak for all of us and 'the future' besides. To Nola Forman, who considers being 'abrasive and a bit too much' as part of her role as a woman artist, the redeployment of existing technologies and the creation of interactive environments are challenges to explore the questions "What can technologies show us about ourselves? What can art do to help us digest and make critical sense of technologies?" And where Forman's work emphasises the human-technology link in human-technology-world relations, Joan Brassil's contemplative and almost Zen-like installations highlight the technology-world connection, asking "What new insights into nature - and ourselves within it - can technoscience bring? Can these tools be redeployed within a different order of revealing?" The conclusion is obvious; these artists show that important and interesting questions about the trajectories, contents and contexts of technologies can be effectively posed without requiring the artist to become a 'techno-nerd' herself, abandoning concern with social and political contexts, or suppressing ambivalence about technology.

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