

KELLY THOMPSON AND MARGO BARTON

A Conversation: Virtual and Actual Spaces – Textile Practices in an Era of New Technologies *

The space between the seduction of the virtual world and creating in the physical can be a great chasm. Margo comes from a fashion industry and millinery background and Kelly has a textile arts practice. We both work with computer-assisted systems and equipment in our individual practices.

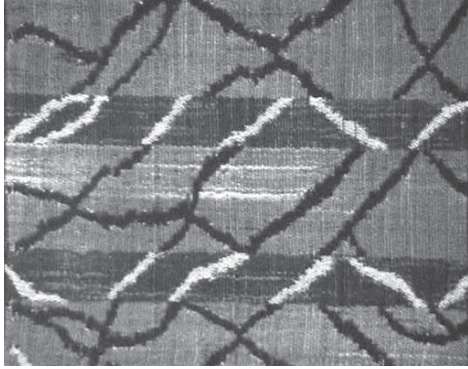
Encircling a form allows the milliner to experience the many shapes, undulations and silhouettes of a piece. The ability to perform this in sketchbook mode in a virtual environment allows the designer to explore ideas more fully and interactively. Engaging in the bodily experience of designing for, and then weaving narratives on, computer-assisted jacquard looms is explored in relationship to reading cloth.

We embrace the technologies yet recognise the dilemmas posed between the virtual and actual. Conversations provide the space for positions to shift and move.

This article discusses our experiences of working with digital technologies; reflects our own practices through personal narratives; and highlights differences and similarities in our approaches. We recognise the extensive research and technical knowledge in the field and acknowledge that what we present is likely to be familiar to many. Hopefully our particular responses to this research and knowledge will engender its own discussion. (Our initials below identify our respective words.)

The relationship of digital systems with textile practices and millinery design is ever-evolving. As we explore our positions on the continuum between the bodily experience as makers and the visual experience of virtual systems, we continue to shift and move in response to opportunity and imagination.

* This article was delivered in an earlier version as a paper at *the space between :textiles_art_design_fashion* conference held from 15 -17 April, 2004 in Perth, Australia.



Kelly Thompson, 1998, *Constructed Surfaces* (detail), dyed woven double cloth

KT: The act of writing and the act of designing a textile in the twenty-first century are not dissimilar. The screen and digits are intermediaries, simultaneously attracting and resisting the process of transference between virtual to conceptual or physical. There are exciting potentials to be realised in systems of visual language and coded cloth. This conversation is an attempt to tease out a space to reflect on the technologies we each embrace and resist; and to explore the rich territories of languages and systems. It is not easy to become fluent in another language.

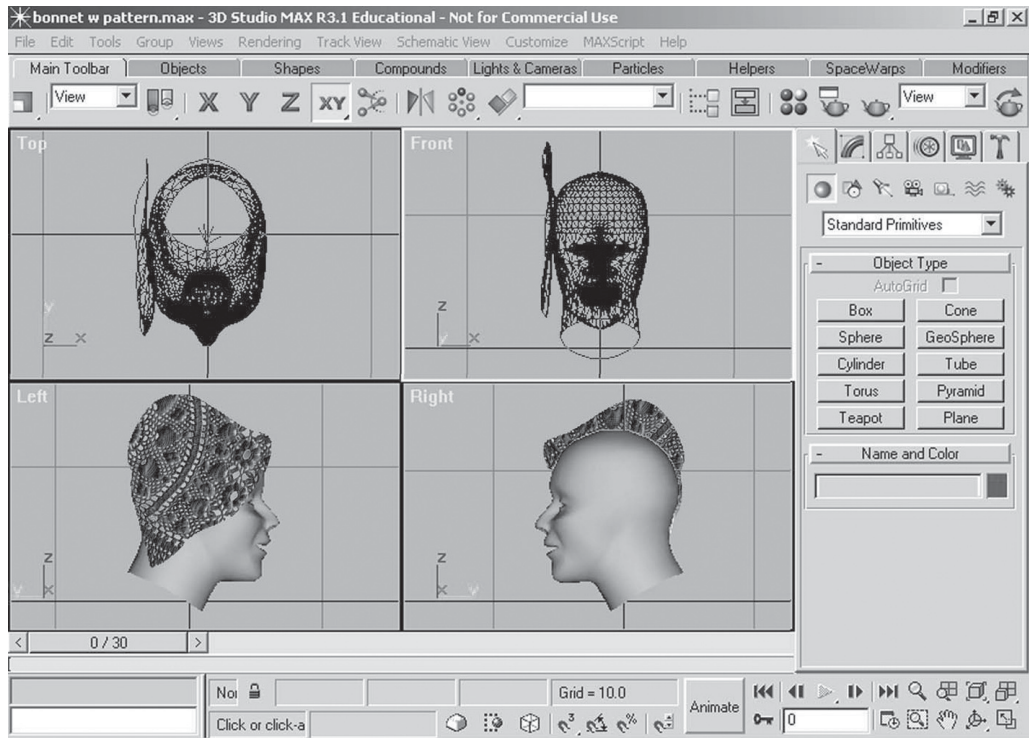
Visual, virtual, tactile, conceptual . . . The seduction of the flickering screen with its mind-spinning potential fascinates, yet is this enough? How do we evaluate that which seduces? Sometimes, I choose to weave using the tools of jacquard software and equipment to embed images in cloth in ways different to my previous pieces; while Margo's recent research has focused on virtual millinery, designing in 3-D on screen.

MB: Because of my knowledge as a maker, I had imagined naïvely that the new CAD method of patternmaking is a 3-D method, like draping on a tailor's dummy. The idea of digitising an existing pattern or of creating a 'flat' pattern using the revolutionary software seemed bizarre. I am determined to get the computer to do what I dreamt of – to enable me to create a design in 3-D; one that I can look at and evaluate: a virtual prototype if you like. This lack of readily available 3-D technology is changing with the development of fashion-specific systems. DesMarteau and Speer state: "The shift toward 3-D product development has brought a whole new arsenal of tools to the fingertips of product designers, including 3-D solutions from companies such as PAD System Technologies, Browzwear, Optitex and Lectra, that allow 2-D patterns to be draped over a 3-D avatar."¹

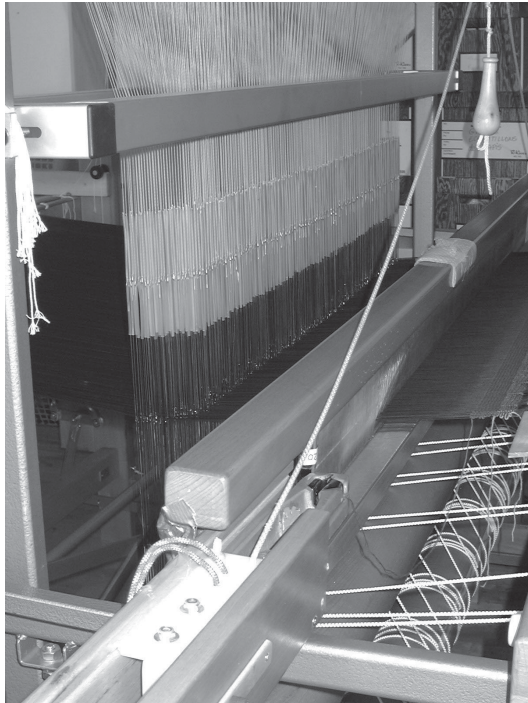
Although these technologies are an improvement on early 2-D only technologies, the user is still limited to a flat pattern as the basis of her design. Recent software systems for fashion designers are heading towards 3-D, with the conversion of 3-D virtual garments into 2-D patterns.

KT: Textile design software linked to a hand-operated jacquard loom enables the translation of digitised information to travel from the 'real' or physical realm, to code, to mechanical systems, then to become a new object. The complex mathematics and speed of analysis of 'on' or 'off' codes would have astounded and pleased Ada Lovelace, credited with designing a precursor to computer language. Charles Babbage's nineteenth-century design of the "Difference Engine", a type of adding machine, was inspired by the original punch-card jacquard head (and this year is acknowledged as the 200th anniversary of its invention). In collaborating with Babbage, Ada designed an "Analytical Engine" capable of both storage and calculation of information, thus 'a thinking machine'. However, the engineering technology of the times did not enable the construction of the machine, and Ada's software was left to inspire others.

In *Zeros and Ones*, Sadie Plant describes the nineteenth-century analytical research and technical developments in textiles, engineering and computing in what might be considered cyborgian terms: “The engine was assembling the processes and components from which it would eventually be built.”² Donna Haraway’s manifesto of 1985 identifies a cyborg as “a hybrid of machine and organism, a creature of social reality as well as a creature of fiction . . . a matter of fiction and lived experience that changes what accounts as women’s experience.”³ The physical and conceptual dependence on computers and computer-assisted looms, printers and screens to produce new types of visual research are the engines of the twenty-first century. MB: Margot Lovejoy states that “the computer has subsumed all of visualization within the realm of mathematics. Paradoxically, the computer’s capacity to ‘see mathematically’ is helping us to see more completely than we can with the human eye alone.”⁴ The maths would astound most people, even Ada. Do we need to understand these codes to be able to work with them? The use of 3-D modelling programmes such as *3D Studio MAX* allows instinctive drawing. A comprehensive understanding of the complexity of the mathematics and algorithms is not necessary.



Margo Barton, 2004, *Dispatch Modelling*, Studio MAX screen capture



Hand Jacquard Loom at the Montreal Centre of Contemporary Textiles (photograph: Kelly Thompson)

KT: Experimenting with concepts and systems of language provides different entry points into the relationship between artist, designer, maker and the digital realm. Fibres transform, becomes cloth, a tactile flexible surface; light reflects off the surface, shifts with the viewer and captures a new position. The static image on a backlit screen and the flicker of simulation technologies are different experiences than that of the physical surface. This surface is a relief of threads, embossed and embedded, confirming a kinaesthetic knowledge that extends beyond digital electronics. Cloth is a surface of many histories.

Weaving has considerable links with technological innovations, dating from simple sticks tensioned with a strap around a weaver's back, to punch-card jacquard or dobby looms and through to high speed industrial looms weaving with extruded filaments and embedded microprocessors. Textiles of all descriptions, with their central relationship to human and cultural needs, are inextricably linked to techni-

cal developments. The challenge for artists of our era is to produce meaningful contributions, especially when we use the tools that dominate industry and our interior-furnishing worlds.

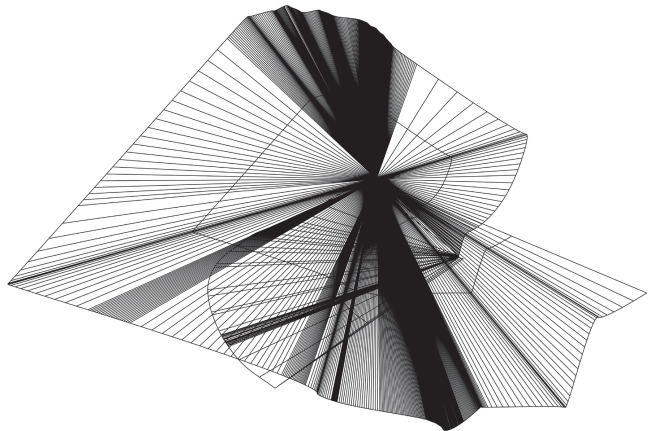
MB: The ongoing discussion between the maker or designer and mass production is the area that I am interested in – can technologies be harnessed by the maker or artisan or does that privilege belong only to the large corporations? Only some educational institutions and the large corporations have easy access to the new fashion-specific software.

Millinery does not seem to be linked with technological innovations. The process and tools have remained unaltered for a long time and although blocks have evolved from wood to metal for mass production, they continue to remain essentially the same. It is worth noting that ingenious nineteenth-century machines like the conformature – a 3-D measuring device for the head that can output a half-scale 2-D template as a guide to lathe a wooden hat block to the exact shape of the head in cases where the head does not conform to the average size – have been used to measure heads in a 3-D manner, long before 3-D digitisation and body scanning were available.

KT: My approach to textiles, with or without computer-assisted looms, has more in common with traditional weavers producing culturally-specific stories, than with the designer of commercial comfort or fashion items. The software may be similar, but gaining physical access to jacquard hardware or 'smart' materials from my base in a small New Zealand city close to Antarctica is a challenge, unless one is satisfied to remain in the virtual or theoretic realm. Personally, I do not want to leave the concept on screen, itself another surface, but wish to feel the textile, to interact with it from a close *and* distant view in order to travel a haptic journey, i.e. through tactile and textural experience.

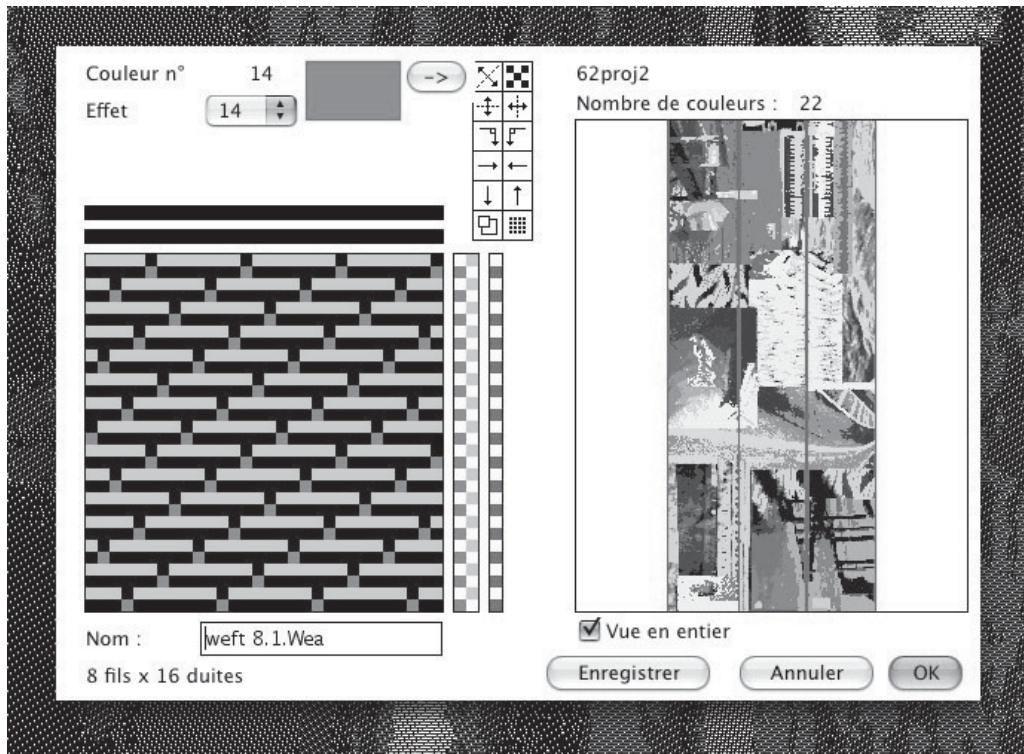
MB: Draping and stretching felt or straw or manipulating feathers and plastic over hat blocks is a tactile activity I love. When working digitally, I use software that is not used by milliners. It is used on the one hand by animators and digital artists, and on the other by engineers and industrial designers – I'm sitting in the middle. My 3-D to 2-D exploration allows me to export files of flattened and unwrapped patterns to an architectural plotter and although outputting a workable flat pattern from a 3-D image is not my main aim, this is something I have been able to achieve. 3-D design can be animated and viewed by the designer as a moving image. Often, I am satisfied with leaving the creations on the screen, where I can appreciate and imagine them.

KT: The digital codes are not enough for me; I value the physical, tactile, spatial and historical associations of cloth. Louise Lemieux-Bérubé, an artist and director of the Montreal Center of Contemporary Textiles, has been at the forefront of encouraging people to access computerised hand jacquard technologies on a scale that enables studio artists to translate concepts and images in affordable and experimental ways. After lusting from a distance over the first



Margot Barton, 2003, *Bonnet Pattern*, 2-D pattern

high profile projects of artists working with the jacquard industry, I studied Pointcarré software with Louise in 1998, and continue to return to Montreal when feasible to produce new works. Hand-operated jacquard looms such as the TC-1 from Norway and other looms are increasingly available to artists and designers, and have moved into larger textile schools and universities. As the activity increases, I believe a critical discourse is necessary.



Design Window Screen Capture from Pointcarre Jacquard Software (courtesy: Kelly Thompson)

Jacquard software such as Pointcarré allows images to be imported from other sources and then weave structure information is added to each element. Design decisions regarding the image must occur: strategies for cleaning and reducing colours, assigning a compatible weave structure to each colour, sorting float positions and lengths, checking tonality of structures; while the clarity or subtlety of transitions are also examined.



Kelly Thompson, 2004, *Static* (installation view)



Kelly Thompson, 2004, *Static* (detail)

My recent series, *Static*, uses capturing and sampling (as in music) as strategies to generate images from my local and familiar environment. Direct digital images, charts or codes scanned from my home, garden, textile collection or daily travels, are collaged on screen before the weave structures are put in. Images shift from identifiable picture plane imagery – a boat, wharf, plant, hand – through to digitised details that produce visual crackle and texture.

From the southern hemisphere access to both software and looms is limited as textile-specific software resides primarily in industry. When in Montreal, my working process has to be quick, as the outcomes are generally not commissioned work. However, the act of hand-weaving the images remains important with its minor differences in tensions, the occasional loop or mistake, and changes in the beating rhythm. These are the human marks of the technology.

MB: The ability to be able to draw on paper and the ability to make a physical hat is an important precursor to creating fashion items in a 3-D space. On the screen the works can look plastic and artificial. This disturbed me to start with, looking as synthetic as processed cheese. I spent months rendering textiles and textures that attempted to simulate the fabric used. However, the virtual fabric has no drape. Problems like this sometimes turn out to be blessings though, as the solid 'processed cheese' look grew on me and I now find the plastic attractive. This glitch encouraged me to produce a series of three printed perspex bonnets for the eCHO project at Queensland University of Technology,

using a baby's bonnet as inspiration. This work informed the next collection of perspex hats for the designer Doris De Pont as shown in *L'Oreal NZ Fashion Week, 2003*.



Margo Barton, 2003, *Match*, head size eCHO project, perspex, model: Keeley McGaw

KT: Margo, perhaps we should think of your hats as extensions of the wearer, a living organism? Plant states: “the term ‘cybernetic’ comes from the Greek word for ‘steersman’, the figure who guides the course of a ship.”⁵ Perhaps more accurately a cybernetic organism or cyborg describes both ship and steersman acting together, a hybrid machine and organism self-regulating or able to run with a degree of autonomy.

Weaving on a computerised hand jacquard loom can feel like this – the machine drives me while I drive it. My brain, eyes, arms, feet, fingers, interacts with software, monitor, keyboard, compressor, beater, beams, shuttles and thread. Although an experienced technician can weave another’s designs, each time I return to Montreal I need to actually weave, testing an image by constructing it pick by pick, together with the jacquard head.

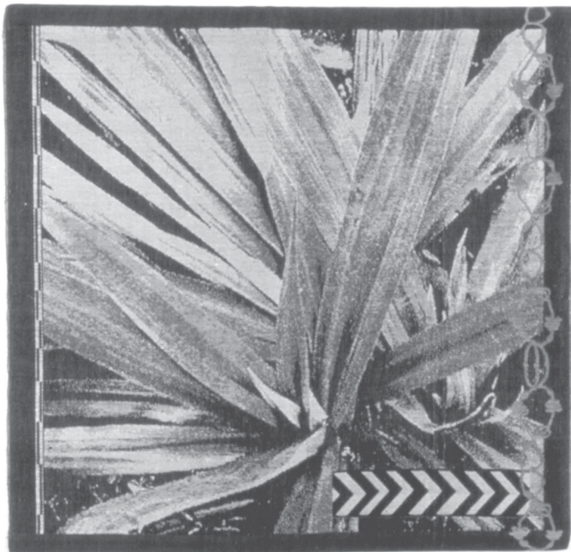
This bodily knowledge obtained through sampling, adjusting colours and thread, density and distortion, and the handling and reading of cloth translates back to screen decisions. Interpreting the visual codes and systems on screen through the tactile senses, I am the cyborg. Haraway suggests that the border between us and our machines is not distinct: “Intense pleasure in skill, machine skill, ceases to be a sin, but an aspect of embodiment. The machine is not an ‘it’ to be animated, worshipped and dominated. The machine is us, our processes, an aspect of our embodiment.”⁶

MB: The machine – a hat block, a loom, a computer, they all have the same allure. The machine is an extension of ourselves, but without us as drivers or operators, it is simply an inanimate object. I think this is the case for many articles we wear – the watch that is driven by a pulse and movement, a shapeless draped form that is given life by the wearer’s body.

For me machines are firstly something to be conquered and understood, secondly something to be embraced and collaborated with. There is a cyborgian link between the perspex hat and the wearer, the hat being an extension of the body. I really like that ambiguity where it is hard for the viewer to see where the human finishes and the hat starts. In fact why externalise the hat?

KT: Margo, you talk of stimulating the imagination rather than of virtual reality, a simulation of the real. At what point do you decide to shift your designs from the screen to material? From potential to actual? Or is this necessary?

MB: My digital images are simulations of the real – concepts that may or may not come to life in the real world, a 3-D visual diary of conceptual developments. To quote Paul Virilio: “images don’t have to be descriptive; they can be concepts.”⁷ I shift them to the real if there is a need, a market need, from a client or perhaps for an exhibition or parade. Sometimes I really need to see something, just because I have to make it. As a milliner I still love to create millinery that is real, to steam and stretch, to stiffen and wire, to use felt, straw, feathers and plastic, but I understand the market for such products is very small, especially in Dunedin. When discussing fashion trends of the past 70 years, Sandy Black and her colleagues write: “Perhaps the only negative trend recorded here is the demise of the hat...once an item of dress worn by all social classes every day and on every social occasion – it has become sidelined to the racecourse, the wedding, the funeral and the catwalk.”⁸



Kelly Thompson, 2001, *Astillia Indicator*, hand jacquard woven, 103 x 108 cm

KT: My weavings are initially for a gallery context, then for a domestic environment in some cases. I am interested in heightening the familiar in the real world, juxtaposing images and codes to create an ambiguous visual space. My intention is that the works be read as a visual diary, scenes from daily life, constructing narratives of place and time, a hybrid reality, perhaps even a space between?

Themes of presence and absence have been explored extensively in recent art practices. Emerging from the interplay between presence and absence is materiality, according to N Katherine Hayles “a term to refer to both the signifying power of materialities and to the materiality of

signifying processes.”⁹ She also identifies that one implication of information technologies is a “systematic devaluation of materiality and embodiment”. I agree on this point with Hayles, and also when she signals the cautionary note that “information, like humanity, cannot exist apart from the embodiment that brings it into being as a material entity in the world; and embodiment is always instantiated, local and specific. Embodiment can be destroyed, but it cannot be replicated.”¹⁰

MB: Knowledge and understanding of materiality and what embodiment means in a particular field is essential when working with elusive and absent computer-generated entities. This knowledge informs the practice of the artist or designer working with virtual systems.

The question is, are all ideas absent until we as makers decide to give them life and presence? Ideas drawn on a page with pen and ink and those sketched using 3-D software have materiality and yet are absent. The ability to use 3-D software to give the absent ideas life on a 2-D screen is the key factor in my fascination with technology.

KT: Techno-textiles are developing at a great pace. The exhibition *Artists at Work* last year in Prato, Italy,¹¹ showcased European textile research occurring with materials and technology, both in collaboration with and independent of industry. Other exhibitions, research and publications from Japan, Britain, and the USA are extending the field. These collaborations are a rich territory, producing a new textile revolution.



Margot Barton, 1999, *Capon*, head size, feathers, for Carlson Fashion House (model: Imogen Ovens)

However, along with the rush for the new, quirky and innovative, I believe the sensitivity of earlier textile histories and technologies must not be overlooked. I freely admit I am enamoured with jacquard systems and the development of software available for contemporary weavers. The challenge of translating images to construct a cloth surface of textured relief is highly seductive. However, a critique of the outputs must also parallel growing competency.

My position is primarily to value and enjoy the bodily interaction with actual cloth and to engage with the cultural, physical and conceptual associations that it carries.

MB: I also enjoy the bodily experience of real pieces. I have to admit that the seduction of technology sometimes makes me worry that my enquiries are nothing more than a facile gimmick. Millinery and the fashion system could also be thought of in this context. Yet I remind myself that explorations, technological or otherwise, need not have commercial outcomes. It is the exploration of potentials, possibilities and intellectual challenges that are the driving forces.

We have suggested differences of practice and belief in relation to the use of technology. In contrast to you Kelly, I am content to work with the virtual; as most of the time, the visual is all I need. Finally, we encourage other makers to think about where they might position themselves on the elastic continuum between machines and bodies.

- 1 K Des Marteau, JK Speer and K Jordan, "Entering the Third Dimension", *Apparel: The Bobbin Magazine* 45 (January 2004), 28.
- 2 S Plant, *Zeros and Ones: Digital Women and the New Technoculture* (London: Fourth Estate, 1998), 22.
- 3 D Haraway, "A Cyborg Manifesto", in *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1993), 182.
- 4 M Lovejoy, "Art in the Age of Digital Simulation", in *Postmodern Currents: Art and Artists in the Age of Electronic Media* (Prentice Hall, New Jersey: Prentice Hall), 159.
- 5 Plant, *Zeros and Ones*, 156.
- 6 Haraway, *Cyborg*, 180.
- 7 LK Wilson, "Cyberwar, God and Television: Interview with Paul Virilio", in T Druckrey (ed.) *Electronic Culture: Technology and Visual Representation* (New York: Aperture Books, 1996), 321.
- 8 S Black, I Caprio and A Cundey et al., "70 Years: A Celebration", *International Textiles*, 836, October/November 2003, 20.
- 9 NK Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago: University of Chicago Press, 1999), 249.
- 10 Hayles, *Posthuman*, 49.
- 11 P Kinsella (ed.), *Artists at Work: New Technologies in Textile and Fibre Art* (Prato: Museo del Tessuto, 2003).

Margo Barton is the lecturer in charge of Design at The School of Fashion, Otago Polytechnic in Dunedin, New Zealand. She is currently undertaking doctoral studies through Fashion at RMIT University in Melbourne and her project is entitled "Conceiving and Communicating Fashion: the Ideas, the Image, the Prototypes". She has a specific focus on the use of new media and CAD technologies, their potential and realising possibilities within a millinery context. She creates millinery for NZ designers and exhibits in New Zealand and Australia.

Kelly Thompson is a senior lecturer and co-ordinator of Textiles in the School of Art, Otago Polytechnic in Dunedin, New Zealand. She regularly exhibits in New Zealand, Australia, the USA and has work in various public and private collections. In recent years she has worked with computer-assisted dobby and jacquard looms, handconstructing narrative textiles that explore postcolonial themes of identity and location.