start

instruction manual conclusion bibliography

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zukunftsmusik: prototyping the social and technological construction of space 2008
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Michael Trudgeon 13.01.09

zukunfts-musik: prototyping the social and technological construction of space 2008
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Thank you: Glynis Nott, Anthony Kitchener, David Poulton, Leon van Schaik, Ranulph Glanville, Chris Ryan, Soumitri Varadaragan, Margaret Trudgeon, David Trudgeon, Alexander Saunders, Dan Hill, Ewan McEoin, Paul Schutze, Dominic Lowe, Bernie Smith, Karl Ludvigsen, Larry Faloon, John Kyros, Greg Walace, Costa Gabriel, Warren Parker, Ian Abley, James Gately, Peter King, Ramesh Ayyar, Dennis Quinn and Veronica
zukunftsmusik: prototyping the social and technological construction of space.

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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October 2008
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abstract

This project investigates shaping the design practice of a trans-disciplinary creative agency through engagement with research and prototyping. The intention has been to identify and test prototyping processes that permit the generation of novel technological and design solutions that are then recognised as valuable to the project clients. The project research explores a central question in the prototyping of new design solutions. That of who is given access to the prototyping processes and how this affects the efficacy and relevance of the processes and the acceptance of the results. The project research describes three successive modes of engaging complex client bodies in innovative designs encompassing customer service in new spatial configurations. The first mode takes client representations at face value, the second engages the wider client in workshops, and the third involves the wider client in the inclusive design of full-scale prototypes. The findings suggest that the tangible outcomes of a prototyping process can act as uniquely valuable bridges for introducing and testing new design solutions for clients. These processes help reduce the perceived risk of innovation and promote conversation and dialogue among the diverse and often non-aligned project participants. The project describes ways in which this setting up of the prototyping processes can also contribute significantly to the nature and value of the design outcomes. The prototyping process can begin to act as an idea generator and catalyst. The processes can focus all those involved in contemplating the value of innovation rather than the expressing of concern over the risks involved in addressing change.
instruction manual

an explanation of the distributed document format and an introduction to the text
The written component of this PhD by project is divided into four catalogues: **start**, **survey**, **contrive** and **risk**. The intention is to present the work as a set of modules that can be approached to configure and customise the delivery of the information as you desire. Below is set out a brief description of each catalogue.

- **Start**, this catalogue, contains this instruction manual, a brief introduction, the conclusion or epilogue and the bibliography. It describes the outcomes, and the intention here is to frame the main body of the writing from the perspective of the conclusion.

- **Survey**, the second catalogue, contains three essays describing the ‘community of learning’, or context of the case study work that is presented in the third catalogue: **contrive**. The three essays in **survey** each tackle one central component of the thinking that drives my approach to the case study work, that of the idea of the prototype, its application to relational systems rather than physical objects and a way that this approach can be folded into the conceptualising architectural projects. These essays can be dipped into or used as references as needed while reading the account of the case study work. The **survey** essays do, however, contain some information and descriptions of the case study work that are not repeated elsewhere.

- **Contrive**, the third catalogue, is the central account of the PhD case study project work. It describes the work-based research undertaken as a series of projects to explore, test and develop the initial thesis that prototyping, developed as a methodology in industrial design, can be used to facilitate the introduction of technological change and innovation in architectural projects. This thesis was proposed as a response to an initial gap that I established at the outset of the work, that of wanting to address the problems faced by designers when they introduce technological innovation into architectural project work. The four acts that make up the essay **contrive** relate to the four bodies of work that serve as the platform for the development of this thesis: a set of industrial design and exhibition projects, the design and construction of five digital cinema capsules, the design of two cinema complexes and the design of a modular retail banking environment. The first act addresses a series of projects from 1994 to 2001 which laid the groundwork for an initial methodology. The three later acts each reveal a further gap as each iteration of the thesis is tested and developed. **Contrive** focuses on the experiences and learning from each of the case studies without a lengthy description of each project. Each act in **contrive** begins with a description of the initial gap and ends with a summary of the outcomes, the new knowledge generated and a new set of challenges revealed.
• risk, the fourth catalogue, contains documentation and descriptions of each of the projects discussed in the essay contrive. Like the essays in survey it can be referred to in order to provide background or details as required by the reader. The text in this catalogue was written at the conclusion of each project and the style of these texts varies with the age and character of the projects.
From 1994 to 2001, as design director of Crowd Productions, I was involved in developing a number of industrial design concept prototypes for manufacture and exhibition. In each case our design and research work was specifically focused on entraining new technologies and formats to improve or change the performance of a particular product. Our position for developing these projects was that experimentation and research into new technologies and new typologies offered the possibility of creating more engaging experiences and more efficient outcomes for the users. Driving this was an interest in emerging technologies and a fascination for the new. Our clients, who sought us out to develop these products, came to us with project briefs asking for specifically innovative and challenging outcomes. They wanted to see a tangible impact from new technologies and user scenarios. In our concept prototypes for exhibition we were often asked to project our thinking just beyond currently available technology to create a vision of possible future developments. We often found ways to extend the performance of existing technology packages to simulate potential innovations. This body of work forms the first tranche of the PhD.

In late 2001 the exposure gained from these projects attracted a number of corporate and government clients asking us for architectural design services. The resulting projects form the three final tranches of work which constitute this PhD project. These clients were also interested in developing designs that were obviously different from the accepted standards of technological performance and user experience. However they wanted fully functioning built environments to accommodate large numbers of staff and the public as the final project outcomes. They believed that manifest innovation would be essential to the success of their projects. The idea of pursuing innovation and change in these projects was set as a key element in each brief. My own monitoring and researching of technology over a number of decades, combined with the demands of how to satisfactorily complete these projects, forms the basis for the shape of the contextual project survey. It also informs the way we went about addressing our own case study projects. Much of Crowd Production’s work in the period between 2001 and 2007 has been concerned with understanding how to research the possibilities for change and then how to frame or communicate the value of a changed or novel architectural design strategy as a response to this. Further, it became important to understand how to solicit input from our clients so as to usefully extend the programmatic basis of the project and gain a broad engagement of the outcomes.

In addressing this work it has been assumed that it is possible to develop a set of strategies that can be applied to widely divergent design tasks, with the express intention of establishing a platform for innovation and change. I have sought to test the idea that this
cannot only enhance the performative and programmatic value of the design outcomes, but it can create a climate of engagement for the clients and also for the end-users so as to make it relevant. Finally, it is proposed that the practice of narrated and exhibited technology demonstrators or prototypes, a methodology taken from the discipline of industrial design, can be used in contemporary architectural practice to model and test architectural design responses. To facilitate the transfer of this idea I have explored the framing of architectural projects as event-based or social artefacts. This framing allows the social and work processes to act as strong shaping forces for the conceiving of the architectural design outcomes.

footnotes

F1. **Zukunftsmusik.** Translated from the German as ‘music of the future’ in *The Concise Oxford Dictionary of Opera*. John Warrack et al. 1996. Oxford. Oxford University Press. It has additional colloquial meanings: future dreaming or dreams of the future. The term is credited to Richard Warner in the *Concise Oxford Dictionary of Opera* but gossip also suggests it was originally coined by Ludwig Bischoff in 1853 as a term of mockery in describing Wagner’s music. It carries two meanings, one of an almost perceptible far-off but potentially realisable future, and of something that currently has no consequence. The word seems to encompass both the promise and the risk of pursuing innovation.
survey

contextualising the case study projects

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survey

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Michael Trudgeon 08.08.08

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introduction

Prototyping space

This catalogue of essays represents a project survey of precedent work or a ‘community of learning’ within which the research for the accompanying doctoral project work is situated. The work in this survey has informed and shaped the projects I have undertaken as the case study work that forms the core of this PhD. That case study work is presented in the accompanying essay contrive as a chronological reflection. In the accompanying essay risk those projects are described in more detail as outcomes. This set of three essays surveying historical and contextual project work is presented chronologically and follows the thread of a set of ideas as they evolved across a number of disciplines and continents. The ideas, practitioners and projects are laid out chronologically, and the connections, now articulated, were not apparent to me until long after my initial encounters. The ideas, projects and practitioners were encountered in a rather more accidental manner. I saw them all as independent illustrations of parts of a central but heretofore unconnected emerging modality. Later reading has established that many of the practitioners I have been intrinsically drawn to knew of each other’s work and some had direct contact and, in fact, acknowledge an influence or debt. The survey is not exhaustive. It presents only one journey of discovery and it is an attempt to formulate and test an approach to architectural practice that engages in a preoccupation with change and innovative technological application.

The survey is bounded by a particular set of defining ideas and sources. The territory for the research by project work is also premised in part on a series of basic assumptions. A number of these are outside the scope of the hypothesis being tested and beyond the scope of the survey work presented. I am therefore not proposing to investigate or defend these particular assumptions. The first is that innovation and change are desirable and worth constant pursuit and evaluation. I do not propose that everything should be changed all the time but I am very interested in the creative possibilities presented by many design opportunities. An assumption is made that creative expression and investigation will continue to find new, valuable and interesting responses and even solutions to problems as they emerge, and that design within architectural practice can function based on this premise. In this sense the foundation of this work is artistic rather than scientific. Secondly, I have assumed that it is possible to develop a set of strategies that can be applied to widely divergent design tasks, with the intention of establishing a platform for engaging in innovation and change. Further, I propose that it can enhance not only the performative and programmatic value of the design outcomes but also create a climate of engagement on the part of clients and end users so as to make it relevant and desirable. Thirdly, my territory of
research and exploration is engineering and design practice and theory. I have not formally engaged to any extent with sociological, psychological or political theory or research, although my conclusions acknowledge and place at centre stage the significance of the social dimensions of design practice.

The first essay ‘make’ begins with a very brief introduction to the history of industrial design and the nature of the engagement that architectural practice has had with it. In the second part of the essay the focus moves to describing the contextual practice that informs this doctorate, work that also has its origins in the aforementioned history but which has focused on other potentials arising from that early industrial design practice. Make describes the emergence of the technology demonstrator prototype within the aeronautical engineering industry in the mid twentieth century, particularly at Lockheed under Clarence ‘Kelly’ Johnson. It then traces the transference of this thinking to the car industry soon after by Harley Earl, head of styling at General Motors, and its evolution into a system for both researching and developing innovation and then communicating or narrating the significance of this innovation to the public and end users. In the second essay, text, this model is then tracked as it was developed into a system for evolving and testing product-service systems in European industrial design, as developed by the Domus Academy in Milan. This change in focus from prototyping and testing products to prototyping processes and relationships and systems then becomes a tool to develop programmatic platforms for a wide range of design project types including architecture. In the third essay of this survey, drama, a number of architectural practitioners and thinkers are identified who have explored and conceptualised architecture as a temporal or event-based practice. Within this canon the programmatic basis for design development and research emerges as a critical territory for approaching and developing architecture. This third essay links the prototyping strategy to a process- or script-based approach to architecture, suggesting this as a way to test new ideas in architecture through the development and testing of new scripts, processes and programs. Much of the project work for this PhD, undertaken by Crowd Productions and described in the case study essay contrive, has given rise to the evolution of design strategies that have been built on the work described in this survey, and some have been developed in parallel with the most recent ideas described in these essays.
architecture as industrial design

version 1.9
Michael Trudgeon 13.01.08

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This first essay presents a sequence of ideas that have emerged in industrial design and that ground this PhD project. The origins of industrial design reflect its very contemporary nature. They are globally dispersed, multifarious in their disciplinary and philosophical character and represent a set of responses to the emergence of new technological systems and social organisation. In Jocelyn de Noblet’s *Industrial Design, Reflection of a Century*, Sir Terence Conran sees the marriage of art, design and commerce as central to industrial design as a discipline. Previously art and design had served the state, the church, and located and reinforced local tradition and identity.

“In Britain an ambitious programme to unite commerce with art began when William Shipley founded the Royal Society for the Encouragement of the Arts, Manufacture and Commerce in 1754. Its objectives were ‘to embolden enterprise, to enlarge Science, to refine Art, to improve Manufactures and extend Commerce’, thus summarising the material and metaphysical aims of Britain’s Industrial Enlightenment.”

De Noblet sees the 1908 mass production of cars by Ford in the United States as marking a second phase where the necessary economic and cultural changes and infrastructure became the biggest challenges posed by the new system of production. Industrial design arose as part of that response, as the engineer replaced the craftsman. De Noblet believes mass production requires four conditions: machine tools and electrical power, a capacity to produce standardised, prefabricated and interchangeable components, a scientifically and rationally organised workplace and production chain, and a mastery of descriptive geometry. This cocktail of precision and system-based thinking underscores much of the logic of industrial design.

At the Deutscher Werkbund in Germany in the early 1900s a debate developed around the artist’s role in mass production. Henry Muthesius asserted that the collaborative enterprise of industrial production to create standardisation would allow for new, rigorous, tasteful designs. The German Bauhaus school explored and proselytised the positive break with moribund tradition and the educative possibilities represented by industrial design for mass production. Thomas Maldonado, a former rector of the Fachhochschule für Gestaltung in Ulm formulated the first definition of industrial design:
The Ford factory, Highland Park 1923

“Design is a creative activity which consists of determining the formal properties of an object to be produced industrially. In referring to an object’s ‘formal properties’, we mean not only its external characteristics, but above all the structural relations which make an object [or system of objects] a coherent unity, from the producer’s point of view as well as that of the consumer.” In France, in the industrial design magazine *Revue d’esthétique*, Jacques Viénot published a charter of design: “Design is the science of the beautiful in the domain of industrial production. Its concern is with the environment and conditions of the workplace, means of production, and end products.”

“The thirties essentially saw the beginning of real industrial design in America. Having ended my career as a fashion illustrator, with vitality and conviction I pursued a new goal for life: industrial design. … Shocked by the fact that most pre-eminent engineers, executive geniuses and financial titans seemed to live in an aesthetic vacuum, I had enough effrontery – or recklessness, perhaps – to believe that I could add something to the field.”

Raymond Loewy

Loewy, the self-aggrandising, self-made industrial designer typified the entrepreneurial cultural milieu in the United States, in which industrial design developed. Loewy, like other significant US designers, including Harley Earl and Norman Bel Geddes, moved into industrial design from other disciplines like graphic design, set design and fashion illustration, much in the way Andy Warhol moved from fashion illustration into a fine art practice based on industrialised silkscreen print production. On receiving the Chevalier of the Legion of Honour, Loewy was described in the press as a “New York artist closely identified with the modern movement in decorative art.” While this description of his practice in decorative art is strikingly at odds with the rational and function polemic of the European industrial design movement, it illustrates the comfortable link between the commerce necessary for industrial production and making products that are saleable and desirable. Raymond Loewy appeared on the 31 October, 1949 issue of *Time Magazine* above the headline: ”Designer Raymond Loewy. He streamlines the sales curve.” This double entendre refers to both the streamlining aesthetic Loewy practised and the powerful positive economic impact Loewy’s design, along with other industrial designers, had on the sale of mass-produced consumer goods, contributing to the US recovery from the 1920s depression.

As editors Franz Engler and Claude Lichenstein of *The Esthetics of Minimised Drag. Streamlined. A Metaphor for Progress* explain:

“The notion of the ‘streamline’ originated in science. The definition is as follows: ‘Streamlines are lines whose local direction corresponds with local flow speed’. However, it is no small step from this scientific definition to the language of design and its fields of associations with streamlining; streamlining refers to the body itself, the streamline runs along the body – or at best through it, if it is internally hollow – but in any case outside its material form.”

Streamlining as a design language, applied to the exterior form of objects by industrial designers, characterised them as powerful and progressive machines. By applying a similar formal language superficially to everyday objects, a formal language that was in fact
01] Time magazine cover featuring Raymond Loewy. ‘He streamlines the sales curve’. 31 October, 1949
02] Liz as Cleopatra. Andy Warhol. Silkscreen on canvas. 1962
03] The Gestetner duplicating machine. The first industrially designed model change by Raymond Lowey. 1929
04] Airship LZ 129 ‘Hindenburg’ engine gondola. 1936
05] Pencil sharper prototype. Raymond Lowey. 1933
06] DC-3 fleet aircraft. 1939
07] Streamlined house hold appliance manufactured by Frigidaire. Raymond Lowey. 1940s
required by the performance needs of the new high technology products like aircraft, industrial designers linked radical engineering directly to the dining tables of middle America. As streamlined objects, mundane items like knives and forks brought the vision and promise of the latest technology home.

In *The Machine Age in America 1918 – 1941*, Robert Buck maintains that “the machine in all its many manifestations was the defining force in America during the years between the two great wars.”\(^9\) The French social scientist André Siegfried wrote in *America Comes of Age* in 1927:

> “Today, as a result of the revolutionary changes brought about by modern methods of production, [America] has again become a new world ... The American people are now creating on a vast scale an entirely original social structure which bears only a superficial resemblance to the European. It may even be a new age.”\(^10\)

In *The Machine Age*, Richard Guy Wilson discusses the popularist and broad impact of industrial production, machine imagery and industrial design on US society. Industrially designed and streamlined products like Gestetner copiers and pencil sharpeners presented the possibilities of a new world of plenty and promised an aerodynamic escape from tradition and economic collapse.

> “Science in all its branches, argued historian Charles Beard, upheld the machine system. The machine age encompassed the vast new skyscraper city, with its transportation systems compacted one on top of the other, and the new horizontal city composed of filling stations, drive-ins and superhighways. Even human beings were viewed as machines in the scientific management and time-motion studies of Fredrick Taylor.”\(^11\)

Industrial design, originating from diverse locations, born of diverse reactions and needs, came to synthesise or represent a group of powerful new forces in Western culture: the rational and potentially egalitarian nature of mass production, the demands and the liberating potential of new technology and the possibility for entirely new modes of artistic expression and definitions of beauty. Beyond this, industrial design as a discipline acknowledged and engaged with a new system of production. The components of that system, technological, aesthetic and social, all represented breaks with the past and traditional systems of production. In this sense industrial design is a truly modern discipline. Without these profound changes in production technology, distributed systems of organisation and consequent cultural change, industrial design could not exist. An exposure to the logic and creative potential of this approach convinced me that it contained valuable lessons about designing for change and flexibility and it warranted exploration. The first of these were the advantages of factory-based construction, albeit creating de-localised but sophisticated products, and the significance of standardised connection protocols to create open-ended systems of construction where the connection was predictable but the elements being connected were not.
01 Mercedes-Benz supercharged record-breaking car, Dessau, 1939
02 Entrance to Futurama, General Motors Pavilion, New York World’s Fair, Norman Bel Geddes and Albert Kahn Associates, 1939
03 Coca-Cola bottling plant and office, Los Angeles, Robert Derrah, 1936
The protagonists of modern architecture have had a well-documented love affair with industrial design and production, beginning in earnest in the early twentieth century. Industrial design and production, with its efficient adoption of new technology and fabrication processes has set a benchmark for innovation and improved performance among the design disciplines. Le Corbusier famously exhorted architects to engage with industrialised production in his polemical 1923 *Vers une Architecture*. Modernist architects like Charles and Ray Eames, Pierre Koenig and Jean Prouvé, among others, designed and built prefabricated housing prototypes based on the ideas of industrialised production. Engineers like Buckminster Fuller developed industrial production housing prototypes, such as the famous *Dymaxion House*, based on techniques developed in the aviation industry. These ideas or proposals represented an attempt to engage architectural practice with the distributed systems of production that underscored the logic of industrial design.

The idea of formally systematising housing design and construction on a non-localised scale – much like that of the mass-produced car – to conform to new typologies is not new or without success. In *Sense and Sensibility* Jane Austen has her character Robert Ferrars extol the virtues of life in a Cottage Orné. “I protest that if I had any money to spare, I should buy a little land and build one myself … and collect a few friends about me and be happy.” The Cottage Orné, eighteenth century patternbook architecture, represented the quintessence of the chic lifestyle designer accessory. Like a Range Rover it was the SUV of choice for those in the know. Cottages orné were not individually designed but copied from patternbooks developed and sold by influential architects and taste-makers. While not a product of industrial thinking or the Industrial Revolution, the Cottage Orné suggested ways of approaching building that acknowledged a non-local system of designing. In Roman times Vitruvius’ ten-volume treatise on how to properly build a house led to the standardisation, albeit considered desirable, of Roman towns throughout the empire. The idea of the pattern, implicit both in the Cottage Orné and Vitruvius and central to industrial production, has generally been the first stumbling block in raising the idea of meshing architecture with industrial design. It is generally forgotten that in the current building industry it is the developer who decides how most buildings should appear rather than the occupants. Decisions about function and appearance are generally made on the basis of short-term economic expedience. In such building practice there is little incentive for intelligent innovation or even exploiting the best of current building and planning knowledge.

Although designed from patternbooks, suggesting regimentation and a restriction of individual expression, cottages orné appealed because they gave their eighteenth century occupants a feeling that they were escaping from the conventions of society. It is this romantic dimension of the Cottage Orné that inspired Frank Lloyd Wright to build his own version of a Cottage Orné; the famous Fallingwater house for the Kaufmanns at Bear Run, South Western Pennsylvania. Cottages Orné like Houghton Lodge, described as being among one of the most romantic historic houses in Hampshire, now provide us with the definitive backdrop for the benchmark,
01] Cover. Vers une Architecture. Le Corbusier. 1923
02] Villa Savoy, Poissey. Le Corbusier 1928-30
03] Case Study House No. 9 using the Kwikset construction system. A DIY building system prototype, Pacific Palisades, Los Angeles. Charles and Ray Eames. 1945. Photograph: Dr Woohoo [Flickr]
05] Cottage orné designed for David Codwise Esquire as a summer retreat or permanent residence. Alexander Jackson Davis, architect. 1837
06] Advertisement for wedding location and bridal photography using the Cottage Orné, Houghton Lodge, at Stockbridge in Hampshire as a location and backdrop. 1799. Photograph: Burlinson Photography
07] Dymaxion House interior designed for manufacture by the Butler Brothers, Kansas. Richard Buckminster Fuller. 1941
08] Coloured pencil sketch on paper of Fallingwater, Bear Run, South Western Pennsylvania. Frank Lloyd Wright. 1935-36
contemporary, glamorous, fashion-plate wedding – romantic, stunning and beautiful, “with no horrible long corridors to walk down”. There is nothing innate in patternbook architecture that is uninspired, mundane or undesirable.

The patternbook designs for the Cottage Orné do conform to certain local climatic and lifestyle conditions, yet are necessarily predicated on a de-localised response to building needs. While the pitfalls of being de-localised, or merely a clone, have always been identified as impediments to the industrialisation of architectural fabrication, industrial production is changing in order to achieve greater performance and economies of scale combined with greater sensitivity to variation in end-user markets. The contemporary car industry operates from a global platform and has established a freedom to innovate by operating through a de-localised, distributed system of manufacture that also tends to limit the scope of locally initiated regulations. With the AUTOonomy Project, launched in 2002, General Motors introduced the idea of a formalised distributed system of production for cars that was embedded in every aspect of the design and manufacture process. The intention was to optimise on production investment in high performance technology at centralised manufacturing sites while maximising local end-user variation, with a network of fabrication facilities at the points of sale. All of the demanding technological infrastructure would be standardised to reduce costs and manufactured in a limited number of locations. In car terms this means the chassis and the engine. Further, all connection formats would be standardised. The body shell and interior furniture could then be manufactured wherever the end-users were and they could be configured to meet local demands and conditions. The core chassis are only made in a very limited number of sizes and configurations. Since the technological performance of the car is now controlled and adjusted by computer, the characteristics of the chassis and engine can easily be ‘chipped’ to meet local requirements and then an interchangeable body popped on. The core chassis are made in vast numbers, bringing down the cost while allowing for a cost-effective increase in technical sophistication and performance. Local firms supply the body panels and assemble the complete vehicles.

“In high end markets, this kind of arrangement might mean that new chassis debut every three or four years … but that customers could purchase a new body module annually. In less affluent markets, the chassis would comprise durable hardware and could be financed for much longer periods, perhaps decades.”

By this logic there is a uniform supply of higher technology to all markets but the modular interchangeable design philosophy means easy changes and upgrades and support of smaller, localised, distributed production ensuring an intelligent responsiveness to local conditions. This process is described as mass customisation. Applied to housing, this logic would see the rationalisation of all service infrastructure, a standardisation of connections rather than system elements, creating a global technology platform, developed without proscribing the particular end outcomes. Services can be inserted, upgraded and repaired without damaging the rest of the building. All wiring, lighting, water, sewage, data and air-conditioning would come as an integrated arterial system nested into prefabricated structural shell components. With the AUTOonomy system General Motors sees a 20 year roll-out period required to institutionalise the change over. Integral to the logic of this approach is that we must relinquish much of our local control. This is a de-localised system trading on the technological and economic advantages of having a global, distributed industrial design product perspective.
Traditional building practitioners see buildings as entangled, fused structures, not as assemblies of discrete modules, able to be unpicked and unpacked with ease. Further to this, an on-site production culture developed during the thirteenth century for building Gothic cathedrals still prevails, along with a similar set of performance criteria. No twentieth century products such as cars or computers are built like this, outside in mud pits in the rain, assembled from a procession of supplies; that is, when they finally manage to arrive. Kent Larson of the Massachusetts Institute of Technology House_n project observes that:

“houses should be more like a personal computer or a car. It should be affordable, built mostly in a factory, and with parts that are easy to repair or replace. You should be able to design your own home online, just as you can today with a Dell laptop or a Honda minivan. The key to making it happen? Follow the lead of other industries: standardise and accessorise. …Before houses can get built this way, though, the industry needs standards analogous to the USB standard for computers.” 14

You don’t have to precisely know what each final fitting will be, but you have to agree on how they are connected. Such a standard will only be useful if it is developed across a very large constituency, at worst continental, at best global. In an attempt to address this challenge the MIT House_n project has proposed ‘open source building’. Borrowing from Dutch architect N. John Habraken15 and American author Stewart Brand,16 the House_n project divides up the house into six major systems from the site itself through to the loose interior fittings. Each system has a different life expectancy cascading from hundreds of years to tens of years, each therefore requiring more or less replacement, repair or upgrade,17 exactly in the manner of the Casa Barcelona project undertaken by Construmat in Spain in 200118 and the GM AUTOnomy project in US.19

Toyota has taken a step in this direction with the Toyota Dream House PAPI, built in 2005, located in Nagoya, Japan.20 Designed by Professor Ken Sakamura, the project has sought to optimise performance, energy efficiency and construction quality and fabrication speed by using factory-built modular construction techniques. The design system extends to in built modular mobile storage units, automated security features and an integrated shopping cart in your city car for easy grocery transport. Sakamura argues that long-life, modular and reusable design thinking has a long tradition in Japan, dating back to the resource-poor Edo period and very evident in the design and construction of the kimono and the Tatami mat. Toyota intends to bring the PAPI technology to market. In Japan large numbers of houses are already factory built by companies such as National Panasonic, and customers are able to customise their home from an extensive menu of parts and finishes just like a car. Customers can see all of the component parts in city showrooms, have their recipe virtually constructed and then take a virtual tour wearing data gloves and head-up display goggles to see how it feels and whether the kitchen shelving is set too high or not.
01] Tedd Benson, Bensonwood Homes. Factory-based prefabricated housing manufacturer. Part of the Open Source Building Alliance at MIT. 2006
02] Storage device utilising the Universal Serial Bus or USB digital data communication protocol and connection format. 2006
05] Toyota Dream House PAPI. Professor Ken Sakamura. Nagoya. 2005
06] Eubiq surface data and power track. A reconfigurable power and data delivery track for commercial and domestic use. Singapore. 2006
The factory-based production of iron and glass buildings serves as an example of the potential for industrial production as a system of manufacture, albeit without the benefit of a systemic change to building culture. Within the European building industry a system of construction based on engineering, materials science, prefabrication and performance emerged from the mid seventeenth century – the glasshouse. This morphological stream of architectural expression began with the Gothic cathedral builders who had an eye to performance, creating conditions for occupation rather than focusing on proportion or an external composition, and they created a glass and stone construction method well suited to the light-starved Northern European climate. This architectural tradition supported the development of a European-wide glazing industry that found additional markets in fabricating mirrors and carriage windows. In turn, the consequent production refinements and cost savings born of production experience saw flat pate glass prices fall and availability increase, making it accessible to the domestic market and to less opulent public and commercial building projects. The apotheosis of this industry’s skills can be seen in the Hall of Mirrors at the Palace of Versailles, completed in 1685 and lined on one side by massive plate glass picture windows and on the other by equally massive mirrors. As Christian Norberg-Schulz observed in *Meaning in Western Architecture*, Versailles is a glasshouse, linking the transparent structures of the Gothic age to the great iron and glass buildings of the nineteenth century. In *Theory and Design in the first Machine Age*, Reyner Banham observes that Auguste Choisy and Eugène-Emmanuel Viollet-le-duc, while both distinguished members of the Beaux-Arts establishment, saw a significant connection between the progressive spirit of Gothic architecture and the economy and daring of the emerging European glass and steel architecture. The first half of the nineteenth century in Northern Europe saw the flowering of botanical glasshouses or conservatories, both as an architectural type of great beauty and as a form of significance for the future of architecture itself. This was an architecture conceived and refined by engineers, constructors and gardeners. The evolution of the art resulted from an international community of designers and patrons travelling to and across Europe competing to outdo each other and assess the most recent contenders, much in the way Gothic architecture had evolved as a process of evolution and experimentation. Joseph Paxton, the nineteenth-century gardener, publisher and politician, took the industrially produced glass and steel components used in greenhouse fabrication and proposed that these could be applied to fast-track the construction of major public buildings, as in his 1851 *Crystal Palace* assembled in Hyde Park and designed to house the Great Exhibition of that year.

“In 1845, the Royal Society for the Encouragement of the Arts, Manufacture and Commerce [now usually known as the Royal Society of Arts], with Prince Albert as its president, conceived the notion of an international exhibition to celebrate industry and manufacturing.”
02] The Hall of Mirrors at the Palace of Versailles. Le Vau and J. H. Mansart. 1669-85
Paxton delivered the building in record time [6 months from first blotting paper sketch to completion], relying on his experience of the engineering and construction particulars, industrial prefabrication of standardised components and his conception of the project as one entire system. He designed systems for integrating the delivery of coal to the furnaces of the iron-smelting works at one end of the process to personally devising the train timetables for the ‘just in time’ delivery of the finished building components to the building site.

“Ingenuity and design skill ran right through the whole project: typical was the idea of the glazing wagon [to glaze the Crystal Palace’s outer skin], which ran on wheels in the patent gutters. There was room for four men to sit, and hooped metal arches were designed over it, enabling it to be covered so that glazing could progress in wet weather.”

“The constructional innovation of the Crystal Palace was a direct result of the marriage of a critical path programme, and the essentially non-architectural expertise which made the achievement of this programme possible.”

The logic and elements of Paxton’s system formed the basis of an emerging international glass architecture, required for the new programs of vast warehouses, market buildings, exhibition halls, shopping arcades and railway stations. In Joseph Paxton’s obituary in 1865, The Times described him as “the founder of a new style of architecture”. The rational and economic benefits of a non-load-bearing translucent façade supported, along with the rest of the building, on a cast iron framing system were not lost on architects, particularly in America where rising land prices in city centres made a construction system that produced flexible, uniformly and well-lit buildings with a minimal structural footprint highly desirable. The 1871 Chicago fire provided a unique urban tabula rasa for the promulgation of this approach. Louis Sullivan, in The Autobiography of an Idea, observed the tall, steel frame and glass-skinned building’s ability to furnish the “proper and desirable ratio of glass area to rentable floor area.” This facility, in combination with the addition of other electrical and mechanical systems such as electric lighting and the escalator, developed as products for the mining industry; air-conditioning, first used in a dissecting room for a medical college in 1899, and Elisha Graves Otis’ elevator, first shown at the 1853 New York World’s Fair, provided an industrially fabricated kit of parts and the formula for modern glass, steel and concrete commercial high-rise buildings seen globally today and often described as the international style. This industrialisation of architectural practice has been mostly driven by pragmatics rather than an ideological desire to change the nature of practice. This changing reality in the fabrication process of buildings has been grafted onto an essentially Renaissance model of architectural practice and has had the effect of turning architects into licensed specifiers of industrial products. The revolution in building practice suggested by the promise of glass and steel, factory-fabricated building never arrived. The global building industry has absorbed these technological and operational changes without them creating systemic change. They are just additions to the traditional suite of materials and processes. Today’s tall glass and steel skyscrapers are still built much as the stone buildings of the thirteenth century were. This reality of unexamined engagement with industrial production sits at the opposite end of the practice spectrum from those architects and designers who have wanted to transform the potential of architecture. They have wanted to actively adapt for themselves the industrial systems and logic that created the new technological infrastructure for the new but conventionally practised glass architecture. These
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architects have noticed the more revolutionary innovations that have occurred simultaneously in product and car design. This fraternisation with industrial design by architects and engineers eager for change has been driven by a belief that factory-based production, and the quick engagement in new materials that characterises industrial design, could quickly liberate architecture from its frustrating inability to keep up with or initiate technological change. They believe the potential to actively engage with social or programmatic change is possible through a process that brings architecture into line with the practice of industrial design. Architects interested in innovation have identified the possibilities for architecture to evolve in response to changes in technology and social practice but have not been able to effectively communicate that interest or potential to the public. There has been a sense that architecture could not actively enable, facilitate or initiate such change. Technological developments and changed social conditions observed by experimental or innovative architects like Cedric Price have not necessarily been coherently apparent to the public and certainly not seen as a reason for changing the format or appearance of architecture. In this regard the possibilities for change that architecture might engage with – enabling new patterns of use or leading the way for social or programmatic change – are not celebrated as a part of architecture’s daily remit. While industrial design, particularly in product and car design, is understood by the public as a place where change is appropriately initiated, and therefore tolerated or even welcomed, this is generally not so with architecture. Its potential to contribute to innovation in lifestyle and social program is not celebrated, understood or embraced even by the wider architectural community.

While the production of buildings has quietly metamorphosed from principally site-based craft production to factory-produced, site assembly, no profound revolution in building design exploiting the core benefits of industrial production has occurred. Every attempt to integrate prefabrication or new materials has either failed to ignite the imagination of the building industry and the public or has been quietly subsumed into the traditional building system. Even the spectacular Case Study Houses project did not see these thoughtful housing prototypes become templates for a wide spread suburban design revolution. The Case Study houses project, from 1945 to 1964, created by John Entenza and published in serial form by Arts and Architecture magazine in Los Angeles, exemplifies a contemporary model that subscribes to this logic, creating a design platform in response to changing lifestyles and new technologies and leading by example. The program of published designs was a laboratory for experimentation in building with new materials in new social conditions. It was open source. Very significantly, most of the projects where actually built, proving to be much more valuable this way as platforms for ideas and performance evaluation. All the results and processes were published. Entenza, the editor of Arts and Architecture, hoped that these examples of progressive design would impact widely on public taste and the building industry. The Case Study program has become, on a very limited scale, a twentieth-century domestic patternbook, but it did not give rise to imitation of the actual process that created the innovation.

The most common explanation for the failure of an industrial design approach in architecture is that the results invariably were alienating, disturbingly uniform, unsightly and lacking in rich contextual sensitivity. The results did not address or satisfy the needs of architecture’s users. Secondly, the inertia characterising the global building construction and building regulatory industries protects the investment of the existing stakeholders. Only a monumentally seductive change in outcome or shift in market expectation could precipitate significant change. Enhancing performance, reducing unit costs and construction time are not enough. Any
case study house no. 22, los angeles. pierre koenig. 1960


[4] cover, arts and architecture magazine. november 1943. ray eames

[5] dc-3 fleet aircraft. arthur e. raymond. douglas aircraft company. 1939
significant change in materials and production has to be accompanied by a corresponding coherent shift in user expectation, and an appropriately communicated response explaining the significance of the design changes in reaction to the new conditions. How could such a shift come about and why should it occur? Changes in user expectation and patterns of use can often occur in times of great social change.

The political and social changes, mass travel, technological innovation and industrial advances that were produced by World War II created the opportunity for a global airline industry shortly after the war. This was only possible with the combination of a cheap, readily available and tested technology platform in the form of the Douglas Aircraft DC3 military transport and a global infrastructure of airports, combined with enormous social change. Such great social changes only occur periodically. When precipitated by catastrophe, political or physical, the process of engaging with technological change and innovation can also involve great loss and destruction. Can a climate of social engagement with design innovation be created without upheaval and loss having to act as catalysts for accepting change? Can design and product innovation be combined with an exploration and presentation of changes to the program of use and expectation of performance to the end users? Can this expedite an appetite for and acceptance of change and innovation? While advances in factory-based fabrication, standardisation and materials technology represent significant territories of ongoing development in industrial production, it is in the area of challenging and evolving program and user expectation that I believe industrial design has something truly valuable to offer architecture. It is the culture of the prototype. In presenting the preceding material on industrial design I wanted to identify the historical and existing engagement of it by the building industry along with the limitations of its impact. In the second part of this essay I want to outline what I believe is a far more valuable template of operation, embedded within industrial design culture, which has become the conceptual platform for the case study work and the research territory of this PhD.
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Innovation in practice requires both technological change and cultural change. Industrial design has evolved a culture of technological research and development synthesised into a propositional design process, the prototype, which is then presented to the users or the public for testing and feedback. I will argue that this process gives industrial designers the unique opportunity to experiment with radical design, fabrication and programmatic options and integrate these into a program designed to change or test public perception and expectation. It optimises the value of any investment into research and development. I have argued elsewhere that research and development is by its nature expensive and that the structure of architectural practice is not well suited to absorbing this cost.29 Understanding the dynamics and potential for optimisation in this culture of innovation is essential if one wants to learn and benefit from it, while controlling the costs and risks. This culture of the full-scale prototype and technology demonstrator displayed for public assessment evolved rapidly in North America in the car industry in the 1930s. It originated as an adoption of the research, testing and rapid prototyping practices developed by the US aviation industry, principally in response to military demands, and then fused this with the cultural practices of the global fashion industry of that era.

In the late 1930s in North America, government-sponsored research into innovative and high-speed aircraft had become a priority. This was to give rise to the development by many US aircraft manufacturers of experimental aircraft to test new ideas and technologies. Collectively these were generically called X-planes.30 While many were secret the idea of the X-plane became a symbol of the technological possibilities made tangible by US research and development and prototyping programmes. Among these was the rapid prototyping program at the Lockheed Aircraft Corporation which had evolved a uniquely effective design and prototyping culture to optimise innovation and control risk. It was born of a specific set of needs to overcome the inertia, resistance and risks that inevitably emerged when addressing technological innovation. It did this in a way that allowed Lockheed to drive massive improvements in the performance of its industrially fabricated products. This idea made a trans-disciplinary leap that saw this thinking embedded into the North American car industry through the principal agency and guidance of Harley Earl, the head of styling at General Motors, and this system of innovative practice allowed the car industry to transform technological opportunities and innovation into an orchestration of changed public perception and expectation. This resulted in a reconfiguring of the car industry’s very role from that of a reactive product producer to that of a proactive product producer. So successful has this re-framing been that there is now an expectation that industrial design and car design are harbingers of change and innovation and that this is embedded into the very fabric of what they offer. So ubiquitous has this process been that much of the basic innovation, if left unadorned, is generally thought of as ordinary and unexceptional. One has only to compare the average 1930s car, with its performance and commodity, to a 2008 model and then make a similar comparison between architectural projects from these periods. Importantly, the comparison should also register the relative
[02] Kelly Johnson and engineers from the ‘Skunk Works’ development team at Lockheed beside the XP-80, their first experimental prototype, Burbank. 1943
[03] Fabrication of a B-52H launch pylon for the D-21B unmanned aerial reconnaissance vehicle program at the Lockheed ‘Skunk Works’ manufacturing plant. 1963
[04] Harley Earl. 1932
cost per kilogram or per square metre of the technological package in each case juxtaposed to the performance. An inexpensive 2008 family Toyota has the comforts and many of the technological advances of only the most expensive and exotic European cars of the 1970s.

In 1943 the Lockheed Aircraft Corporation based at Burbank in California, set up an Advanced Development Projects Unit to research, design and fabricate prototype aircraft in response to briefs developed by the US airforce. These briefs invariably possessed two characteristics: firstly they were born of a competitive need by the US military to produce weapons and equipment that outperformed those of enemy nations; secondly the briefs also called for a level of performance for which there was no precedent. This meant that the research and development work needed to proceed in entirely untested technological territories. It also had to proceed in a climate of very tight timeframes. The budgets would not allow for a safety net to absorb extensive effort in the wrong direction. There was a changing and often antithetical political and management climate and there was the probability of fatal accidents if mistakes or carelessness occurred in the design or manufacturing processes. This demanded the evolution of a working process specifically designed to deliver highly predicable outcomes in a situation with enormous risks and few precedents. The process required a safety net built into the very design and internal management system rather than any reliance on borrowing from existing or proven technological knowledge or practice.

Clarence ‘Kelly’ Johnson, the chief aeronautical engineer placed in charge of setting up and running this research and prototyping division, had distinguished himself during World War II by designing and building the twin-engined P-38 Lightening, the most manoeuvrable propeller driven fighter of the War. Harley Earl, the chief stylist of General Motors was later to claim that seeing this plane was the inspiration for an entire range of automotive innovations. To work rapidly and effectively, Johnson had developed a rule set that drove every aspect of the designing and prototyping operation from the building and office layout, daily staff routines, team sizes, product testing, parts requisitioning and scavenging procedures to the presentation of concept designs and technology demonstrators. This system integrated carefully conceived storytelling and development of the design through making, by tightly integrating all designing and making processes. They maintained very small teams, kept all processes as cheap as possible to test more options and lower risk, avoided costly duplication of any existing cheaper option, and appropriated and tested arcane academic research as sources for new approaches. The intention was to optimise all of the advantages industrial production and research could bring and to ensure all knowledge gained in the making, fabrication or testing of new design ideas was immediately fed back into the design process. Keeping this loop as tight yet vibrant as possible was central to Johnson’s system to maximise progress in unknown territories while minimising risk, time and cost. Central to this approach was the relationship between designing and the prototype. The development of the Stealth fighter by Lockheed in the 1970s illustrates many of the design rules and processes Kelly Johnson put into practice.

The development of the F117 Stealth fighter began in 1975 with research by Denys Overholser, a mathematician and radar specialist at Lockheed. He found a 1966 paper by Pyotr Ufimtsev, the chief scientist at the Moscow Institute of Radio Engineering based on a re-examination of centuries-old formulas derived by Scottish physicist James Clarke Maxwell and later refined by German electromagnetics expert Arnold Johannes Sommerfeld. Calculations by Overholser based on the Russian paper’s information
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01] *Lockheed P38 Lightening* designed by Kelly Johnson and a source of inspiration for Harley Earl. 1938

02] *Lockheed P38 Lightening*

03] The ‘Have Blue’ stealth *prototype* developed at Lockheed using Russian mathematical calculations to evade radar detection. 1976

04] The ‘Have Blue’ stealth *prototype*. 
suggested that it was possible to build an aircraft almost entirely invisible to radar, based on the shape of the aircraft alone.\textsuperscript{31} In 1976 this idea was pitched to the Tactical Air Command at Langley, Virginia, which had become very concerned about the US Air Force’s vulnerability to Russian radar. The presentation given by Johnson was 20 minutes long. Lockheed was given US$7 million to develop a prototype for testing.\textsuperscript{32} To undertake such a radical product development program it was very important to maintain budgetary and time constraints.

“Over the years we had developed the concept of using existing hardware developed and paid for by other programs to save time and money and reduce the risk of failure in prototype projects.” Ben Rich.\textsuperscript{33}

This reduced the development costs by up to 75% of the normal development budget for such a plane. Involving all staff and disciplines in the development of the product was central to Kelly Johnson’s system.

“Our engineers were expected on the shop floor the moment their blueprints were approved. Designers lived with their designs through fabrication, assembly and testing. … Our designers spent at least a third of their day right on the shop floor … at the same time there were usually two or three shop workers up in the design room conferring on problems.” Ben Rich.\textsuperscript{34}

There was no separation between the prototype production hanger and the drawing and designing studio. When the hanger doors were opened birds would fly into the hanger and offices and dive-bomb the drawing staff. Johnson did not care. “All that mattered to him was our proximity to the production floor. ‘A stone’s throw was too far away.’ He wanted us only steps away from the shop workers, to make quick structural or parts changes or answer any of their questions.”\textsuperscript{35} Ben Rich, who was Kelly Johnson’s successor as the head of Skunk Works, as the Lockheed Advanced Development Projects unit was known, illustrates the resulting dynamic of this policy of tight proximity:

“I was separated by a connecting doorway from the office of the four structures guys, who configured the strength, loads, and weight of the airplane from preliminary design sketches. They put skin and muscle onto the original design concept. After lunch one blazing summer afternoon, the aerodynamics group in my office began talking through the open door to the structures bunch about calculations on the center of pressures of the fuselage, when suddenly I got the idea of unhinging the door between us, laying the door between a couple of desks, tacking onto it a long sheet of paper, and having all of us join in designing the optimum final design to make full use of the chines.” Ben Rich.\textsuperscript{36}

For Johnson this integration in the design process extended even to the test pilots, who all came in to see the planes being built. He saw this as necessary in order to establish an intimate relationship between builder and user. The intention was to build an expert
Ben Rich, Kelly Johnson’s successor as director of the Lockheed ‘Skunk Works’ research and prototyping facility standing in front of a F-117 Stealth fighter.
knowledge of the product by the users and build confidence in it. This was seen as crucial to the success of the design. The three extraordinary outcomes of this process were: the final products represented quantum leaps in performance and technological achievement; they could be built on time and often below budget, and they worked reliably. Achieving such predictability in a climate of extreme speculation and risk indicates the efficacy of the prototyping culture developed at Lockheed. This model was to act as the catalyst and template for the global car industry and was to make it the benchmark industry for integrating new ideas and technology into products for public consumption. In paralleling and appropriating the prototyping culture that emerged in the US aircraft industry and the structures developed by Kelly Johnson at Lockheed to fast-track innovation in the market-place, the car industry created a new typology: the concept car or dream car.

I have had no direct experience of the Skunk Works dynamic, but I have experienced first hand a very similar set-up. In the 1980s I frequently visited the factory and design studio of Cash Engineering Research in the course of developing our own projects. Started by John Cash and later run by his nephew, Anthony Kitchener, Cash Engineering manufactured industrial equipment and developed advanced prototypes for other manufacturers or for upcoming production. The drawing studio was immediately adjacent to the factory floor and there was a constant communication between the machinists and design team. Ideas were tested as full-scale, early prototypes even as they were being drawn-up as concepts. I witnessed the speed and effectiveness of this arrangement in capturing radical ideas that could only mature through the constant feedback from physical engagement with the ideas. The success of the technique was manifest in the numerous international patents Anthony and his uncle held, all in production either locally or overseas. The process contained the development costs and optimised on the innovation. It allowed Cash Engineering to maintain a business predicated on radical innovation. In the early 1990s I worked with Cash Research on a number of research and commercial design projects. The process generated radical but functioning technology demonstrator prototypes. At one stage I was keen to fabricate a prototype of a reactive computer-controlled building membrane. In a matter of days, when I returned, Anthony had found a section of building façade, fitted a gas strut opening system and connected it to a hydraulic drive and computer controller with an array of sensors. Thermal and barometric sensors informed a simple computer program of climatic changes. The window in the façade would open further or close up in order to maintain the programmed temperature required on the ‘internal’ face of the wall. There was a hose in the factory and Anthony turned it onto the open window. Detecting ‘rain’ the window snapped shut immediately. When I expressed concern about the likely success of a dangerously novel proposition at the inception of each new project Anthony would reply, “have I ever let you down?” The answer was no.
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Prior to the late 1930s in North America, the birthplace of the mass-produced car, there were generally three types of car available: cheap and ugly mass-produced cars designed by engineers, such as the Ford Model T; very expensive custom-built cars, often designed and fabricated by small companies specialising in one-off bespoke designs, which, like their European counterparts, often had begun as carriage builders. Finally there were very expensive European-imported cars. Often these more expensive cars were a fusion of production types, such as custom carriage-built bodies on European chassis or on mass-produced US chassis. A number of the carriage design companies grew into large businesses and dominated the early evolution of car design, developing ‘catalogue custom’ design-and-production runs of up to 100 units for car manufacturers, which generally only built the car chassis. Carriage design bases much of its approach on shipbuilding techniques dating back to the ancient Greeks. Teachers in US carriage design, like Andrew F. Johnson, went on to teach car design, introducing the subtleties of the art to a new generation of young designers in the early twentieth century. Through teachers like Johnson, US car designers were given early access to European thinking and techniques. Some of the rules governing carriage design addressed issues of correcting visual proportion using cheat lines and tilting vertical lines in exactly the same way classical Greek temples were built with unequal and distorted lines in order to make them appear straight or more geometrically precise. Interestingly Johnson, acknowledged as the father of US car design, never learnt to drive. From 1900 to 1925 US and European car manufacturers would exhibit their latest wares at the annual New York auto shows or salons, allowing local designers and customers to keep abreast of new, often European, trends. New York became the first centre for the US auto-styling and fashion trade because of the strong car industry cluster around New York and its prominence in the fashion industry. The shows were staged as very chic trade shows, where luxury automakers and coach builders released their designs, much like the Paris haute couturiers presenting the next season’s clothing fashions. The salons were held at the Commodore Ballroom, sometimes spilling out into the lobby. Attendance was strictly limited to an invitation-only guest list of 400 people. The general public could not attend. The salons ended in 1931 with the Depression. These salons would be revived by Harley Earl in the 1950s as public extravaganzas showing concept cars, open to all, with visitor numbers in the millions.

Early mass-produced cars were simply designed as basic carriages without the horse, in the case of Henry Ford, designed using borrowed bicycle technology, as with the early German Benz. Many fledgling automakers adopted a number of innovations from the bicycle including the lightweight seamless-steel tube frame, wire spoke wheels, pneumatic tires, roller-chain or shaft drive, band brakes, Ackerman steering and the differential. While mass-produced cars were affordable to the wider community they had little of the refinement, driveability or attention to their physical appearance that was lavished on the coach-built cars. In 1908 Ford launched the Model T and with greatly increased competition and economic pressures the industry consolidated into a smaller number of large
BACK TO THE FUTURE

In 1963, it seemed like an express post parcel sent from the future. Now the Chrysler Turbine shows us the past really was a blast.

01) Magazine spread exhorting the contemporary significance of the innovation and potential of the 1963 Chrysler Turbine concept car 44 years after its debut. Wheels Magazine Yearbook, Australia. 2007.

02) An early forum for Harley earl’s innovation. The International Motor Show at London’s Olympia. A very sombre show case in contrast to the later GM Motorama extravaganzas. 1929.

03) Cadillac roadster designed by Harley Earl while still working at Don Lee Coach and Body Works. A typical example of the innovation expected in low volume, high cost, custom-built cars at the time. 1920.
vertically-integrated companies. Pressed steel replaced wood in structural and body components and having a low new car price and high production volume became the key to automotive manufacturing success. By the mid 1920s the US car market had begun to soften and a struggle of strategies developed between the two greatest car manufacturing companies: Ford and General Motors. The industry needed to stimulate consumption of its product without raising the costs of its production.

“Ford extended its strategy of cost-cutting utility – offering a widely useful vehicle at a low and decreasing price – on which it had risen to industry dominance … But even drastic cuts in Model T prices did not stimulate sales, and Ford’s market share slipped from 50 percent in 1923 to 15 percent in 1927.”

This strategy failed because the cheap car market was being serviced by the availability of second hand cars and buyers were beginning to demand more comfort, convenience and style. Ford was forced to discontinue production of the Model T in 1927 and introduce the more stylish Model A. The alternate and ultimately triumphant strategy was devised by Alfred Sloan, the brilliant young executive vice-president of General Motors. He reasoned that competing against a giant like Ford by cost cutting on new car prices was a doomed path.

“The astute Sloane suggested another strategy – fielding a graded hierarchy of autos blanketing all markets … Sloan’s innovative product policy recognised that rising incomes and instalment buying were replacing the mass market for basic transportation at a low cost … He recommended that GM meet this demand for escalating quality with a hierarchy of better cars covering all classes, which would capture consumer’s dollars as they moved up the consumption ladder.”

Additionally GM would offer annual upgrades to each model. This very successful strategy quickly spread throughout the industry. The art of the strategy was to balance the increased cost of any real technological innovation against the need to continuously improve the apparent performance and appearance of each model each year. Sloan’s solution was to balance the costs of production and development by standardising the chassis and engines across the production range, creating a lot of parts interchangeability and to create distinctive-looking cars through body styling and design. The styling of automobiles became the key to the future success of automotive manufacturing. To put this program into effect Sloan hired Harley Earl, a Los Angeles-based car designer who had been working as the chief designer for his family’s company, the Earl Automobile Works. The Hollywood market for custom cars was booming. While working there as a designer, Earl had developed a technique of building three-dimensional models of his proposed designs in clay. He would show these models to customers for assessment and to allow them to propose changes. Earl was to bring this technique of constructing clay prototypes to the car industry along with the idea of customer engagement and soliciting feedback, thus radically changing the way cars were designed.
A clay buck being sculpted at General Motors. This generic ‘speed shape’ formed part of the design investigation process leading in part to the GM Runabout design. 1964.
“...unlike other body builders who developed their designs in wood and metal models, Earl used full-scale clay models. This pliable material resulted in designs that were less fragmented and mechanical and more unified and organic. Second, unlike many other coach builders Earl designed not just the body but all the visible parts of the car, blending them together into a coherent, integrated form. This was exactly the ‘unified appearance’ of the handcrafted cars that Sloan and Fisher wanted.”

Earl’s first styling job for General Motors was a resounding success resulting in a sporty little production Cadillac that was compared to a Hispano-Suiza, a luxury sports car from Europe, in looks, but cost one-sixth the price. In 1927 Sloan created the Art and Colour Section of General Motors, the first of its kind in the US automobile industry, and made Harley Earl its head. Earl found himself in continual conflict with the company engineers and sales staff who tried to interfere with his design proposals, believing that they had a better understanding of the limits of production engineering or a better and unique understanding and knowledge of consumer desires. Both groups resisted change. Harley Earl believed that he could create cars that unconsciously responded to and satisfied the public’s dreams and desires, communicating this through the design to buyers and users and acting to ‘dramatise progress’. He believed research and experimentation could uncover these dreams and this research would be the foundation of marketplace success. In order to increase the creative range of ideas his new department needed to develop he looked beyond the traditional employment sources – coach-builders and body shops, and hired trained architects, interior decorators, commercial illustrators and clay modellers. Rather than show drawings of the finished designs to the company executives Earl would show full-scale clay models, built over wooden armatures, complete with wheels, some up to 12 feet long.

“And over the years Earl developed techniques that made clay models look amazingly like real automobiles constructed of painted glass and chrome.”

With these highly finished models, patterns could be taken directly, greatly speeding up the production design process. He developed techniques for introducing cycles of change to car body detailing that was embedded in the design of the mass production tooling, used to manufacture the cars, to optimise on impact and minimise the cost.

In 1938 Harley Earl took his strategy for synthesising design innovation in prototype form one step further. He created an ideas car, a vehicle to prototype and test a whole raft of new engineering and styling innovations. Described by Life magazine as the ‘car of the future’, this prototype car became a source tool for technological innovation and design ideas that could progressively trickle down into the production of GM’s tiered consumer brands. This, the world’s first concept car, was the Buick Y-job. Because this car went beyond experimental, Earl took the idea for the car’s name from the aircraft industry, which used the X designation for experimental projects.

“Earl’s 1938 Buick Y-job was much more than an experiment in rounding off the edges of a box on wheels, although it certainly had dramatic and aerodynamic styling. Its cut-in running boards were concealed by its long doors, which themselves had unique flush handles. The Y-job also had such innovative and futuristic – and previously unseen – technology as a power convertible top, electric windows, hidden headlights and many other features that decades later would be part of even
02] LeSabre concept car. ‘an experimental laboratory on wheels’, that incorporated a rain-sensor activated soft top and a hydraulic jack for easy tyre changes. Harley Earl. 1951.
03] Lockheed P38 Lightening designed by Kelly Johnson and a source of inspiration for Harley Earl. 1938
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ordinary production cars. The Y-job was built to point the way to that future, and to excite those who would see it about where the automobile could take them.” 46

At the time that the Y-job was introduced to the public there were no regular automobile shows of national significance in the United States so the public’s reactions were tested through the press and public relations.

“A release declared that the Y-job ‘made possible better looking, more advanced cars produced years ahead of the time they would appear in normal evolution’.” 47

The Y-job became the first in what was to be a new trend in automotive manufacturing and design traditions, described in corporate advertising of the time as ‘experimental laboratories on wheels’ to the public, developing concept prototypes as platforms to test, exhibit and market technology and design innovation. During World War II the automobile industry’s extensive involvement in aircraft production consolidated the association in the public’s mind between the two.

In 1947 Earl began working on a series of cars designed as rolling laboratories to test and showcase the most advanced thinking and technology General Motors could produce. The first, named the XP-8 [XP stood for experimental pursuit, a designation developed for military aircraft], was developed in complete secrecy and renamed on release to the public as the LeSabre. It featured a fully automatic folding convertible roof activated by a rain sensor, a laminated aluminium honeycomb floor pan, cast magnesium body panels, four built-in hydraulic jacks, remote scanning rearview mirror and tail-fins.

“Just before the war [in 1941], Harley Earl took his studio chiefs on a field trip [to Selfridge Airforce base] to study the lines of the then new P-38 twin boom fighter plane [designed by Kelly Johnson at Lockheed. The aircraft’s engines were supplied by GM’s Allison division]. Aircraft with single tails were old hat and not all that inspiring, but the designers got all excited about the P-38, especially since they could see its twin tails as extensions of a cars rear fenders … The P-38 also prompted other aircraft motifs: Plexiglas canopies, various types of air intakes, grille spinners and bumper bullets.” 48

The success of the LeSabre to pull crowds and public attention and interest as a concept car or dream car convinced Earl to develop a steady stream of them from 1953.

“To help us get a glimpse into the future of this unfinished world of ours there has been created for the New York World’s Fair a thought provoking exhibit of the developments ahead of us. The greater and better world of tomorrow that we in America are building today.”

Introduction commentary from General Motors 1939 Futurama promotional film. ©General Motors

In 1939 General Motors participated in the New Work World’s fair, an exposition of international commerce and design based on the 1851 Great Exhibition housed in Paxton’s Crystal Palace, presenting an exhibition entitled Futurama. The 35,000 square feet of
01] **Futuristic cityscape diorama** designed by Norman Bel Geddes for the General Motors *Futrama* Pavilion at the World’s Fair. 1939.  
03] **Poster advertising the General Motors Motorama at the Waldorf-Astoria.** The image makes explicit a conceptual link to the fashion industry’s use of haute couture parades to display prototype ideas in the development of mass market ready to wear fashion. New York 1956.  
futuristic diorama, designed by Norman Bel Geddes, was a theatre in the round, presented to viewers from the perspective of an aerial ride. It provided sweeping technological and social contexts for the GM concept cars parked in a showroom at the end of the ride. While the show provided very superficial and removed scenarios it proved to be a spectacular piece of sales propaganda for General Motors.

In 1953 General Motors revived the defunct tradition of auto shows and created the GM Motorama. These annual shows became huge and elaborate travelling exhibits, transported by as many as 143 trucks to New York, Chicago, Miami, Dallas, Los Angeles and San Francisco.

“Go on, enjoy yourselves. Look around at the new dream cars built to test new ideas and your reactions to them. The way you look at this La Salle will help build tomorrow’s cars. Perhaps you dream about a low sleek car like the Biscayne. The way you look at it can put some of its features on cars of the future. The gown of multi-tone stripes by Sophie of Saks, 5th Avenue [referring to the fashion model standing beside the car] seems to go hand in glove with its contoured styling. The flair of a sports car may excite you so you might go for the Stratstar and there is room for the family to share the excitement in this six passenger hardtop. Its fresh appeal inspired this strapless gown on a white satin top and a skirt of silvery grey gauze … Last year we looked at you looking at a dream hardtop. You liked it and here is the production model, a four door with no centre columns and because last year you endorsed it so heartily all this year’s cars have another pioneering achievement; the distinctive panoramic wind shield … Your ideas help fashion the glamorous new colour combinations.”

Commentary accompanying a promotional film for the General Motors 1955 Motorama. ©General Motors

“The Motoramas’ main attractions were the GM dream-cars along with Broadway-like stage revues that featured singers, dancers and a full orchestra. GM never charged admission, and all expenses were written off to publicity. In the eight years that Motoramas were held, total attendance came to just under 10.5 million. As for the impact Motoramas had on GM’s production cars, the 1953 Chevrolet Corvette came directly from a showcar, as did the 1957 Cadillac Eldorado Brougham. And a great number of futuristic details also made their public debut in Motorama exhibits.”

Techniques originally developed for fabricating concept cars like fibreglass body construction, much lighter than the wooden master body forms they replaced and easy to change, found their way onto the production assembly floor.

“The special customised cars represent more than anything else General Motors’ long range planning in both engineering and styling” said Harlow H. Curtice, acting President for General Motors. “Our engineers and designers are continually exploring new methods and materials that can be used in the art of car and body building. In producing these special automobile bodies of glass fiber reinforced plastics we believe our stylists and engineers have demonstrated great skill and versatility. To the best of our knowledge this is the first time anyone has been able to develop such specialised techniques with this relatively new experimental material,” Mr. Curtice added.

01] *Production Chevrolet Corvette Stingrays* featuring fibreglass bodies for lightness and a sculptural body form not then possible to fabricate in metal. These cars were the first to use this prototype construction technique in a production vehicle.

02 to 08] *Stills from a General Motors film promoting the Futurama 2 exhibition* at the World’s Fair in New York. The film provided additional material to introduce the scenario-based design thinking on display. 1964.

These Motoramas formed the foundation for the re-emergence of the automotive show as an annual event to launch the new year’s product and titillate the public with new visions of the future possibilities for car design. Concept cars have remained the anchor attractions for these shows everywhere they are held. Fundamentally Harley Earland General Motors had invented a way of not only developing and testing new ideas and technology for internal assessment, but extended this strategy to gauge market reaction to these new ideas and prepare the public for their arrival. These prototypes were both technological and social artefacts that shaped the fundamental characteristics and future of the automobile. They synthesised the advantages of standardised mass production with a prototyping culture that parlayed research and development investment into marketing, publicity and customer education programs. Kelly Johnson had found ways to balance the risks of innovative research and development by mixing in standard components where he could and foregrounding the full-scale prototype in the process of designing. So too, Harley Earl understood the unique power that full-scale prototypes had to communicate the value and consequences of new ideas to both designers and users. His own designers worked side by side with the clay modellers and the working prototypes, often begun on a mass-produced chassis to speed up the development process. During intense periods of prototype construction Earl had a local restaurateur set up a café in the adjoining auditorium with a spit roast and shrimp available around the clock. As at Lockheed, multi-disciplinary design and fabrication teams worked in close-knit small groups to realise a vision of innovation led design. Central to the success of this prototyping strategy was its propositional nature. It was not about giving the public what they wanted or asking the public to design the product. It was about communicating what the product designers were capable of delivering, in a language that the public could understand: full-scale working models.

In 1964 General Motors participated in the second New Work Worlds Fair with Futurama 2. This extravagant, immersive installation extended the idea of the single product prototype or group prototype exhibition into that of an information rich-environment presenting an elaborate package of new technology and design ideas. Here entire scenarios were presented situating products within a similarly innovative context. General Motors had begun to prototype and illustrate product service systems and social processes. The Futurama pavilions were the hits of these two fairs, constantly cited as remarkable insights into future developments over a 50 year period. Starting with a global perspective of technological change and intervention, the exhibition rides swept visitors over the metropolis of tomorrow in “a journey out of this world into the world of the future,” gradually drilling down into the design and performance of everyday products at full scale. Daughter companies of General Motors like Frigidaire presented the kitchen of tomorrow replete with a phalanx of innovative domestic products like electronic ovens that could cook a roast in minutes and refrigerated carts for flexible informal entertaining. An example of this more sophisticated design approach is the GM Runabout or ‘Shopper’ showcased at the 1964 GM Futurama 2. The Runabout was designed by Preliminary Design Studio as part of a suite of three concept cars showing the broadest and most far-reaching impact of new technology.

“As I recall, the runabout was born out of studio brainstorming sessions and represented a desire to go down a totally different avenue, apart from the other two vehicles. We also felt we were entering an age of specialised vehicles, specific designs for specific purposes. We felt that most families would be driving more than one car. Of course, questions arose like why should we take the large family sedan to the local supermarket? As we honed in on our objectives, we decided the Runabout should be a small two-passenger vehicle with a small Sterling Engine [GM engineering staff was working on it at the time]; its primary

purpose was for shopping and other errands requiring short inter-city trips with only one or two passengers involved. Being lightweight and having good fuel economy were certainly strong considerations. Cargo capacity needed to be adequate for most shopping needs. One of the studio designers, Don Daharsh, came up with the idea of the plug-in shopping cart [trolley] module. I recall that he initially made a working cardboard model to test out his concept. We called the vehicle the “shopper” while in the design stage, but it was later renamed ‘Runabout’ to imply broader usage, I believe. What looks like a three-wheel configuration was originally actually four wheels with the two front wheels spaced very close together. This direction was decided upon because of aerodynamics, great manoeuvrability, and the opportunity to achieve a fresh and unique look. The small engine also offered us the opportunity to achieve this packaging. I did the initial design drawing for the external shape and had a scale clay model done which was used to sell the concept to management.”


“The GM Runabout is a completely new type of light utility car designed to ease the shopping and commuting tasks of city dweller and suburbanites of the future ... This experimental car is a highly efficient four-passenger vehicle in which every design feature and every bit of space contributes to its usefulness ... Ingenious utility features, including a built-in shopping cart system, and simple driving controls make it ideally suited for residents of the metropolitan complexes which will be prevalent in future decades. The Runabout will appeal especially to women because it is designed for the kind of shopping and other errands they run every day. But it will appeal to men, too, because it would be well suited for commuting or a quick trip to the drugstore, and its load space is perfect for golf clubs or other recreational equipment. Overall, the Runabout shows a new automobile proposition. Its unified shape emphasises its functional design. It would have stressed-skin construction, permitting thin walls and maximum interior space ... Glass surfaces dominate the upper body for maximum visibility in urban traffic ... Step-in entrance and exit would be provided through a canopy including the wrap-around window and large area of the roof and both sides. The canopy would raise and slide forward when activated by a sensor unit in the car, either from a voice command or an electric device carried by the driver. This provides “no hands” opening when the driver returns laden with packages. Two built-in shopping carts are a unique feature of the Runabout. When in place, they form an integral part of the car’s rear end. At the shopping centre, the shopper can slide a cart out from the rear [its wheels fall automatically into place] and wheel it through the store as she does her shopping. When she pushes it back into the car, the wheels retract alongside the cart body and it locks into position. When she gets home, she can wheel the cart into the house to unload it ... New lighting concepts are used in the Runabout ... Rear directional and stop lights are two narrow strips running vertically up the outside edges of the rear window ... On an overhead console are four courtesy lights for interior illumination, three indicator lights for the shopping cart system, and a release handle for the opening canopy ... A built in ‘kiddie seat’ with its own seatbelt could be flipped down from the front passenger seat”


General Motors Runabout concept car on display at the World’s Fair. Technical information and details of the design scenario provide a context for viewers. New York. 1964.
The development of this vehicle illustrates the process enshrined at General Motors and institutionalised within the car industry internationally. The design process was embedded in a propositional contextual model in which the product design responds to a constructed scenario. The designers constructed the propositional model and designed the product accordingly. It was exhibited to the public with contextual information describing and illustrating the scenario.

After exhibition at *Futurama 2* in New York this car was selected as a prop for the Stanley Kubrick film *2001: A Space Odyssey*. Kubrick, distinguished for his methodical, research-driven directorial approach, needed a car for a ‘film within film’ sequence as a futuristic but accurately believable prop that would maintain the credibility of the futuristic ‘2001’ scenario for a 1968 audience. *Runabout* was already four years old, in an environment where car-styling was updated annually, and yet was perceived as effectively convincing to a cinema audience in representing a car released 32 years into the future. This was a fitting test for the General Motors prototyping method. J. Mays, vice president of Ford Design, in charge of global car and truck design, is a contemporary practitioner of the car industry’s prototyping and concept car strategy. Mays, the designer of numerous contemporary icons like the 1994 Volkswagen *Beetle*, the 2003 *Mustang GT*, the 2002 *Ford Thunderbird*, and the 2002 Ford *GT40*, has synthesised historical and marketing research and focus testing with the practice of full-scale prototyping. In developing the 1994 Volkswagen *Beetle*:

> “Market research was an important tool that Mays used to first focus his thinking about the design. He and his team surveyed a large sample group of consumers to find out what they liked about Volkswagen.” Mays’ research provides him with a cultural overlay to guide development of the form and functional performance of the car connected to the appropriate historical and cultural associations.

> “My realisation is that the cultural aspects of a design are actually the high concept. Everything else is in a supporting role. But the high concept is, ‘How does it connect and create meaning for people who ultimately might be purchasing, driving and using it somehow?’”

Like Earl, Mays believes in a multi-disciplinary approach. Car designers must tap into architecture, product design, fashion, music and the culinary arts. Mays’ iconic designs have all begun their lives as concept cars exhibited internationally, creating powerful and positive public reaction leading to production. In emphasising the cultural dimension necessary in researching the foundation for the brief of a new artefact, Mays, like many of his design contemporaries, is acknowledging the social dimension of design. Innovation in technology and form need to make sense in terms of the processes and cultural narratives that a product or artefact is embedded in. Mays sees his design decisions and outcomes embedded in scenarios, social extensions of the physical prototype. To frame and test the prototype and scenario composite Mays has collaborated with Philips Design, who ironically have developed just such a powerful and unique prototyping method or toolkit that had its roots in the car industry!
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03 to 08] Stills from Stanley Kubrick’s 2001 showing the Orion space shuttle journey out to an orbiting space station. The GM Runabout features as the site of an in-flight entertainment sequence. The film’s protagonist, Dr Heywood Floyd sleeps through it. London. 1968.
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text

design embedded in narrative

version 1.9
Michael Trudgeon 24.01.08

zukunftsakt: prototyping the social and technological construction of space 2008
In the preface to his catalogue accompanying the groundbreaking 1972 exhibition *Italy: The New Domestic Landscape*, held at the Museum of Modern Art in New York, Emilio Ambasz observed that Italian designers in particular had begun to extend their thinking beyond a focus purely on the designed object.

> “Thus the object is no longer conceived as an isolated entity, sufficient unto itself, but rather as an integral part of the larger natural and socio-cultural environment.”

Described by Enzo Fratelli in 1988 as the “True nodal point of the period, organised to celebrate Italian design on the other side of the Atlantic, it was perhaps the first example in history of a direct correlation between the production of design and its theoretical and critical framework…” Giampiero Bosoni goes on to state, “Italian design has never lost the chance to assert its own need for research and experimentation through the numerous opportunities provided by important exhibitions.”

By the early 1970s Italy had emerged from the ruins of World War II as a pre-eminent force in product and automotive design. Italian designers had begun to frame and communicate their design activities as elements within larger scenarios, some represented or approached just as lifestyles, others as more complexly political and far reaching. The designers represented in the exhibition, many who had trained as architects, operated in a design milieu where the boundaries between the different design disciplines were blurring in terms of production processes, materiality, formal and aesthetic references and performance. Appliances could be furniture, furniture could become interior design and cars could become architecture. Some objects were designed as critical, to contradict the very idea of the role of objects. Other objects were designed to be multi-functional, flexible with multiple modes of use. These objects could become environmental ensembles rather than referring to contextual environments. Such objects also challenged notions of boundary, privacy and community. The exhibition was divided into two parts: an exhibition of products and an exhibition of especially researched, designed and produced experimental environments exploring possible scenarios of spatial and product use. This was an exhibition of full-scale prototype concept spaces – prototype domestic landscapes.

> “The design program for this exhibition was prepared with the specific intention of exploring possible approaches to these problems [of juxtaposing the condition of the contemporary against a vision of an as yet unrealised future]. One approach is to search for the long-range meanings of the rituals and ceremonies of the twenty-four hours of the day, in order to design the spaces and artefacts that give it structure. The complementary approach is to divest ourselves of the spaces and artefacts inherited by our present culture, in order to arrive at a redefinition of the ideal way to live.”


“From the point of view of the competition, the particular objective of this design program is the designing of a domestic environment, adaptable enough to permit the enactment of different private and communally imagined new events, but at the same time sufficiently fixed to permit the re-enactment of those constant aspects of our individual and social memory. The competitor is thus asked to propose microenvironments and micro events; he is asked to design the spaces and artefacts that, singly and collectively, support domestic life; and he is also to demonstrate the ceremonial and ritual patterns in which they may be used.”

Italy: the New Domestic Landscape. Design Program.

The design program went on to outline a design brief based on projected domestic patterns of use, occupant numbers, manufacturing and financial considerations, along with predictions about the increased urbanisation of society in 2000AD. Manhattan was identified as a potential template or context for a new notion of the city. It was seen as product of the second technological revolution, a city shaped by the processes of communication and information networks. Narratives and observations were presented about the family and domestic relationships between cohabitants and objects including the vacuum cleaner. Participating designers included Gae Aulenti, Ettore Sottsass Jr., Joe Colombo, Mario Bellini, Marco Zanuso, Richard Sapper, Archizoom, Superstudio and Gaetano Pesce. Each designer provided a story and description of the proposed living dynamic that their design prototype embodied and operated within. The design prototypes where all presented as collaborations between the designers and Italian manufacturers. The exhibition suggested a dynamic and rich relationship between an energetic and diverse design community and an equally engaged and energetic manufacturing community. Intellectual discourse, research, narrative, design and manufacturing were presented as an intermeshed and significant whole. The exhibited prototypes were diverse in nature and the designs actively questioned the brief and notions of a predictable, comfortable or manageable future. Supporting essays in the catalogue by Leonardo Benevolo and Vittorio Gregotti trace the key distinguishing vectors of modern Italian design culture. The roles of research and social examination are cited. Mondrian’s notion of ‘architecture as total environment’ was identified by Benevolo as the basis for much advanced Italian research into environmental or scenario-based design. Gregotti cites two events of particular significance; the launch of the 1948 Olivetti Lexikon 80 typewriter by sculptor and graphic designer, Marcello Nizzoli, heralding in the new age of Italian industrial design and the publication, in the newly created Italian design and architecture magazine Domus, of the work of Charles and Ray Eames in 1947. Nizzoli’s work was significant to Italian designers because he had worked directly, almost manually with Olivetti to create an industrial design masterpiece. He had bridged the role of the craftsman, embracing the potential for new technology and industrial production to create something functional and beautiful.

“An examination of his particular liaison with Olivetti and his personal comments gives some insight into Olivetti’s understanding of product design and the type of working liaison between designers and companies. The artists and designers worked as freelancers together with permanently employed, experienced engineers and technicians. It involved extremely close and intimate collaboration between designers and technicians, out of whose relationship and engagement a


05] Lexikon 80 typewriter designed by Marcello Nizzoli for Olivetti. Ivrea. 1948.
Olivetti prided itself on recognising the significance of fusing cultural value into its technological products. They saw design as acting as this bridge and fostered long-term and intense relationships between their engineers, artists and designers to achieve this. Domus magazine, under the direction of editor Ernesto N. Rogers, who had subtitled the magazine ‘The House of Man’, became a reference point for Italian culture in design and a key source of contact with international design. The 1947 publication of the work by Charles and Ray Eames stimulated a flurry of activity by Italian designers to engage with new materials and the ‘do-it-yourself’ prototyping ingenuity and initiative that the Eames espoused and practised.

“Shortly after their arrival in Los Angeles, the Eameses began to experiment in their apartment with molded, compound-curved plywood chair seats, continuing the work Charles had begun with Eero Saarinen [who had been working with Norman bel Geddes] at Cranbrook for the 1940 Museum of Modern Art Organic Design in Home Furnishings competition. After a series of experiments, the Eameses made a prototype chair seat produced by a laborious method of gluing together and heat bonding thin plies of wood. Charles built a device for molding plywood, which the Eameses named the ‘Kazam! Machine’. This machine greatly sped up the process of producing cured compound curved plywood forms. The apartment experiments on the prototype seat established the basic technique for molding plywood into compound curves and were the nucleus of all further developments in the ply-wood molding process. From the outset, the goal was to devise a system for mass-producing high-quality, low cost furniture.”

To develop completed chairs this technique involved an additional process called cycle-welding to bond rubber connecting elements to the wooden chair membrane. Cycle-welding was being developed by the Chrysler Motor Corporation for its car production. In 1942 the Eames approached the US Navy with a proposal to design and produce moulded plywood splints to fulfil a badly needed requirement for a light safe system to secure the broken bones of wounded soldiers and transport them off the battle field. With financial support from John Entenza the Eames won a contract to immediately produce 5000 splints. The Eames set up a studio, research and prototype production shop in 1943 on Washington Boulevard, Venice California. This former automobile repair shop remained the Eames office for 45 years. This model of design practice – meshing research, experimentation, technology sourced from different disciplines, and ongoing prototyping and engagement with manufacturers – characterised the Eames design and architecture work from then on. For the Rationalist Italian designers and architects, this model of engaging in new technological processes with new materials allowed them the exploration of new territories while maintaining a consistent ideological position devoted to performance. In 1952 at the Milan Triennale Marco Zanuso “showed a series of pieces of furniture destined to have a great future. Making use of foam rubber and nylon cord and drawing inspiration from a method of automobile design [even to the point of mimicking their performance systems], he gave a first impetus to increased contacts between the designer and industrial processes,


facing all the risks of being subject thereby to capitalistic control, but nevertheless recognising that without this updating the designer would have lost the battle on every front.”\textsuperscript{12} Vittorio Gregotti asserts that the work at this Triennale, which drew from the precedents set by Olivetti and the Eames, marked a turning point in Italian design, setting in motion new trends that would eventually find full-blown expression in \textit{Italy: The New Domestic Landscape} exhibition in 1972. In 1983 one of the pre- eminent Italian furniture companies B&B Italia published a history of their experiments and production work. By way of introduction Renzo Zorzi says:

“... there were a certain number of designers [artist – technicians], for the most part members of the really militant group in industrial design [intended here in the narrowest sense as defined above] and eager, armed as they were with a technical ability of often exceptional quality, to take on different types of problems which allowed greater creative latitude, trying out new materials which might offer new solutions, often impatient of the continual demand for pure and always more artificial [and lifeless] ‘redesign’ coming from the more backward parts of the sector, tempted by the gamble of looking again at the objects of the everyday landscape with new eyes, fresher, freed from the customary images, trying to rethink the whole matter from the beginning. They were influenced, no doubt, too, by the voices – growing louder – that came in from the street or through the windows now left open and invaded by the noise that marked the roaring Sixties [their first, more adult phase]. Finally, the technological moment was suitable. The existence and the chance of using materials such as polyurethane and expended polystyrene permitted new experiments, new ideas, hypotheses of a new environment. A departure operating not as a kind of safety exit but as a means of plunging even more deeply in.”\textsuperscript{13}

This Italian model of design fused the significance of research, experimentation, prototyping and engagement with industrial fabrication processes with the culturally particular traditions of craftsmanship, visual and plastic art and the importance of narrative and the exploration of social and political context. Practice was comfortably trans-disciplinary. Practitioners moved between product design, automotive design, architecture, painting, graphic design and sculpture. The key issues for practice lay in addressing the key role design played in a democratic social context. It could be critiqued on ideological and educational grounds and this critique formed an important part of post-war Italian culture. Drawing from Italian art movements such as Futurism and L’Arte Metafisica, Italian designers sought to address the problem of the relationship the industrially produced and designed object has to its environment. “In an industrial society, the environment is no longer created by nature but by industrial production; it is itself a consumer product.”\textsuperscript{14} Designers could act as mediators and translators of social processes through the design act. “The positive aspect of Italian formalism is that it has shown that the proper function of design is neither artistic nor technological but specifically linguistic.”\textsuperscript{15} In the 1930s and 1940s Italian architects developed and tested their ideas about designing environments through exhibition design, particularly at the Milan Triennale which presented an ideal platform for research, experimentation and discourse. Similarly the tension between expensive custom-designed objects and mass production in car-manufacturing made this also a high-profile area of design experimentation where the role of the prototype could be explored. Furthermore, in Italy the government did not support design education, other than in architecture, or design research. This focused any notion of the necessity for design progress through

research on to individual or corporate research models. For Italian designers this made the practice model demonstrated by Charles and Ray Eames very attractive as it demonstrated the potential for individual initiative and engagement. The Italian architect Andrea Branzi celebrates the culture of design through individual research and experimentation in his 1984 book The Hot House. Italian New Wave Design. The book catalogues the fluid journeys of Italian architects and designers moving between product design, art, graphics, fashion, automotive design, interior design and architecture as they experiment and research into new possibilities for design.

“The new objects, often produced in close collaboration with the research centres of the most progressive furniture manufacturers, took their place in the home without any pretence to be part of a more far-reaching, formal design aimed at bringing new order to furnishings; on the contrary they pointed, by their autonomy, to a rupture with the surrounding environment in terms of both behaviour and style.”

By the 1970s experimentation and research and an interest in the significance of total environments had given rise to the design investigation of non-visual aspects of experience: smell, temperature, air movement and sound. Described as ‘Design Primario’ or ‘qualistics’, and championed by the Italian designer Clino Castelli, this area of design investigation and mapping was to play an important role in the design of car interiors for companies like Fiat.

The significance of cultural critiquing created a cross-disciplinary discourse within the Italian design community allowing a quick assimilation of influences and ideas between the disciplines. It gave them a framework to assess each other’s work and promoted the idea that discourse was necessary and in fact required. It also allowed them to identify emerging problems before other national design cultures could. In The Material of Invention Ezio Manzini describes the problems faced by the modern designer as a result of new plastic materials that can themselves be custom designed to have any characteristics the designer desires. Nor could there be an association with any notion of intrinsic value through a material’s rarity or inaccessibility. Such freedom removes all restrictions previously imposed by less polymorphic and more traditional immutable materials. This places great demands on the designer’s decision processes as they now must select or determine every facet of a product’s composition. Without rigorous discipline, in the form of a narrative or specific set of objectives to interrogate every step in the design process, the designer can quickly descend into kitsch or styling, creating confusing or overly decorated objects merely because it is possible. Written in 1986, The Material of Invention is an important book because in writing it Manzini makes a number of impressive assumptions about design practice, all of which reflect an Italian perspective. The book assumes that designers want to progress the performance and possibilities for their products and design practice and it assumes that designers in any field will look at and borrow new ideas from any other design field. He selects a large number of innovative design products and processes from watch-making to aerospace and discusses their qualities, their potential to inform performance and their dangers. It is an encyclopaedia of innovative ideas for designers. It is a handbook for prototyping and it flagged a profound change in the focus of Italian design thinking and for the idea of prototyping. The problems of prototyping the physical object and processes were now well understood and tested, proven by the success of the Italian design industry. They could make anything they wanted. Manzini, an academic with a strong research background into the problems of environmental pollution and sustainable design was asking a bigger question: ‘Why?’ ‘Why are we designing?’ ‘What benefits will more objects bring?’ This question brought into focus the issue of the brief ‘What is it we are designing and why?’ With a cultural history of critique and concern for relationships and context this was a natural question for Italian designers to be asking.

Eugène-Emmanuel Viollet-le-Duc is credited with articulating the first coherent method for developing a design proposal for an architectural project based on careful analysis of the user’s or client’s requirements and activities. This step-by-step method for approaching the brief or program is set out in his *Histoire d’une maison* published in 1873. The founding premise is that the design of the project must be shaped by an engagement with the client’s needs through rational investigation and not shaped entirely by fanciful imaginings on the part of the architect. Once a program has been determined and reviewed a plan can be prepared in response. By this means the building is designed from the inside out. That is the volumes and arrangement have been driven by the articulation of a program. Structural and regulatory issues complete the formal arrangement. This notion of designing from the inside out had a long tradition in France and stood in opposition to the very formal, ordered geometric dictates of Italian Renaissance architecture typified by the work of Andrea Palladio and Leone Battista Alberti. While not articulated as a discrete program, the design of French châteaux and hôtels had evolved in lockstep with an evermore sophisticated social program. Rather than seeing architecture as a figure in a landscape as in the Italian Renaissance model, French architectural thinking was driven by a notion of the interior space as the figure with the building envelope as the ground.

“In the last decades of the fourteenth century a new richness appeared, and along with it a new feeling for comfort and intimacy. A magnate as powerful as the Duc de Berry could indulge in this to the full, but the development was by no means confined to him. It was stimulated, perhaps, by the twenty years of virtual peace between the two halves of the Hundred Years War. Its most remarkable manifestation was the way in which the personal accommodation of great people became more elaborate. Monarchs, bishops and grands seigneurs set in train a development that then started to percolate down the social scale. This improved accommodation involved several rooms, collectively known as the ‘logis’ of whoever occupied them [their English equivalent was similarly known as ‘lodgings’]. A great person’s logis contained at least two chambres as well as a garderobe, generous provision of latrines, and sometimes a private oratory and a study, or ‘estude’.”

French social etiquette and a preoccupation with cultural forms saw French architecture respond to and evolve around well-defined programs, giving rise to complex and varied plan-forms and interior experiences. Modular clusters of rooms could be repeated in larger houses where accommodation for multiple parallel programs was required. In the early seventeenth century the ‘appartement’ arrived as a self-contained private accommodation module, whereby complex mini programs could be nested and repeated within a larger program. As French society found new forms of intellectual and social engagement, so new rooms and spaces appeared in
01] A lady and her attendant in her cabinet de toilette, part of the typical arrangement of the emerging art of apartment design among French architects designing châteaux in 1700s. Painting by François Boucher.

02] The late eighteenth century boudoir at the château of Moncley.
response to developments in the art of conversation and the role of the hostess; the cabinet, the ruelle, the alcove [from the Spanish alcoba or alcova]. The size, separation and orientation or ordering of these rooms was dictated by the type of interaction desired, the group size and appropriate level of intimacy. The evolution of French fashionable society provided an engine for the development of French architectural planning. The design of private houses became the development of spatial sequences that supported, stimulated and inspired social interaction. Michael Dennis argues that near the end of the seventeenth century with the designing of the Baroque Hôtel form French architects had established a very sophisticated vocabulary of planning; local symmetry, re-centering, figural space, architectural promenade, designed discontinuity and hierarchical levels of poché.²⁵ Dennis argues that this sophisticated level of spatial strategising and programming underscored the approach of modernist architects like Le Corbusier, who talked about designing architecture from within and whose plans exhibit the benefits of being generated by an advanced engagement with program. This French model, while being driven by a formal sensibility derived from fashion and social conduct, was directed to creating an integrated environment that acted to facilitate and contain a process. As with Ezio Manzini and the architects creating environments for Italy: The New Domestic Landscape, developing a critical understanding of the program represented the foundation of the enterprise.
Detail of the plan of the adjoining Hôtels Crozat and d'Evreux by Pierre Bullet. Exhibiting the logic of privileging the spatial experience, the plan has none of the symmetrical grace of Italian planning of the period. This plan is driven by a social script. Paris, 1702 and 1707.

Elements of the apartment at the château of Ansous, which were designed as a nest of smaller rooms radiating from a central octagonal chambre. Provence, 1760.
In 1982 a group of Italian designers, including Andrea Branzi and Maria-Grazia Mazzocchi, decided to create a design academy in Milan that would capture the research and innovative design initiatives of the leading Italian design studios to create a teaching and research facility that both trained designers and undertook research for large companies. It would be a teaching research laboratory with a strong focus on developing the idea of the design brief and program. The Domus Academy formalised the strategies and lessons emerging from Italian design practice, so forcefully expressed in the *New Domestic Landscape* exhibition, and sought to explore the intellectual and commercial potential of these practices. The Domus Academy comprises a postgraduate design school and a research centre.

“Innovation in design is the main mission for Domus Academy. This means, in research, working with companies or in basic research to open up new areas of competence, such as interaction design, advanced product design, materials identity, design of services, corporate visions and communication, soft qualities of the environment and spaces and behaviours. These disciplines and fields of practice correspond in some ways to traditional areas of competence, such as product design, industrial design or architecture, but these traditional areas are examined in a fresh light, with new eyes and in the full recognition that something has changed – in the human beings, in the society, in the knowledge, in the role of industry, in the technology – making possible new experiences that the design culture can support.”

Marco Susani. Architect, industrial designer. Director, Domus Academy Research Centre, Milan. 1999

The Domus Academy took the Italian interest in contextually-driven, whole-of-environment focused and trans-disciplinary practice and combined this with the research, prototyping and innovation modality that had typified the Olivetti and Eames approach. The Italian culture of design critique was combined with the rational investigation and detailing of the brief or program that underscored the European modernist approach initiated by Viollet-le-Duc. Finally the exhibition component, so effectively executed in *New Domestic Landscape* gained more significance. In the course of their research into ever more complex product territories they began to acknowledge that innovation requires rich and powerful channels of communication in order to convey the significance and value of the proposed change. Domus Academy staff started to look at the concept car culture developed by Harley Earl and implemented globally by the car-manufacturing industry to introduce and test new ideas and technology in a public arena. In synthesising the research and functional briefing requirements into design outcomes at the Domus Academy, Marco Susani observes:

02] Poster advertising the Dressing Codes Competition at the Domus Academy, Milan, part of the ongoing experimental and propositional program. 2006.

“Information technology tools such as Macromedia Director demos are fundamental to simulate the scenarios of interaction concepts that are usually presented and discussed with users. We do this on a regular basis. When we have to test and evaluate physical objects, if the size and complexity allows it, we often prefer to use physical models, since the touch and weight and surface treatment are much better shown with a model than with a digital or paper rendering … take design as an intellectual act of narration. Design is not so much about solving problems, it is about telling interesting stories that create positive experiences for people. This is valid for a nice chair, for a piece of architecture and even for a good multimedia system or a software tool.”

The model of design research and development espoused by the Domus Academy also reflects the Italian design community’s ties to manufacturing and industry. Italian designers, unsupported by government, turned to industry to fund their design research. In doing this they located the value of their research within a commercial territory. This is reflected not only in their desire to exhibit their design experimentation in public forums but also in the pursuit of commercial partnerships to exploit their design thinking. This is nowhere better illustrated than in the relationship between the Domus Academy, Domus professors and the Dutch lighting and electronics company Philips.
text • design embedded in narrative
In 1995 Alessandro Mendini, Stefano Marazano and Andrea Branzi from the Domus Academy held a group of workshops with Philips’ designers to explore future design scenarios for television. The workshops were designed to open up the way television might be conceptualised but with an eye to transferring this thinking into production. They represented an ideal forum to demonstrate the effectiveness of the Domus model for soliciting innovation through combining a prototyping process and careful research with the development of contextual narratives and scenarios to ground design thinking.

“In those workshops, young designers [all from Philips] explored ways of expressing ideas about the future of the medium in the design of the next generation of televisions. In doing so, they avoided the temptation to indulge in science fiction, accepting the confines of today’s – or at least tomorrow morning’s – technology. Their designs, focusing on a single portable format, are incredibly varied. In graphic form, accompanied by epigrammatic comments, they express their vision of the near future. One significant aspect of the workshops was the context in which they were held. They were experimental, in that they brought together the respective skills and strengths, in many ways complementary, of a major industrial producer and small specialist design studios.”

In the workshops the designs were explored and presented as full-scale prototypes and also presented in filmic scenarios and storyboards. The idea of identifying and communicating the context, environment or scenario could be seen as a natural expression or extension of an Italian cultural impulse that had shaped Italian design thinking for a very long time. Here that dimension of design engagement was mobilised to carefully frame and articulate the performance and consequences of the new design approaches and technology innovations. If this made sense from a cultural point of view it made even more sense from the perspective of situating and communicating unfamiliar design strategies. Previous prototype projects had used drawings or occasionally still photography to illustrate the design dynamic. However, this work, such as the photomontages exhibited by Superstudio in *Italy: The New Domestic Landscape* exhibition, owed more to theatre or cinema than to the history of illustration and narrative painting. Earlier experimental collaborations between Domus staff, Olivetti and Philips, such as the workplace-focused *Workshop* had only featured still images of the prototypes devoid of background or context and hand drawings explaining the operation processes. The ‘scenario mapping’ or ‘envisioning’, as this process has been termed, acts as a bridge between the novel, innovative and unfamiliar product and an audience’s existing experience. The full-scale prototype allows an audience, client or potential user to respond to the physical presence and impact of the design without having to translate information from drawings or pictures. The scenario or narrative
01] Still from a narrative video. Here’s looking at you kid, a television prototype designed to also act as a mirror. Designed by students during a scenario-based design workshop conducted by Alessandro Mendini described in Stefano Manzano’s book Television at the Crossroads. The Netherlands. 1995.


provides a kind of entertaining ‘users’-manual’ to draw the design into a field of references that the viewer might already have. Few objects or spaces reveal their full potential from a quick glance. Making the prototype object the centre of a theatre piece allows the designer to demonstrate all of the features and advantages of the design without a potential user spending months testing the prototype. In this process the prototyping culture was being married to a communication-based theatrical or cinematic technique. This workshop studio project was not only about designing innovation into television sets; it had literally become television, constructing programs about the design prototypes.

By 1996 Stefano Marzano, a former director of the Domus Academy, had been made the senior director of Philips Corporate Design. Philips embarked on an ambitious exhibition and publication project to research and prototype a full range of domestic and professional products. The project Vision of the Future synthesised the concept car/New Domestic Landscape exhibition strategy with elaborate scenario-based communication. All of the ideas were explored and developed as prototypes for exhibition and then became props in elaborate films locating the performance of the design within elaborate theatrical performances of imaging future life. By this stage the role a prototype ‘played’ as part of an explanatory drama was more significant, in terms of describing and engaging with the design proposal, than as a mute full-scale object on display. Images of the exhibition suggest a much less persuasive experience than the visual impact of the accompanying catalogue. The design prototypes were grouped into narrative packages that addressed complex lifestyle problems and events. The theatrical narratives and the scenarios they mapped represent 60% of the catalogue’s content, the remaining part being saved for delicious studio portraits of the prototypes. In Vision of the Future the social process that underscores the operation of each design is presented not only as a bridge to understanding the design but as the far more significant dimension of the design. The emphasis was shifting from object to process and the prototyping modality was being evolved to address this change. The objects were being addressed as social artefacts. For Philips, like General Motors before them, designing products or environments for public exhibition needed to have a commercial return to justify the expense. The cost of the research projects needed to show a return through increased sales. This commercial reality was not perceived as an impediment by the Italian designers shepherding the project. Manufacturers have always been significant parties contributing to the Italian cultural critique of design. The need to explain new product directions from the point of view of engaging new customers fitted comfortably with the Italian impulse to contextualise design gestures. Philips understood that by not imposing short term or conservative limits or parameters onto the research and prototyping programs, much richer and sometimes unexpectedly valuable outcomes would emerge. Also like General Motors, Philips recognised that the gesture of exhibiting believable prototypes of future products was seen by the public as the company making some commitment to a collective future, as well as providing engaging and entertaining content.

“What will life be like in 2005? What will people want to do in the future? What will interest them and make their lives more fulfilled? Companies like Philips, wanting to help shape the future, are in a position to propose ways in which new developments in technology could improve the quality of people’s lives.”

Stefano Manzaro, senior director of Philips corporate design, identified the objectives for Philips as being to stimulate the imagination

of the Philips company community, explore new technological opportunities within emerging socio-cultural frameworks, demonstrate a commitment to better products and “to demonstrate Philips’ commitment and ability to make a positive contribution to the future by offering products, services and software that enhance the quality of peoples lives.” Marzano identifies the research, ‘making the concepts tangible’ and ‘communicating the results’ as central to the project. This combination is critical. For General Motors, Domus Academy and Philips these enterprises have no value in any of the identified categories if they are not undertaken with rigour. The outcomes have to be believable. Superficial or weak attempts to exhibit experimentation demonstrate a superficial and potentially duplicitous streak in the generating or exhibiting body. The results need to support discourse and critique.

Speaking about the design methodology at Philips, Marzano says, “Firstly it’s research-based. This is because it’s important for our actions and decisions to be taken on the basis of solid research and understanding … Of course, designers’ intuitions are important, but they need to be validated by research and experimentation. Design issues are often not a matter of opinion but can be settled by practical research – if only you take the trouble to do it. And if you do, the result provides a much more reliable basis on which to make investments than one of unsupported intuition.”

“Our human sciences experts act as sensors for societal changes, observing and understanding what people’s motivations are in particular circumstances and at specific times. We take the results of this research as a starting point, synthesising and ‘translating’ them into something that is concrete and tangible. For example, based on our research into social trends and technological developments, we develop realistic product concepts and scenarios in which they could be used. We don’t keep these in a drawer, but present them to the public and the media in exhibitions. This way, we get people’s feedback on our interpretation of the information our ‘sensors’ have picked up. It allows us to validate our hypotheses about what people see as a desirable quality of life. We’re effectively asking, ‘Is this what you meant?’

Marzano cites this process as a dialogue between users and the designers. He describes this process of engaging the public in prototyping design innovation as creating ‘memories of the future’ whereby the public can participate in responding to new design ideas and become accustomed to these ideas. The results of this process in a commercial sense for Philips are best demonstrated by their designs for magnetic resonance-imaging equipment for medical use. The design process has allowed them to reconceptualise the experience and then the environment for this potentially intimidating medical procedure. For General Motors the rigour was supplied by a very small group of visionaries: Harley Earl and later Bill Mitchell, whose bullyingly obsessive commitment to the project drove a very high level of work. Behind Italy: The New Domestic Landscape was the Italian cultural critique, unafraid of crossing disciplinary borders. For the Domus Academy and Philips it was the teaching environment of the academy; design thinking operating in the classroom, subject to the rigours of academic scrutiny.

In 1991 I attended the first Domus Winter School held in Australia, auspiced by the Centre For Design at RMIT in Melbourne. A number of professors from the Domus Academy in Milan, including Ezio Manzini and Marco Susani, came out to take what was effectively a

postgraduate design studio for design practitioners and academics. The studio began with a series of lectures by Manzini and Susani on the cultural context and technological opportunities presented by the problem we were working on: “The table as a Scenario of Complexity.” Over a two-week period we explored scenarios, undertook specific research in relation to our design proposals, tested these proposals against scenario mapping, undertook technological research, created storyboards and built simple prototypes for an exhibition at the conclusion of the studio. From my own teaching experience at RMIT in architecture and interior design I could see clearly how the culture of the tertiary or university classroom or studio was ideally suited to a group investigation of a design problem requiring an innovative solution which then requires communication to an audience. Engaging, stimulating and provoking creative activity from groups of people requires a particular cocktail of inspiration, anarchy and discipline. If the expectation of a very high standard of production is not demonstrated in the appropriate way, or if the group dynamic does not comfortably evince creative responses from the participants, or the overall proposition is not introduced in an engaging way the classroom-as-creative-engine dies. My own experience of the academy is limited to a small number of polytechnical colleges and universities in Melbourne, Sydney, Southampton and London. This limited experience has led me, however, to trust the methods I have seen used in these tertiary education centres to deliver reasonably predicable results in what is a very risky business – innovation. Engaged in the Domus Winter School I was struck by the realisation that the designers from Domus were using an educational model for commercial ends. The process we undertook was exactly the same as the ones documented in 'Workshop' and Vision of the Future. The Domus staff described to us commercial projects they were undertaking with Fiat, Olivetti, Japanese architecture clients, 3M, Sharp and Mitusbishi. It was clear from the descriptions given of the processes involved that they were the same ones we were engaged in. In each case the process was centred on researching a scenario, not just designing an already determined specific project. The framework was propositional and experimental. The Domus Academy was using the academic studio system to engage with commercial clients in the development of innovative and risky projects. The notion that the academic teaching environment was somehow not up to or able to contribute to the cut and thrust of commercial design practice was turned on its head by this situation. Not only were the Domus staff successful practitioners in their own right, they were exporting educational models of knowledge generation straight out of the classroom and into the commercial domain. From my own commercial experience I understood that demonstrating and communicating innovation was harder than just conceiving it in the commercial environment. The commercial world is preoccupied with risk and the ‘real-politique’ of commercial survival. The commercial sector does not invest heavily in developing strategies for innovation. There is generally no time and the talents required for this work are not the same as those required to ensure day-to-day commercial survival. For the Domus Academy the solution was not to re-invent such a process but borrow them. By this logic the academy then stands as a significant contributor to imparting strategies for controlling risk and engendering some predictability when you are engaged in innovation.
Philips MRI facility. The machine acts as a generator of an ambient experience as part of its operation. This process is designed to improve the experience of the patient and is based on research from the Nebula prototype, part of the Noah’s Ark ‘experience design’ research program in 2000. The Netherlands. 2004.

Philips MRI facility. Programmable ceiling projection system designed to entertain patients and reduce the trauma of the experience. The Netherlands 2004.

Model MRI facility used for preparing children for the procedure. The Netherlands 2004.

Staying alive. A prototype wearable computer with integrated GPS and atmospheric sensing. This garment was part of a broad research and prototyping program fusing clothing and ICT technologies. Philips. The Netherlands. 2000.

Ezio Manzini and Francois Jégou have taken the methodologies of prototyping and scenario mapping developed at the Domus Academy one stage further; developing strategies for the prototyping of processes rather than objects in a project called ‘The Sustainable Everyday’. This has been born out of Ezio Manzini’s focus on developing modes of sustainable production and consumption. For Manzini a key means to reduce the global impact of the environmental pollution arising from western systems of consumption is to substitute the purchasing of products for the purchasing of services. For Manzini it is critical that any notion of reducing environmental pollution through changing the way people consume must be made with a concomitant increase in the quality of customer experience and satisfaction, not a reduction. He believes that change in the marketplace will only be accepted if it conforms to the prevalent expectation that change must bring an improvement to performance of a product. His focus then, along with Jégou, has been to locate products within service networks, often utilising information technology, to create appealing and rich service models where the operation of the network can substitute for the operation of multiple products. These service networks are called ‘product service systems’. In developing the designs of product service systems at the Politecnico di Milano Manzini and Jégou have adapted the prototyping model in order to construct and test prototypes of social processes. Here the focus of the scenario is not an object and its uses but a social and technical network designed to provide a service. Jégou, quoting Herman Kahn working for the Rand Corporation as the first scenario builder, defined a scenario as a description of a possible alternative future, aimed at stimulating concrete actions in the present in order to control and orient the future. He argues that simulation and testing of the proposed product service system is far more valuable than merely trying to pursue societal change through policy making. The projects undertaken by Jégou and Manzini have ranged from neighbourhood food services networks to regional technology sharing scenarios. In order to construct a prototype product service system scenario the focus becomes one of addressing the modelling of social innovation. Jégou and Manzini grabbed a range of existing tools or semi-existing tools and created a design plan, a series of processes adapted from interaction design, services marketing and blueprinting. He compares his process to the car industry’s use of concept cars.

“They are not to be implemented. They are there to open a dialogue with users and to be tested to see the potential of a new concept, new forms of technology and also to put the seeds of a possible evolution into people’s heads. To allow it to exist. To give visibility to the ideas.”

Jégou argues, like Marzano, that we need to become accustomed to new solutions if we are to change, and it is important to enter


into a conversation with users and, like the exhibition of the concept car, allow people to get the idea or refuse it. The point of the process is to speed up the process of implementing change. For Jégou and Manzini this is important because they see the problem of environmentally sustainable consumption as a gravely pressing one.

Operating within this set of requirements the prototyping focus moves to scripts, role-playing, focus-testing, market research and interviews. The objectives are to identify the key actors, understand the relational and operative dynamics and find ways of modelling the emerging system that are valuable, accurate and manageable. The intention is to orient the action and understand emerging opportunities revealed by the social prototyping process. Jégou sees this kind of prototyping as much harder than prototyping a chair. It is a social artefact. Prototyping a new product service system requires prototyping all of the elements of the system. Invariably the mapping of the scenario will require the collection of enormous amounts of data to construct a model of the potential actors and their relationships within the system. Jégou and Manzini have developed a number of techniques to construct and test social prototypes. These mirror the technical drawing tools of industrial design and architecture. The process can be seen from the ‘front view’, that is, as seen by the user. It can be seen from the ‘top view’, as a view of the entire organisation and it can be seen along a timeline following the progress of the interactions. Mocked up advertisements for proposed services to quickly engage in user dialogue, system maps to show the relational vectors and operation elements and advertising storyboards are used. ‘Video sketchbook’ is another tool to quickly engage users in role playing to test and evolve process elements of the system and record the results for analysis. They argue for the need for quick and dirty prototyping solutions that are easy to use and able to change the visualisation of the process on the spot. Users are asked to build their own stories in response to the scenario as a way of soliciting further feedback. The final result of this designing process is the construction of a movie integrating the user stories and showing the system from all of the different user vantage points. This is shown back to the stakeholders as the social process prototype of the design. For Manzini and Jegou this approach represented the logical intersection of three things: the need to engender design innovation in the face of global warming to change patterns of consumption, appropriation of prototyping and testing practices from the car industry; and finally the need to translate this practice into one focused on prototyping and testing social and technical processes within a system of products and social networks.
02] Diagrammatic representation of the scenario based product-service-system prototyping regime as it progresses from the initial idea stage to final implementation. Ezio Manzini and Francois Jégou. Milan 2007.
In 2002, after a decade of pursuing the idea of design innovation by developing product prototypes and architectural concepts for exhibition, I attempted to parlay this approach into our first architectural commission. I soon encountered a very similar problem to the one faced by Manzini and Jégou. Resulting from my long interest with and investigation of US concept car development and their related strategic exhibition, to present design innovation in order to solicit interest and feedback I had managed to attract a client who wanted this kind of innovation embedded in an architectural project. The process of design based on fundamental research of historical and cultural precedents and technological opportunities proceeded well until we presented our first design to the extended network of the client’s stakeholders. They rejected the design out of hand. In what I could only describe as a state of crisis I began to slowly construct a series of strategies to engage with this group in developing a design that maintained the engagement with innovation and combined this with an engagement in the processes that constituted the architecture as a social artefact. The processes had to be identified, researched and prototyped just like the physical elements. The processes, once designed, had to be tested and reviewed and then act as key determining factors of the final architectural design. I quickly assembled a grab-bag of techniques that I was familiar with. These included; focus testing and market research techniques from my decade of work in advertising, work used at the time to fund the earlier program of prototypes for exhibition; scenario mapping, from my exposure to the Domus Academy through the RMIT Centre for Design Winter Schools in 1991; and design-studio teaching which is often directed to focussing a group on a design problem demanding innovative thinking.

In 2000, working with Chris Ryan at the International Institute for Industrial Environmental Economics [IIIEE] at Lund University in Sweden we had developed a design strategy to engage with the uniquely consensus-based social dynamic of Swedish society. We had been asked to create a corporate graphics package and multimedia presentation about this environmental research facility for the Hanover 2000 Expo. In anticipation of the challenges that full consensus-based decision-making would produce we developed a design strategy called ‘open studio’. Our design studio was set up on site with the client, within easy reach of all parties. We invited everybody to visit us constantly and always left the door open. We also presented our work in progress at weekly breakfast forums for comment and feedback. With constant client interaction and the transparency of our process we progressed the design in record time and got full agreement on a quite radical solution that required some difficult decisions on the part of the client.

With these strategies the desire was to unpack the much more complex social dimension of our architectural design problem. Our client wanted innovation but not without more extensive consultation and comfort. I had learnt a first lesson, one of many, that change has to be introduced in a way that makes real sense in every detail for users. The real significance of the feedback process embedded in prototype exhibition was dawning. Unaware of the work Manzini and Jégou were about to embark on, I realised that a much more
01] Introductory brochure to the International Institute for Industrial Environmental Economics at Lund University in Sweden showcasing the new corporate design elements developed by Crowd Productions. Graphic design: Crowd Productions. 2001.

elaborate system of communication was needed with our client along with a much more sophisticated model of our client. This was not designing a structure, it was designing an environment that facilitated a set of processes and I was designing or co-designing the processes that were going on in the spaces. What was being designed was an event not a static or fixed product. The architecture would need to be a dynamic container responding to and facilitating the social processes. This was designing a kind of theatre set. I had no desire to move from architecture to sociology or psychology to solve this problem but the territory of action had been redefined in my own mind. It needed a much better way of thinking about the nature and structure of clients as individuals with individual perspectives and as a system. I needed to be able to map an organisation and to end up with a script that addressed this organisational model, how it might change and how the new processes and systems would work with it. The strategies to address these problems emerged very slowly and they revolved around the idea of architecture and space as primarily social artefacts. I had been fascinated by the work of Cedric Price from an early age and understood that he was addressing architecture as an event-based discipline. He represented a model of the ultimate architect. But what was needed now was a practical model to engage with a client as an organism, model the organism, present, prototype and test changes to that organism in a way that gave all involved comfort with the process and a sign off to proceed with construction. In reflecting on these problems I encountered the writings of English architect and teacher Robin Evans, followed by the work of Bruno Latour and John Law on Actor Network Theory and finally, from within the field of science and technology studies, the theory of the Social Construction of Technology and the ‘social construction of the artefact’. I did not study these sources exhaustively or carefully. The ideas were encountered while teaching Interior Design and Industrial Design at RMIT. I scanned them and grabbed what I needed.

In his book Translations from Drawing to Building and Other Essays, Robin Evans examines the origins of a number of deeply institutionalised conventions in architecture and urban planning. He discusses the social rather than physical or logistical nature of their origins. These conventions are so central to most architectural thinking that they are never questioned or re-examined, like the idea of the corridor or the suburban home. These conventions turn out to be much more ephemeral than generally understood and often the product of social processes and thinking which have long since been sublimated within the convention and no longer able to be easily addressed. As an example, Evans identifies the corridor as first appearing in architecture in 1597 at Beaufort House in Chelsea, England, designed by John Thorpe. Entirely unlike colonnades, entry staircases, landings and other flow spaces, the corridor is a device for removing traffic from rooms. The logic of the corridor was to separate the inhabitants in terminal rooms allowing them the distinctly Enlightenment luxury of contemplation and developing an inner life rather than building their personalities through the endless chaotic social rough and tumble you would expect to experience in the interconnected matrix of an Italian Renaissance palazzo. The corridor was a product of the intellectual and social condition of the Enlightenment, not rational planning, structural or economic or even artistic considerations, according to Evans. Evans applies a similar form of analysis to the evolution of the garden suburb, seeing it rooted in Victorian moral and ethical concerns and the emergence of socio-graphical mapping techniques. The suburb and the detached single family home are not ancient time-honoured archetypes, absolute and unchanging. They are in fact quite new and while highly desirable for all sorts of reasons, the notion that they represent an absolute formula for the design and urban planning of our housing and the welfare of our populous is ludicrous. The rookeries and squalor of Victorian England provided
the ammunition for a philanthropic and moral crusade to index moral degeneration, crime and poverty with urban population density, living conditions and living arrangements to reveal the intimate bond between urban density and moral degradation. These ideas fuelled a Victorian desire for change in domestic arrangements. ‘Where there are bad homes there are bad hearts and bad deeds …’ In the 1840s domestic architecture was for the first time deployed directly against the twin evils of vice and ill health in towns. Charles Booth’s Descriptive Maps of London of 1889, overlaying housing typologies and the relative degeneracy of the occupants amounted to the conception of a moral geography. ‘The layout of the house mapped out the moral condition of the family and the street layout mapped the moral condition of the community.’ Model house projects where developed to circumscribe the movements and intercourse between occupants to reform and improve their moral condition, creating a more isolated, insular domesticity. These created whole new housing typologies. Three became the magic number for the number of family bedrooms as it ensured the essential moral separation and secrecy. This fundamental logic was then extended to the street, ensuring appropriate separation between the houses and house and street, giving a moral structure to public space. From this logic the suburb emerges as a figure and ground composition where discrete, articulated building objects sit in a continuous landscape, a moral moat. The layout of the house mapped out the moral condition of the family and the street layout mapped the moral condition of the community. From this logic the suburb emerges as a figure and ground composition where discrete, articulated building objects sit in a continuous landscape, a moral moat.39

Robin Evans’ critique suggested a way to change conventions. Since they are not set and wrought of an immutable logic they can be addressed and unpacked for discussion and possible change. What Evans’ approach implicitly suggests is that by a process of such an address, an arcane and disciplinary specific phenomenon like a corridor can become the subject of discussion centred on social processes and systems. He had rendered architectural conventions as social artefacts. Such a discourse could be applied to any design element of an architectural project, reviewed and, where it was useful, changed. By this technique the changes could be instigated from discussion about the processes and any change would be preceded by an understanding on the part of the client stakeholders that they had participated in and ratified the reasoning behind the change. This provided a valuable platform for questioning existing structures and operational systems from individual user’s perspectives, but I then needed a way to approach modelling the overall ‘client system’.

From a more traditional management perspective W. Edwards Deming and Frederick Winslow Taylor had proposed and applied machine-like organising structures to social systems to understand and modify or improve them. Lewis Mumford, in his 1966 book Technics and Human Development, argued that the idea of the machine as a system of interchangeable parts was not a new idea but a very ancient one, one that began as an observation about possible ways to organise or orchestrate a society. He saw its likely origins in the advanced astronomical modelling made possible in ancient civilisations by the invention of writing which allowed for the keeping of accurate records over many life times. This longer time frame revealed previously invisible and intricate patterns and cycles in celestial activity. He suggests that Classical Greek culture extended the potential of this idea of the adjustable contribution of interchangeable parts with the privileging of individual creative innovation, suppressed in most cultures. Western culture is unique in its institutionalisation of innovation, he asserts. Fredrick Taylor took this idea of social-organisation-as-machine literally and in addressing the workplace broke every job down into its constituent parts, sliced, trimmed and timed them, remoulding them into the most efficient system possible. Although Taylor saw knowledge as more important than muscle power, as the primary resource, this reductivist approach heralded as ‘The principles of scientific management’, greatly influencing Henry Ford, no longer holds any
useful key to acceptably promoting or facilitating change. Edwards Deming, the US academic sent to Japan after World War II to assist in planning Japanese reconstruction, developed a much more sophisticated version of this model called the Deming Cycle or PDSA cycle. Placing the notion of co-operation at the centre the model sought to reduce all productive systems to four stages of a continuous cycle: plan, do, study, action. Modelled on a more socially engaged set of principles it inspired the Toyota Lean Production System which transformed the global car industry, allowing it to react to change much more quickly. It was very close to Clarence Kelly Johnson’s rules for the Skunk Works operation. However, it would eventually become the ‘Total Quality Management’ system, and be reduced to a small stamp at the bottom of product labels.

The problem I was encountering was that clients were not clear and carefully organised systems; they were chaotic, ambiguous and contradictory. I needed a model for social systems that was inherently complex and highly disorganised. In 2003 I discovered Actor Network Theory or ANT. ANT was developed by John Law at Lancaster University and Bruno Latour at Ecole Nationale Supérieure des Mines in Paris. This model proposed a highly complex forensic model for social and technical processes. They argued that the key actors or drivers operating within any system could not be superficially determined. Often the most significant factor shaping a system could actually be one that is extraneous to the acknowledged model. The success of a biscuit factory might be its proximity to a river which creates the perfect humidity for crunchy but firm biscuits as they dry. The factory is moved to another location and every detail is replicated and yet the biscuits are no longer as good. Until someone detects the minute but profound significance of the river, which plays no obvious role in the factory’s operation, no amount of re-jigging the new production line will remedy the problem. This provided a framework for approaching system models in a way which resonated with my experience. The solution was to act like a member of a Crime Scene Investigation Unit and collect as much data as I could. Even the most extraneous information may hold vital clues as to how a system or network operates and how it will behave or how it might be possible to meaningfully change it for the better. For a social process the best strategy was to interview everybody, including the cleaners, and build up the richest picture of the relational dynamics at work. For this, all of the existing market research and advertising data collection and communicating techniques were easily applicable, along with studio teaching and the experience in Sweden with the ‘open studio’. From advertising came the tools and artefacts developed to facilitate communication and feedback. From the academy came the processes for unpacking and analysing responses and applying a framework of enquiry.

Finally I encountered the Social Construction of Technology model. This provided a way to view any project as a social construction, one that could be best understood by the relational dynamics of the actors. The social dynamic made the system what it was. The physical space could reflect, assist or hinder the social dynamic but the principal weight of the system was in that social dynamic. This gave me a framework for abstract social systems that allowed me to go about constructing models of them, to understand them, represent them, propose changes as new designs and then prototype these designs in a system and process-focused way. They gave me the structure to develop a social prototyping method suitable for applying to the design of architectural projects where innovation and change was required. The social prototyping we undertook at Crowd Productions produced an innovation toolkit: The “Ella” scenario narrative, the technology/experience matrix, the experience path map, the experience path matrix, the cardboard box theatre set, the real-time fly-through experience path, the adjacency plan, the reverse brief, continuous reporting, the
method diagram ‘speaking in the language of the client’, technology demonstrators and the full theatre set and training facility. The process of development took five years from 2002 to 2006 and underwent many additions as each new version revealed new gaps. The key breakthroughs for me were realising that I needed to prototype social processes as well as technology innovations and that architecture could be modelled as a primarily social and event-based discipline.

In *Your Private Sky*, Richard Buckminster Fuller describes how the interaction of social convention and technological innovation can generate the possibility of change, driven by changed social processes. He recounts the condition of old mid-western American farm settlements. They consisted of many buildings, each with a specific function: barn, stables, corncribs, wet fermenting ensilage, woodshed, cold cellar etc. Each required elaborate and time-consuming maintenance. With the advent of efficient farm machinery in the early twentieth century, the American farmer

> “finally had time enough before twilight to sit and look at the scenery and he built porches around his house. As he began to have more and more time, he began to put screens on the porches. With ever more time, he began to put glass windows on the porches. Sitting on his porches, he watched other people go by. Then came the automobile, which in effect put wheels under his glassed-in front porch, so instead of waiting to see people go by he drove down the street to see the people. In a very real sense the automobile was part of the house, broken off, like hydra cells going off on a life of their own. The young people who used to court in the parlour, then on the glassed-in front porch, now began to do their courting in the automobile, or the porch on wheels. Today the young people do their courting in their parlour on wheels, driving it to the drive-in theatre. Because we are conditioned to think of the house as static, we fail to realise that the automobile is as much a part of the house as is the addition of the woodshed.”

By this description the architecture is defined by the users’ patterns of behaviour, their rituals and social and technical processes. The architectural framing cannot be circumscribed by the activities of a particular discipline or the limits of a particular technological platform. The patterns of use can jump unpredictably from one technology platform or territory of a particular design discipline to any other. In engaging with designing for change this lack of a boundary for defining how an activity might evolve is a critical consideration. It reinforces the logic of a transdisciplinary approach and the very dynamic impact that a social model has on defining the practice of designing space. With the clarity of an historical observation it raises the intertwined and unstable character of the design problem that emerges when you frame architecture is an event.
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version 2.4
Michael Trudgeon 23.01.08

zukunftsMusik: prototyping the social and technological construction of space 2008
In framing the context for my own practice in these essays the intention has been to document the progress of a set of ideas. These ideas originally provided me with a methodology for the physical development and execution of innovative design outcomes. However they were, in an entirely unanticipated or unexpected way, transmogrified into a template for addressing the far more complex and pressing problem of developing and verifying the brief or program that underwrote the design projects I was undertaking. In 2002 when I began to assemble the beginnings of this document the focus was on the singular and prescient examples that demonstrated new technologies in dramatic and innovative ways, ways that to me signalled significant new directions in design, pertinent to the direction I was heading in. I was interested in the way designers like Luigi Colani could combine radical technological innovation with a uniquely dramatic biomorphic envelope, invoking both the presence of the human user and the transformative possibilities of the technology. Colani, the recognised author of contemporary biomorphism in product and car design, had committed himself to a highly theatrical and experimental practice. In 1985 with the publication of his biomorphically styled Canon camera series in the English magazine *Design* he shocked the design world with their curvaceous and characterful assault on the then ubiquitous black box.

From 1994 to 2000 at Crowd Productions, as part of our design practice, we had delivered a number of exhibition and prototype projects, where all of the focus had been on the impact and innovative nature of our design and technology strategies. Our approach had been very influenced by that of Luigi Colani. I was convinced that achieving and underwriting the new territory of operation for new technologies and practices was to be our focus. We sourced new technologies and researched the potential for new practices. We packaged and presented these and the result was change. In 2001 we began to extend this process to the engagement of architectural projects with extensive client and stakeholder groups. I had no inkling of the significance that the social processes arising from the presentation of change itself would play. Five years later in 2007 the social dimension of the design process had come to completely consume our time. Managing the destabilising and chaotic impact of invoking change for our clients, through introducing design innovation, became the principal territory for using these same tools, but now as tools for shaping and testing social processes and systems. Our focus moved from product, or design outcomes, to program definition and testing or creating the script driving the project and the activities or events contained within our designed space or building. In pressing for the evolution and uptake of new technology we were now focused on the content of the design package. All of the content and action had to be part of a coherent program and be manifest to our clients as a coherent spatial and operational experience. The new technology could only be introduced or justified in terms of these elements. In the model of Actor Network Theory described in the previous essay text the design process itself is an actor, as is the new technology, along with change and the idea of innovation. We were designing for clients who acknowledged that they were in a state of flux – or needed to be – and while I had assumed that this situation promoted


the opportunities for introducing innovation I had not registered the true and complex nature of our situation. We needed a script of our own to manage the social processes of the design engagement and interaction with our clients. In slowly translating the prototyping tools from the automotive industry and the concept car we were in part reinventing many of the tools of the theatre. We had become set designers, orchestrators of rehearsals, dramaturgs and coaches. We wrote and studied scripts. We assembled and advised ensembles of actors. We identified and shaped roles. We built theatre sets for our clients to explore, role-play in and acquaint themselves with activities and technologies. And the process was dramatic. The client was in crisis, there was no time and there was a lot of angst. Our toolkit for prototyping social processes had to bring clarity, it had to bring order, it had to bring trust and it had to reduce the collective sense of risk.

This focus on the process of architectural design as one of engaging in shaping a dynamic or fluid social artefact raised the issue of how we as a practice perceived or understood the territory of architecture itself. Although our initial energy had been directed to creating a powerful formal expression of the capabilities of new technology and new processes, celebrating change, and we were drawn to modular and flexible solutions, we were still perceiving the form as capturing this sense of celebration and change. As we persisted in visiting the idea of change and innovation on our clients, more and more the innovative dynamic was being invested in the changed processes and systems. The physical characteristics were not so much formal, linguistic devices developed by us but were evolving from the dynamic of the design process that was developing around fabricating the new social artefact, the new system and the network of actors. The architecture was evolving as a container for the action. However, it was also an actor and it was not passive. From the beginning of this design process we had been looking for new roles for architecture to inform or enhance the experience and performance of the constructed environment. My own conception about how architecture ought to perform or respond to the demands of the project and the user were primarily shaped by the work of English architect Cedric Price and Czechoslovakian sceneographer Joseph Svododa. Observations by Gottfried Semper, the nineteenth-century German architect, and Marshall McLuhan resonated with their invocation of architectural space as active. They suggested that architecture’s principal significance was vested in the surfaces and they suggested a theoretical platform from which to explore and push for the introduction of new digital communication technologies into our projects. In The Medium is the Massage; Marshall McLuhan observes: “Environments are not passive wrappings, but are, rather, active processes which are invisible.” McLuhan believed that the multiple and mobile vantage points from which we view our surroundings blinds us to their operative impact. He sees this as a consequence of our Renaissance-derived perspectival framing of relationships, one that backgrounds the more ubiquitous actors. Gottfried Semper, the German architect and art theoretician who had demonstrated the polychromatic nature of classical architecture in the 1830s, proposed that the art of building should be understood through the principle of clothing. He saw the meaning and significance of architecture as being bound up in its surface not its structure. For Semper the solid form in architecture acted as a support for the ornamental surface. He believed that the origins of architecture lay in the placement of the textile ornament followed by the development of the structure to support it. In Surface Consciousness, Mark Taylor observes: “Locating architecture as a textile art in which seamed – together textile walls envelop and wrap to give spatial enclose, Semper suggests that architecture ‘turns out to be nothing more than texture’”. Such a model naturally engages with cultural and operative models of architecture where the building acts as a wrapper of the contained

02] *Front portico, Athens Academy.* painted in the polychromatic style of classical Greek architecture. Athens. 1887.

03] *Atrium, House of the Faun.* Idealised reconstruction exhibiting a rich and dense representational and polychromatic architectural envelope. 1855. Pompeii. 79 AD. [Main mosaics believed to date from 200BC].

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*drama • architecture as event*
functions and events, but it is also inevitably an active part of those events. Its surfaces and presence are being read by the users as part of a total experience. The surfaces and surface treatments or articulations become central to the contribution of the building and of architecture. Semper’s model situates architecture in a dynamic cultural system, intertwined and dependant on many other cultural vectors. Its forms are bound up in complex conventions which it plays back as part of an active cultural process. This model, in placing the focus on social processes and events, albeit invested in the fabric of the spatial envelope, resonates with my own experience of attempting to build functioning commercial spaces. Foregrounding these processes and communicating the significance of them and the information systems related to them has become one of the central concerns of my own practice.
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As a result of the problems faced by our practice in completing the projects we had begun in 2001, I found the idea that the set of tools available to the architect or designer should be defined by how one engaged with the social processes wrapped within the project very resonant. I was also very keen to find ways of framing the activity of architecture and space-making as enmeshed in or related to other fields of cultural expression. I was convinced that the field of architecture was a social and operative one rather than a structural or formal one. I needed to find examples of thinking that sought to link architecture to or define architecture as part of other culturally and socially based media and modes of practice. I found a very compelling example in Victor Hugo.

In his 1831 novel *Notre Dame of Paris*, Victor Hugo extemporised on the idea of a communication-based role for architecture in an essay entitled ‘This will kill that’. So convinced of the idea that architecture was principally a medium for communication, he went on to assert through the voice of one of his characters, as well as his own, that this role was being usurped by the arrival of the printed book. The essay suggests that Gothic architecture operated as a technology-focused, communication-driven, space-making model. It framed Gothic practice as an intersection of technological innovation in the service of creating carefully crafted spaces to actively wrap and enhance particular events and experiences. The architecture was functioning as a technological tool set, mixing media to create a specific set of conditions, so much so that if a superior technology emerged, like the compact disk replacing the gramophone record, then the earlier form was quickly abandoned in favour of the latter.

“"The archdeacon contemplated the gigantic cathedral for a time in silence, then he sighed and stretched out his hand towards the printed book lying open on his table and his left hand towards Notre-Dame, and looked sadly from the book to the church: ‘Alas,’ he said, ‘this will kill that.’ ‘Alas and alack, small things overcome great ones! A tooth triumphs over a body. The Nile rat kills the crocodile, the swordfish kills the whale, the book will kill the building!’ This was the presentiment that as human ideas changed their form they would change their mode of expression, that the crucial idea of each generation would no longer be written in the same material or in the same way, that the book of stone, so solid and durable, would give way to the book of paper, which was more solid and durable still … It meant: printing will kill architecture. Architecture began like any form of writing. It was first of all an alphabet. A stone was set upright and it was a letter, and each letter was a hieroglyph, and on each hieroglyph a group of ideas rested, like the capital on a column … Later on, they formed words. Stone was superimposed on stone, and these granite syllables were coupled together … Finally, they wrote books. The symbol needed to expand into a building. Architecture thus evolved along with the human mind; it became a giant with a thousand heads and a thousand arms, and fixed all this vacillating symbolism in a form at once palpable,


3] **Avebury stone circle.** Photograph: Gary Curtus. 2600BC.
visible and eternal. The idea that engendered them, the word, was not only the foundation of all these buildings, it was also in their form ... The material and intellectual forces of society all converged on the one point: architecture ... Thus up until Gutenberg, architecture was the chief, the universal form of writing ... that up until the fifteenth century architecture was the principle register of mankind, that during that period all ideas of any complexity which arose in the world became a building ... And why? Because every idea, be it religious or philosophical, is concerned to perpetuate itself, because the idea that has moved one generation wants to move other and to leave some trace. [With print] The human mind discovered a means of perpetuating itself which was not only more lasting and resisting than architecture, but also simpler and easier... The invention of the printing-press is the greatest event in history. It was the mother of revolutions ... In its printed form, thought is more imperishable than ever; it is volatile, elusive, indestructible ... In the days of architecture, thought had turned into a mountain and taken powerful hold of a century and of a place. Now it turned into a flock of birds and was scattered on the four winds, occupying every point of air and space simultaneously ... Before it was solid, now it is alive ... from the sixteenth century on, architecture’s malady was apparent; it was no longer the essential expression of society; it turned miserably into a classical art ... once it was true and modern, now it became pseudo-antique. This was the decadence we call the Renaissance ... Let there be no mistake, architecture is dead, dead beyond recall, killed by the printed book, killed because it is less enduring, killed because it is more expensive.”

This text articulated for me a framing of architectural history and action from the perspective of the culturally operative impact of architecture. It accords with the idea of working within a cultural framework for an experimental and prototyping approach. It implied that design and construction practices and technologies were best evaluated in broad cultural terms rather than as disciplinary-specific canons. From this perspective the specifics of technologies and media were secondary to the contextual and cultural imperatives and objectives. In this model the choice of appropriate spatial strategies and tools was framed by these broader cultural concerns. It meant that there could be sudden or radical changes in how a designer might approach a problem if the landscape of technical and cultural opportunities changed. It suggested that scanning a broad field of emerging and developing technologies would be valuable and that you should expect and design for change. From a position of being enthralled by the possibilities of emerging technology and wanting to explore the opportunities that change presented, this reflection by Hugo was significant. I was introduced to another framing of this idea by Martin Pawley, then editor of World Architecture, in an essay titled ‘Condition Zero’ by Nigel Gilbert in 1993. He framed the communicative potential of architecture from the perspective of contemporary information technology where information and experience are fused in a dynamic package.

“Using the language of IT, architecture can be redefined as a control system for our experience of the world, filtering out the unwelcome and celebrating the desired. Looked at this way, it is true that architecture has always been in the business of creating ‘realities’ for societies that are inherently ‘artificial’ – the transformation being effected via form as mass and structure.”
Johannes Gutenberg, introduced metal movable type and the mechanical printing press to Europe and was a significant contributor to the invention of mass production and development of the European Renaissance. Etching showing his wooden printing press, similar to the screw olive and wine presses of the period. Mainz. 1439.

The generally invisible nest of servicing technologies snaking through the fabric of most contemporary architecture designed to deliver a controllable and predictable set of conditions. Photograph: Detail Magazine. Issue 5. 1998.
In a manner that has a resonance with the sentiments expressed by Victor Hugo, Gilbert sees that electronic media can effect many of the experience-shaping roles of traditional architecture. He identifies the power and pervasive expediency of communications technology as bringing an ‘ephemeralisation’ to the technology used for the shaping of experiences and definition of environments. Ephemeralisation was a term coined by Buckminster Fuller to describe the imperative of miniaturisation and enhanced performance that technological progress pursues, inevitably reducing the overall physical presence of any maturing technology. The augmentation of a material spatial infrastructure with a digital or communications-based technology is described as ‘augmented reality’ or ‘mixed reality’ in the emerging language of information technology. The increasing compactness and robustness of digital technologies is making it easier to blend these media into the fabrication of the physical environment. Much in the way that the solar-powered rear projection stained-glass window screens of Gothic cathedrals acted as the information and content centrepieces of those spaces, so there is the potential for contemporary media to play a role in articulating the surfaces of our own architecture. Often cited contemporary examples of mixed reality environments are the busy intersections of some of the main roads in downtown Tokyo, such as the street crossing above Shibuya train station. Here every available building surface has been covered in very large format digital video screens. These are used mainly to play advertising content. Some are linked into the mobile phone network and can display content requested and even generated by passers-by in the street below. These are extraordinary but shambolic spaces without a specific design program other than the commercial pressure to exploit the most visible available advertising spaces. A mixed-reality environment sees information added from virtual communication networks to a physical environment. The user’s sense of presence is not transferred out of the physical space, unlike the experiences designed as virtual realities. Depending on the technologies used in a mixed reality environment the user may feel a greater sense of immersion or a sense of an extended field of action, with the provision of new tools to act on the space or with other users. Proponents of mixed-reality architecture believe that it presents very powerful and intuitive ways of navigating space and social networks describing them as furnishing space with data. The potential for these technologies to add to content, coherence, experience or richness to space has been a source of continual inspiration and interest for our practice as a technological approach to develop or design spaces in response to a program or script. The availability and capacity of these communication technologies to deliver content in a rich and carefully articulated way while being affordable is gradually growing.
Shibuya Station intersection and street crossing, Tokyo. This urban landscape is heavily mediated by complex neon signage and vast digital video imagery. 2004

02] Touch project at the Dexia Tower, Brussels. Intuitive user interface for use by the public to control or ‘play’ the external lighting system of a skyscraper in the Brussels. Designer: Lab [Aa]. 2006
The significance of these technologies and of the framing of space as a dynamic actor in a socially defined framework of operation accords very well with the experiences I have had in addressing the introduction of new technologies and the consequent changed functioning of architectural space. The very activity of introducing change to the social organism that is the client has relocated our architectural activities from those of a purely technical nature to those of an anthropological nature as well. We are designing, prototyping and constructing social artefacts. Our original focus was to design physical space, but until we engaged with it as a social construction we had no real basis for productive communication with our client. They were experiencing distress and concern based on a model of the social consequences of our design. We were describing our design work in terms of technological opportunities. To move forward we needed a model to locate the potential value and dynamic consequences of our designs and the embedded technological opportunities. Actor Network Theory had provided a model to assess all parts of a design problem as a highly interconnected network of vectors and elements and a way of addressing them. It provided a model to describe our process as one of constructing a social artefact. I was interested to see if similar models existed that specifically located this rather abstract forensic view within a more charged spatial model. I also needed to frame the emerging prototyping model in terms of an outcome that was architectural or spatial. This was what we would end up delivering to our clients, even if that architectural outcome was in fact constituted of social systems, industrially designed artefacts and processes and digital communication networks and displays. I found such a model in the writing of Henri Lefebvre. His book, The Production of Space, frames the primary comprehension of space as a socially constructed one. While Lefebvre’s critique has been generated within a Marxist model of social and political conditions, which are entirely extraneous to this paper or my interests, his description of spatial production resonates strongly with my experience. My reading of Lefebvre is practically based rather than theoretical.

“To speak of ‘producing space’ sounds bizarre, so great is the sway still held by the idea that empty space is prior to whatever ends up filling it. Questions immediately arise here: what spaces? And what does it mean to speak of producing space? … Everyone knows what is meant when we speak of a ‘room’ in an apartment, the ‘corner’ of the street, a ‘marketplace’, a shopping or cultural ‘centre’, a public ‘place’, and so on. These terms of everyday discourse serve to distinguish, but not to isolate, particular spaces, and in general to describe a social space. They correspond to a specific use of that space, and hence to a spatial practice that they express and constitute. Their interrelationships are ordered in a specific way.”

production
fabricating interventions and provocations
drama • architecture as event
Lefebvre’s focus is on the description of existing space, but the model articulates a social approach to framing space and how it is constituted. He argues that social processes are made real by the spaces they constitute and further that social processes are made ‘real’ by the spaces that represent or identify them.\(^{11}\)

“Space is never produced in the sense that a kilogram of sugar or a yard of cloth is produced. Or is it an aggregate of the places or locations of such products as sugar, wheat or cloth. Does it then come into being after the fashion of a superstructure? Again, no. It would be more accurate to say that it is at once a precondition and a result of social superstructures.” \(^{12}\)

From the perspective of approaching and designing spaces, Lefebvre’s model sees a set of social relations and forms constructing space. Appropriating this model in the service of a conscious design process it seemed reasonable to propose that identifying or articulating a set of social processes and all of their requirements could deliver the foundation for designing the required space. The framing of the social artefact would provide all of the key vectors for shaping the final architectural project, an anthropological inquiry, giving rise to a physical outcome. Lefebvre identifies the Bauhaus as representing an example of a conscious program to construct space constituted socially in a total project, where the inter-relationships between systems of users and objects identify the spatial project as a principally social one.\(^{13}\)

The Situationists, contemporaries of Henri Lefebvre, saw the social underpinning of this way of defining space as a platform to actively construct interventions and shifts in the way people might perceive and operate in space. For them the social construction of space was an invitation for creative intervention. As part of their own political platform they believed that they had a duty to “actively and consciously participate in the reconstruction of every moment of life.”\(^{14}\) They resorted to a performative and spatially based set of strategies to address this. While the motivation for them was a specifically political one the Situationist framing and organising of public space as material for creative manipulation to change the way other users think presents a seductive model for experimenting with space as a socially charged medium. They saw spatial organisation as an appropriate territory for continuous experimentation and prototyping. The reorganisation and reprogramming of space could confront and change the way users think about their own roles within that space and socially. Space was framed in this model as a potential tool to change the way people think. For the Situationists it was critical to motivate society to behave creatively and their reprogramming of space was designed to force users to respond in a proactive and creative fashion. For the Situationists this was a necessary step in activating a new political awareness in society, one of personal engagement and creative activity rather than pliant passive consumption. The Situationists believed you could create spatial interventions that forced users to move from a position of passive response to one of active participation and contribution, becoming part of an ongoing dynamic performative social ecology. In this sense, space and spatial design becomes a territory or tool for continuous experimentation of prototyping by both designers and users.

The challenge by the Situationists and Henri Lefebvre to address the design of space as a provocative and socially operative actor was met in the strategic thinking of Gordon Pask and the architectural projects of Cedric Price. While there is no connection between Situationist thinking and Pask and Price’s work there are clear similarities in their conclusions about the role that architectural space can play as a dynamic actor. Again their work locates an appropriate position for exploration and experimentation in architectural practice, along with a belief in the role of operative and dynamic solutions.

Gordon Pask, the English scientist, engineer, and psychologist, proposed a formal framework for approaching architecture and spatial design as a dynamic evolving ‘conversation’ between users and designers. Participating in the ‘Cybernetic Serendipity’ show in London in 1968, Pask exhibited his ‘Colloquy of Mobiles’, an installation conceived as a cybernetic system of interaction loops, where its actions led to an impact on the surrounding environment, leading to changed sensory input to the installation, resulting in changed actions in a continuously evolving dynamic choreography. Somewhat akin to the call and response conversational structure of jazz improvisation, the Paskian environment requires participation to be fully realised. Such environments invite participation and collaboration to achieve their full range of form and behaviour. In this design model the architectural proposition is thus ‘under-specified’ or not fully formed until it is reacted to and interacted with by users. Known as ‘Conversation Theory’, Usman Haque, currently exploring the ideas in practice, describes it as a “particularly coherent and potentially the most productive theory of interaction encompassing human-to-human, human-to-machine and machine-to-machine configurations in a common framework.”

The theory proposes a way of building dynamic, non-prescriptive environments that allow the user to interact with them or complete them by engaging in a ‘conversation’ with them. Pask explored these ideas in a series of machines and installations. Such a model of design, seeking engagement from users to adjust the conditions of the designed, surrounding installation, proposes a productive relationship between users and the machines that make up this environment around them. Expanding on this idea, these aggregates of devices can be construed as constituting entire architectural environments. Gordon Pask built programmable processing racks, activated by sensory input and outputs from human performers and users, that in turn drove lighting and mechanical systems to respond. These processors were programmed to deliver apparently non-linear responses, because the machine’s performance was very dependant on the character and detail of the human input, much in the manner of the call and response construction of jazz improvisation, which has also been likened to conversation in its nature. Pask’s own installations could be described as technology demonstrators, prototyping these ideas as well as creating laboratories full of tools for their users to experiment with to create new spatial experiences.


Ranulph Glanville, a student and collaborator of Gordon Pask’s, sees the fluid and flexible characteristics of Pask’s approach as crucial to creating environments where users or participants can learn.\textsuperscript{13} The Paskian model privileges the relational, cognitive and social aspects of design. It combines these with a strongly technologically focused model of experimentation and exploration. However it avoids a technologically prescribed or rigid and utterly predetermined experience. This model for creating a fluid and flexible tool-based social artefact presented a very powerful model for shaping our own commercial architectural projects. For us, our client’s social and work processes had become the central territory for the design organisation and the demands of change and the unknown potential of new influences demanded similarly flexible and fluid solutions.

In approaching how these ideas might manifest themselves in an architectural project my own thinking was most significantly influenced by the work of English architect Cedric Price. In the book, Cedric Price Works II, Royston Landau describes Cedric Price’s architectural approach as one of ‘enabling’.\textsuperscript{14} Landau goes on to describe two of Prices influential but unbuilt projects – Fun Palace, for which Gordon Pask was the resident cybernetician,\textsuperscript{18} and Generator, a housing project – in relation to this idea.

\textquote{Price’s first major project was the Fun Palace [1961]. The client was Joan Littlewood, the founder of Theatre Workshop at the Theatre Royal, Stratford East, and she was to describe this proposal as a ‘laboratory of fun’ and a ‘university of the streets’. In the project, planned for the Isle of Dogs in London’s East End, the idea of ‘fun’ was not interpreted as passive entertainment as in the amuse-me ethic later to be adopted in the Walt Disney pleasure grounds. For Joan Littlewood and Cedric Price, it would be ‘fun’ if the visitor could be stimulated or informed, could react or interact, but if none of these suited, had the freedom to withdraw. The facilities Joan Littlewood initially proposed for the Fun Palace [which were time and place specific] included jam sessions, popular dancing, science playgrounds, teaching film, drama therapy, modelling and making areas, music stations with instruments on loan, et cetera, to which Price responded with an architecture which provided an unenclosed steel frame structure, fully serviced by a travelling gantry crane and containing hanging auditoria, moving walls, floors, ceilings and walkways, multi-level ramps and a sophisticated environmental system which included vapour barriers, warm air curtains, fog dispersal plants and horizontal and vertical lightweight blinds. Price’s striking design concept – which was later to have a major influence on Piano and Rogers’ Pompidou Centre in Paris [1971–77] – expressed two features of his position which are of concern here. The first is that of an architecture which supports and enables human activity … The second is Price’s fascination with technology … }\textsuperscript{19}

Price’s description of how to use Fun Palace frames it as a tool for experimentation with a fairly anarchic social program. “Arrive and leave by train, bus, monorail, hovercraft, car, tube or foot at any time YOU want to – or just have a look at it as you pass. The information screens will show you what’s happening. No need to look for an entrance – just walk in anywhere. No doors, foyers, queues or commissionaires: it’s up to you how you use it. Look around – take a lift, a ramp, an escalator to wherever or whatever looks interesting. CHOOSE what you want to do – or watch someone else doing it. Learn how to handle tools, paint, babies, machinery, or just listen to you favourite tune. Dance, talk or be lifted up to where you can see
Fun Palace. Arriving by Helicopter. Fun Palace explored the idea of an architecture that increased the range of choice of activities possible for users. It was a design for a reconfigurable, intrinsically dynamic building. Render. Architect: Cedric Price. 1964.

Fun Palace. Plan view of the model showing the supporting structure used to suspend and transport components of the building from one part of the site to another in response to the programmatic requirements of the moment. Scale model in metal and plastic. Architect: Cedric Price. 1964.
how other people make things work. Sit out over space with a drink and tune in to what’s happening elsewhere in the city. Try starting a riot or beginning a painting – or just lie back and stare at the sky.”

Landau goes on to describe the Generator project:

“A significant advance in the effect of information technology on architecture was to come in a project Price was to produce for the Gilman Paper Corporation in north Florida, starting in 1978. This scheme, Generator, explores the notion of artificial intelligence in which the environment itself becomes an intelligent artefact. An intelligent environment must have a capacity to learn and a memory and an ability to respond. Since the Fun Palace, Price’s architecture had possessed a capacity to respond, that is, it could react formally or mechanically to a given stimulus [an example of a stimulus-response conceptualisation]. But an architecture which did not simply react but which learned, remembered, when necessary, re-learned, and then responded appropriately, is clearly what his approach was leading towards, and, it might be said that if the concept of artificial intelligence had not been created Cedric Price would then have had to invent it. The Generator project was thus one of the first major investigations into artificially intelligent architecture.”

Generator was an accommodation facility for visitors, management and workers at the Gilman Paper site in Florida. It was intended to be able to house up to 1000 people. A reconfigurable and reactive project, Price said of it: “Architecture must concern itself continually with the socially beneficial distortion of the environment. Like medicine, it must move from the curative to the preventive. Architecture should have little to do with problem-solving – rather it should create desirable conditions and opportunities hitherto thought impossible.” Royston Landau further says of Generator:

“A visitor to the facility would first go to a fixed location, double cubed unit housing computers, monitors and human aids. The visitor would be assisted in handling computers and other simulations, and a process of exchange would commence. The computers initially present a preliminary set of programs to help the visitor create an amenable environment. But the more detailed contents of the computer programs help and encourage the visitor to make the best decisions. There are also implementational and recording programs to bring mobilising plant [such as the crane] into action, to create new configurations and to record such movements and assemblies. But there is also a novel anti-inertia program at work. It is described as computer boredom and it is said that the computer will become ‘bored’ if the site has not been reorganised or changed for some time. This boredom will result in the computer promoting unsolicited changes. It is interesting to note that the ‘necessity’ for change becomes a ‘value’, which has been built into this computer’s ‘thinking’. But the potential of Generator lies far beyond an investigation into environmental preferences alone. Preliminary surveys assessing reasons for using this faculty are progressively enriched by the interactions of each successive visitor. The computer, the brain of the facility, is continuously learning and building up a cumulative bank of experience. The facility’s limbs [that still-primitive crane technology] are activated on instruction from the brain. A built structure with a prototypical artificial intelligence has been invented, but one which also serves, perhaps in the most sophisticated manner yet, the purposes of human enabling.”
1. **Generator.** Isometric detail drawing of the proposed modular reconfigurable housing complex operated by crane and computer. The crane boom is visible to the left. The first architectural project capable of expressing boredom. Architect: Cedric Price. Florida. 1978.

Cedric Price’s project proposals and the accompanying descriptions suggested to me ways of both approaching a role for architecture and ways of utilising technology for particular ends, principally social ones. Within architecture his approach and practice seemed to be unique. He appeared to be unfettered by the weight of architectural tradition or convention, and unafraid to explore the potential of emerging technologies. In December 1988, with Paul Schutze, I interviewed Cedric Price at his office in London for an essay to be included in an exhibition catalogue I was involved in preparing. He said of Generator:

“The structure was comparatively simple – it was a series of boxes, but almost every moving part or any part that could be affected by light or pressure or sound, had a little chip, so that the building knew how often you used the lavatory, how you opened the blinds, turned the lights on, turned the heater up or down, whether you had gone and sat outside rather than inside, etc. The point of Generator was that it was somewhere anyone could go and do things or not do things, collect butterflies or just get drunk, and you could hint at your requirements over and above the natural requirements one expects in a built environment like shelter, safety or whatever. The computer would take that in and set it against the way you were actually using the building. It would then tell you how you could use it better each day, if you wanted to. You could also ignore it completely. If in fact you didn’t make any changes from the day you got there, the computer could start suggesting changes based on the first thing you put through, because it was designed with the capacity to get bored. We called it ‘the boredom factor’. The building actually got bored with the occupants putting up with too much – not putting demands on it. I actually have it on a chip downstairs in a little box.”

Price’s architecture is conceived as a tool designed for use as part of a social program and it is this domain that is framing and driving the architecture however somewhat like the Situationists it is also provocative, demanding a creative response from the users. The architecture’s own unexpected actions, based on its ‘boredom’, are intended to change the perception of the users about their contribution to the ‘mis en scène’. As users they are not passive consumers of the architectural wrapping, nor is their environment quiescent and passive. By this proposition Price frames an architectural or spatial approach that is driven by addressing the social dynamic or the intended users and the events to be contained by the architectural gestures. He also demonstrates a clear relationship to the use of technology so as to further equip the architectural gestures to engage with this social construction of the project. In Re CP by Cedric Price, he comments:

“As an architect, I’m trying to make architecture a better performer, trying to find ways that might suggest the gaps that can’t be filled in by anyone else, but are not recognised as opportunities to make the human lot a bit better by architecture.”

Price’s interest in cybernetics lay in its potential to provide a model for interaction between the built environment and users. Hans Ulrich Obrist says of Gordon Pask; “Pask spent his life developing a theory of learning. His research spanned biological computing, artificial intelligence, logic, cognitive science, linguistics and psychology. In essence, Pask believed that intelligence lies in interaction, not inside a head or a computer.” This idea, I believe made the notion of a conversation and dialogue very important for both Pask and Price.
1 [Fun Palace]. Scale model showing a section through the building. The sliding gantry, straddling the building, can travel the full depth of the building to deliver accommodation and services as required. Scale model in metal and plastic. Architect: Cedric Price. 1964.

Maddalena Scimemi claims: “Cedric Price has concentrated his entire career on the process of information circulation … questioning the potentialities of ephemeral structures, dedicating himself to building mobile sets for casual ‘happenings’ or festivals of ‘performance art’ … His sensitivity to the mass social phenomenon, like the illusory evasion inside domestic walls produced by television and or the neo-nomadism prophetically invoked by the derive of the Situationists, has contributed to unveiling processes of ‘informationalisation’ that have transformed social dynamics and the lifestyles of successive decades.”

Mary Lou Lobsinger goes on to frame this approach as giving rise to an ‘architecture of performance’. “In the early 1960s, architects with a penchant for technology, such as Cedric Price, turned to systems theory to find an approach to thinking about architecture that emulated the performative potential of the new technologies.” The building becomes as fluid and ephemeral as the communication technologies it houses and the enclosed social programs, activities and processes define the presence and format of the building rather than the building as an aesthetic statement. Lobsinger goes on to describe the Fun Palace project as a building that behaved like a machine:

“capable of adapting to the users needs and desires … It seems that here the conventional determination of built form as enclosure or as legible envelope for functional requirements is supplanted by an idea of environmental control, where for example, adjustable sky-blinds perform the role of roofing and the task of spatial division is assigned to mutable barriers described as movable screens, warm air screens, optical barriers and static vapour zones.”

Lobsinger is effectively describing the building as a gigantic theatre set of dynamic and flexible props and tools for a play or script that is continuously evolving. Technologies are employed for their contribution to achieve the most effective environmental manipulation. The nature of the characteristics required is driven by the social processes and events programmed for the project. The building is not a shelter or a signifier, rather it is an enabling tool. “In this way it may be considered performative, for only at the moment of transaction between user and machine would meaning or content be expressed, and would expression be identical with the act of performance.” It could be said that the ‘behaviour’ of the architectural envelope is more important than its form. Such a model for framing architectural projects sees the addressing and investigation of social processes and activities as fundamental to the conception of the building envelope well beyond acknowledgement of basic ergonomic and physical functionality. Articulation and/or reframing of the social processes to be accommodated become the key territories of architectural activity. Introduction and investigation of technological opportunities are also circumscribed and evaluated on the basis of their relationship to these processes. They are then folded into the architectural response and constitute that response. Form and structure are only parts of this process and may be minor in the overall scheme. The architecture is being driven from a relational and process-based platform. Much in the way Francois Jegou and Ezio Manzini approached an emerging dematerialised and service-focused industrial design territory, architecture seen in this way can be perceived as a hybrid of physical and ephemeral components inexorably tied to the presence and activities of the users; in effect as a product service system.
The significance of ephemeral elements as core tools to construct spatial experiences has a long history. In his kinetic sculpture *Light Space Modular* of 1930, László Moholy-Nagy explored light and movement as the key vectors in framing spatial ambience in the form of a mechanised sculpture designed to ‘activate’ the surrounding environment, much in the way the television set now activates the contemporary suburban lounge room. Set in motion by an electric motor, the light-reflecting apparatus was designed to bring the life of moving neon advertisements and street lighting and the invisible energy of radio transmissions into the home.32 In *Space Odysseys*, Scott McQuire suggests that this impulse to render space through the agency of media was born from the experience of the electrified 24 hour modern city and its sister and mirror, the cinema. McQuire recounts Le Corbusier’s enthusiasm for the first floodlighting of the Place de la Concorde where electric light converted mute architecture into a living, speaking entity.33 This strategy of pursuing a synthesis between electronic media and architectural space meshing virtual spatial practices and real space is sometimes described today as ‘mediatecture’.34 The focus here is on the experience generated by a profusion of technological strategies as integrated and sometimes coherent spatial installations. A rare large-scale example of this approach was *Pavilion*, the 1970 project by E.A.T.

At the 1970 Osaka Expo, the first Asian-hosted incarnation of a World’s Fair, whose predecessors had housed the General Motor’s *Futurama* exhibitions, Pepsi Cola funded an exhibition project entitled *Pavilion*. It was a space designed by artists, engineers and musicians to function as an experimental media-driven environment where each visitor could participate in creating their own unique experience. Conceived as a software-generated environment by the group Experiments in Art and Technology, or E.A.T., this project came very close to realising the performative potential of Cedric Price’s *Fun Palace* project. Billy Klüver, the president of E.A.T. and the executive coordinator of the project, described it as a ‘living, responsive environment’.35 It represented a new form of theatre space which completely surrounded the audience. With Pepsi’s support, the project represented a unique opportunity for the funding of essentially experimental technological installations that were designed to create a unified, dynamic spatial experience for the visitor.

Kenzo Tange and Arata Isozaki, principal architect and master planner respectively of the Osaka Expo, had set an agenda for the Expo that it should embrace a dynamic software focus rather than an exhibition of hardware, as all of the previous fairs had. They had been particularly struck by the multi-screen projection display of the Czechoslovakian pavilion at 1967 Montreal Expo, designed by Joseph Svoboda. Tange and his team had created, with their particular vision, the perfect environment for experimental and performative architecture. From the autonomous mobile floats and the optical laser systems to the exterior fog sculpture, the *Pavilion* project sought to marry emerging technologies with rich architectural experiences.

More recently this challenge has been taken up by Expo 02. In 2002 I visited the Swiss National Exhibition Expo 02, a nationally focused celebration of Swiss industry, creativity and culture. The exhibition appeared to have modelled itself on the 1970 Osaka Expo,
01] Light Space Modulator. A kinetic sculpture designed to create a dynamic ambience. Artist: Laszlo Moholy-Nagy. 1930
03] Pavilion. Interior photograph showing a performance by the hostesses enhanced by the multiple reflections generated by the surrounding spherical mirror. Pavilion design: E.A.T. Osaka. 1970.
with a strong focus on experimentation and the design of unique experiences rather than elaborate corporate messages. International architects including Diller and Scofidio, Jean Nouvel and Coop Himmelb(l)au participated, creating appealing if somewhat less radical architectural experiences. Diller and Scofidio’s ‘Blur’ installation even had Fujiko Nakaya, the fog artist on the 1970 Pavilion project, acting as a consultant. The Expo felt like a vast laboratory for technological and spatial exploration. It convinced me of the impact and value of large-scale experimental and dynamic immersive environments. The fusion of digital media and expressive physical envelopes created a sense of great dramatic moment and the enormous possibilities available for the creation of innovative and rich architectural experiences. The scale of the Expo meant that the visitor could escape into entire urban landscapes of these ideas. An extensive account of the temporary exhibition has been published by Birkhäuser.36

Generally the exploration of these ideas remains in the laboratory or the art gallery, in the work of artists like Nam June Paik, James Turrell and Bruce Nauman and at research facilities like the MIT Media Lab. Here there is an emerging group of practitioners engaged in exploring the potential of this fusion for architectural practice. This work is being documented in a number of ‘weblogs’ or ‘blogs’. These include ‘Interactive Architecture Dot Org’, hosted by Ruairi Glynn37, currently studying at the Bartlett School of Architecture, University College London; ‘Media architecture’, hosted by Gernot Tscheche40, a software interface designer based in Vienna, and ‘Urban Screens’ hosted by Mirjam Struppek40, an urbanist and researcher based in Berlin. Much of the work documented specifically explores the possibilities of interactive and performative technologies in creating spatial experiences. The work is of interest as it forms a platform for experimentation and investigation into the possibilities of creating technologically augmented spatial design solutions, driven by the significance of social processes and the opportunities emerging from communications-based technology. While this work informs a kind of strategy menu it is usually very simple at the level of the scripting or organisation of activities that constitute the aggregated experiences. Within our own projects there are often large numbers of interrelated events, paths and processes that require investigation, framing and spatial facilitation and support. For the development of our design responses we need to map the technological and structural responses in relation to these activity ‘drivers’. Consequently, much of our research and prototyping occurs around the area of mapping and shaping activities, processes and desired experiences. While these need to have levels of indeterminacy and unpredictability, enabling not rigidly proscribing, they need to remain coherent.

To this end, in architectural and design practice, we are writing scripts. The spaces and spatial experiences we design act as the sets within which these scripts are addressed. This calls into play the idea of the role of the designer as a dramaturg.40 The dramaturg, working on the dramatic script, acts as a critic, analyst, interpreter and advocate, researching the origins and relevance of the work and possible approaches to it. Within theatre practice the dramaturg’s domain can extend to addressing an institution, analysing and organising its goals and vision. In framing the architectural domain as one critically engaged in constructing a social artefact it seemed that the theatre had created a relationship between experiencing an event and critically analysing the designing of that experience, scripting and the ideas underlying the event. This idea of analysis seems to anchor the role of the dramaturg, but the dramaturg, like a contemporary researcher or analyst, critiques projects rather than designs them. It seemed to me that the role of the architect cast by Viollet-le-duc as an analytic investigator of the needs of his client’s and their project’s had great similarities with the role of the dramaturg. This role identified the importance of design as the process that sculpts the resulting performance, but also one that can


03] **Interactive Architecture dot Org.** A web log hosted by Ruairi Glynn reporting on the development of performative architecture and information and communication technology.

04] **Media Architecture.** A web log hosted by Gernot Tscherteu reporting on architectural projects and installations innovating in their use of digital technology.
be continually evaluated in relation the reading or translation that it brings to the ‘source material’. The theatre also provided me with an example of a designer who starts with the sensibility of the dramaturg but then translates that into the role of design, maintaining the exploratory and research-based methodology throughout all stages of the process: Joseph Svoboda.
drama • architecture as event
In conceptualising an approach to architectural space as one requiring a synthesis of technology as ‘enabling instruments’ fused with a response to and engagement with social processes – in this case a formalised and scripted set of processes – I was struck by the dramatic, technologically experimental and research-based design work of the Czech scenographer, Josef Svoboda. Working in Prague in the 1950s – 1970s Svoboda created radical theatre sets that functioned as active elements in an overall project orchestration to combine acting, text, space and technology. While continuously experimenting with new technology, saying, “Theatre means creating, seeking, experimenting”, he was always testing and evaluating his ideas in relation to the agreed interpretation of the theatrical production and the audience experience of those ideas through the production.

“Svoboda’s humanistic conception of architecture clearly applies to his conception scenography; its ultimate significance is to be measured by its relation to human experience.”

This suggested to me a very powerful way to address the idea of social processes as the drivers for testing both technological tools and spatial organisation, and also framing the territory of spatial design as one primarily responding to the centrality of social processes and the events they generate. Of great significance to me were three principles that made up an important part of Svoboda’s approach; firstly that of recognising that the set itself is an ‘actor’ in the experience of the narrative, and therefore able to be conceived of as participating actively in the narrative as a dynamic entity. Burian describes Svoboda’s 1965 set for Hamlet in Brussels as functioning in at least three ways: symbolically, functionally and theatrically, as ‘an instrument of performance’. Svoboda said of the set:

“The final step came about as a result of my picking at the model of the set one day after gazing at it for a long time; I wasn’t quite satisfied. In any case, I pushed one piece and suddenly saw the reflection of the movement in the mirror. And suddenly I saw Elsinore as a certain spiritual world, a microcosm of Hamlet’s world, one which must change psycho-plastically along with the development of the action … In other words, Elsinore was represented ultra-flexibly, plastically. The photographs suggest a sheer mass of cubes, solid and fixed, but in performance only selected portions were visible as a result of controlled lighting and movement. The set was extremely playable, not as puristic and austere as the photos suggest. In fact, it became an instrument with many possibilities; a good example of technical becoming an instrument, a means.”


Svoboda is quoted as saying: "What I tried to create was the organism of Elsinore Castle as an acting machine, not a symbolic one." 45

Secondly, its role must conform to a shared understanding of the narrative. For Svoboda this meant that his reading of the text and his subsequent discussions and collaboration with the production’s director formed the foundation of his design strategy. From the production’s script must be drawn the key underlying threads that will define the shape and themes of the performances. Svoboda sees the script and its interpretation as the source of all the principal design decisions and directions. This is exemplified by his production design for the un-produced Faust by Goethe:

“The production concept involves the dual identity of Faust’s domestic servant and Mephistopheles; how to distinguish the two identities instantly becomes critical. The setting would consist of a huge room virtually empty except for the thousands of books lining its walls. Svoboda’s chief scenographic contribution would be invisible: a floor designed to produce either a heavy, hollow sound of steps or else absolutely no noise, depending on who walked on it and precisely where he walked. As Svoboda describes it: ‘The servant walks to the door, and we hear the hollow sound of his steps in the vast room. He turns just as he reaches the door, and starts back – and suddenly – silence – and we know, instantly, that it’s the devil. Nothing is visible, but this is scenography and is what sets me apart from other designers. It’s scenography raised to scenographic direction’” 46

Thirdly, as this example indicates, Svoboda engaged forcefully, intellectually and experimentally with technology. He was criticised throughout his career for not having a consistent design style. His work was at times monumentally formal and dynamic, at times entirely media-based [projections and cinema], while at other times figurative, static and traditional. He was convinced of the need for design to reflect the condition of the prevailing cultural mood or climate. Technological opportunities represented ways of extending his palate of techniques. He argued that an understanding of the technical is a fundamental prerequisite for regenerating creativity and that this knowledge can be delivered from experimentation, conducted in a systematic and scientific way. He felt obliged to engage with contemporary technologies and to experiment. He further believed that this would necessitate taking risks in the technologies and approaches he brought to his project designs. In his role as chief designer and technical director of the National Theatre in Prague, Svoboda saw that his significant access to state funding enabled him to test and develop technical innovations that were valuable but beyond the means of smaller, more progressive theatre companies to develop. He believed this was also an important creative contribution larger institutions must make.47 I was struck by how this logic of a trickle-down of expertise, developed at the international or corporate level, allowing smaller companies to improve or maintain a competitive edge, resonated with Australian Senator John Button’s arguments for the significance of retaining an Australian car industry. Throughout his career, Svoboda developed numerous technological innovations for the theatre: elaborate lighting and projection systems such as the multi-screen Diapolyekran, Laterna Magika and Polyekran systems, through to the very early use of lasers on stage. His projection systems combined a projected

montage of changing images, designed to fragment or coalesce in synchronisation with the unfolding action on stage and at times on moving projection surfaces that allowed for physical redefinition of the staging envelope. The research into, testing and evolution of these technical tools was always being driven by the communicative and experiential requirements of the project’s direction and script. Svoboda’s approach and project work suggested both general strategies and specific techniques that could be brought into architectural practice. The practice organisation and approach of Joseph Svoboda, combined with Cedric Price’s model for a ‘conversational’ and enabling architecture and a dramatic, event or process-based framing of architecture’s remit, provided me with a platform to locate a research and prototyping-based practice within architecture and spatial design.

The idea that precedents and conventions could arise in the theatre and translate into architecture is, of course, not new. The writings of George Hersey and Bernard Knox, for example, explore the connection between classical Western dramatic form and Western architectural conventions and arrangements. The authors link the activities undertaken in architectural practice with the Western dramatic cannon and suggest the driving significance of social processes in the evolution of both arts. In *The Lost Meaning of Classical Architecture*, George Hersey suggests that Classical Greek architecture derived its organisation and form from religious processes of sacrifice and worship. Hersey suggests that classical architectural structures evolved as edifices aggregating tropes of sacrifice, each formal element representing or reincarnating a particular trophy and each connected to a particular religious or social ceremony. As such, he is at pains to locate these architectural gestures as expressions of social processes rather than self-referencing or being abstract in origin. Bernard Knox traces the organisation and design of the Classical Greek amphitheatre back to the structure of Greek theatre, itself modelled on earlier religious rites undertaken as part of farming practice. Knox goes on to suggest that these originating social forms, captured in the architectural organisation of the amphitheatre, act to represent a link between the duties and rights that the classical Greek citizen had to the city and the foundation of those cities on community-based farming practices. Knox sees that theatrical forms and practices acted as a bridge between social processes and architecture and as such became a significant platform for the organisation of architecture. Knox locates theatre’s origins in the worship of the god Dionysus. The Greek chorus, central to Greek theatre, represented the civic body of the polis but also had its origin as a group of dancers harking back to archaic harvesting practices and ceremonies. These very farming practices were central to the welfare of the earlier pre-Hellenic rural Greek communities and also underscored the need for social cohesion and participation. Functioning as a translating tool or mediator, theatrical conventions acted to locate and articulate the significance of later architectural forms and Knox argues that these theatrical conventions in fact shaped them. I introduce these ideas here only to suggest that there are significant precedents to draw from in framing architectural activity as resonating with theatrical or dramatic processes. However, I wish to suggest that it is the content nexus and social or cultural significance of the theatrical gesture that is important to my own work rather than the purely dynamic or performative nature of theatre. Theatrical techniques can be directly translated into architectural practice as purely technological process rather than as tools to situate design practice within a strongly social and cultural framework. Researchers, such as Flavia Sparacino at the MIT Media Lab, have sought to link the gestures of performers to dynamic spatial technologies with an emphasis on developing the immersive state of the audience, but the ‘script’ driving or shaping this research is generally technological rather than derived from particular socially conceived processes or programs. Such technologically-driven research has resulted in a suite
03] Smart Rooms. A computer system that can identify people and interpret their actions, creating helpful home and work environments. This has led to the idea of narrative spaces bridging architecture and entertainment via interactive technology, particularly in the work of the dancer Flavia Sparacino at MIT. Design: Alex P. Pentland. MIT Media Laboratory. Massachusetts. 1996.
of projects from MIT such as *House_n Living laboratory*\(^5\), *Smart Rooms*\(^4\) and the *Media House Project* [done in conjunction with the Institut d’Arquitectura Avancada de Catalunya]\(^5\), that have divorced technological application or innovation from any notion of a carefully researched social process or program. Playwrights such as Autonin Artaud, on the other hand, have speculated on the importance of invoking powerful new technological and immersive spatial strategies in order to amplify the experience of particular scripts without exploring or researching the specifics of the technological possibilities.\(^6\) Svoboda is refreshing in that he is able to both embrace technological innovation and locate its operation within or from the driving importance of program. His position makes it very clear that while he sees that as the duty of the designer to undertake research into emerging technologies, their use and significance is entirely mediated by the social and cultural construction of the design outcome. Invoking technological innovation as a design response, method or solution in its own right obfuscates the role and contribution that design processes can bring to a socially constructed or cultural project. Projects such as the MIT’s *House_n* undermine both the potential value of technological innovation and prototyping in design practice, as well as the significance that design can have as an organising or enabling tool in addressing real-world, programatically-based, socially constructed projects.
01] House_n Living Laboratory. This project at MIT with the Open Source Building Alliance is developing key components for a more responsive model for creating places of living. This partly sees the integration of more sophisticated technology in the home and the user given greater control and freedom to personalise their environment. MIT, Massachusetts. 2004

02] Media House Project. Based on the idea of a house as computer, this project sought to prototype an informational house. The project produced an information-rich environment based on extensive and thoughtful research but without a sense of there being rich and engaging content manifest in the final built environment. Designers: Metropolis Group, MIT Media Laboratory and Fundacio Politécnica de Cataluya. Barcelona. 2001.
Further to the idea of an event-based and dramatic configuration for approaching spatial design, it seemed valuable to exploit the potential for this content to add to or in fact construct place. The recognition and articulation of place and the qualities of identity it engenders are central concerns within architectural practice and very important to our own work. I was keen to find a way of framing an event-based model of architectural design that similarly framed the idea of place as one that was socially constructed. The idea of memory and layered processes and narratives beyond the confines of the theatre, informing the foundation of place-making underscores the research work of David Turnbull. In *Mapping the World in the Mind*, David Turnbull describes the elaborate social and artisanal processes developed by the Micronesian navigators to construct and maintain unwritten maps of the Western Pacific Ocean. These mapping strategies allowed the Micronesians to criss-cross a 6000-kilometre stretch of ocean with incredible precision. The stories and woven navigational ‘mandalas’ created by the navigators synthesised tidal and swell systems, ocean currents, wind, star locations, seasonal animal migration and landmarks into a single, elaborate, intermeshed pattern that describes one vast interconnected place. This system of mapping depended on the identification and description of relationships and processes rather than on merely locating static geographic forms. As such, Micronesian navigators could be ‘at home’ 500 kilometres offshore, able to predict weather patterns and the availability of food, etc. Used as a tool for navigation, this process of storytelling can be described as a knowledge system, but from a broader cultural perspective this layered mesh of stories can also be seen as a way of giving identity to place. In his paper *Maps, Narratives and Trails: Performativity, Hodology, Distributed Knowledge in Complex Adaptive System-an Approach to Emergent Mapping*, Turnbull explores this idea further with the notion of ‘folksonomies’, layered and shared narratives that build to create the identity and meaning of places. He further links these ‘folk’ stories and narratives to pathways and journeys through places that result in the creation of dynamic maps of place.

“From a performative perspective, the making of knowledge is simultaneously the making of space, space is made in travelling. Knowing is a form of travelling, of moving through space; and travelling, like knowledge, is also a form of narrative.”

Turnbull goes on to say: “Trails, along with string and stories, were among homo sapiens’ first artefacts and may have been the foundational practices in which human cognition, knowledge and technology are based. The act of tracking, of moving through the environment, following prey, and reading the signs, creates both a complex of intellectual and cognitive connections and at the same time a physical trail. Tim Ingold, in his explorations of the ways people construct their
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02] Marshall Islands sea chart with cowrie shells marking the positions of the islands and curved coconut leaf ribs showing the interaction of the ocean swells. Micronesian navigational aid.

03] Fleet of lakatoi setting sail from Mailu. With sophisticated mapping techniques the Micronesians travelled very long distances in very small craft. Papua new Guinea. 1927.
Understandings of the environment through skilled movement, argues that 'knowledge is regional, it is to be cultivated by moving along paths that lead around, towards, or away from, places, from, or to, places elsewhere. We know as we go. The 'topokinetic' nature of knowledge through movement is now apparent in the deep epistemological embeddedness of trails in a wide variety of cultures around the world …” 60

Turnbull's model of creating a place through the narratives and processes leading to and through an environment resonate with an event-based or socially constructed notion of spatial design. Pask’s ‘conversational’ model and Price’s ‘enabling’ model give rise to layered depositions of exchanges and stories, which in turn begin to generate a shared spatial memory and identity. Turnbull’s model suggests that not only are the socially constructed processes and pathways able to underscore the organisation of an architectural project, but that by the resulting exchanges the identity of the space and place will emerge. The framing, definition and resulting detritus and scarring from these processes represents a dynamic, shifting model of spatial construction and the emergence of place. The scripts arising from the program or brief driving the project become a part of the lives of all of the users. It is in a sense the unforeseen drama, arising from an attempt to deliver change and innovation as part of a design project that can generate new and unique processes and paths which constitute the final project and go on to create not only the performative space of the project but also the shared and layered construction of a place. In the projects presented in the accompanying essays contrive and risk we have framed an initial engagement with the design process and the client through constructing stories; imagined narratives of possible experiences in a yet to be designed space. We have tested the roles of new technologies and changed processes in mocked-up buildings or ‘theatre sets’, exploring our scripts and props. We have trained users within these unfamiliar environments through role-playing in preparation for their new work while the real building is still being constructed. David Turnbull’s model of an ongoing aggregation of layered stories or a ‘folksonomy’, dynamically constructing an emerging sense of place. suggests that our approach to imagining space through narrative may be only a beginning.
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59. Ibid. p. 6.
60. Ibid. p. 7.
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musik: prototyping the social and technological construction of space 2008
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cover | *Detail of the first prototype inflatable ceiling* for the ACMI *Hyperlounges* fabricated by Peter Bedggood. Design: Crowd Productions and studio dp. 2003.
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The intention here is to introduce the case study work undertaken for this PhD as a series of evolving conversations and conversational or communication models. These conversations centred on creating prototypes designed to test and explore technologically experimental project work. This project work has been the focus and centre of my practice, an architectural and industrial design studio: Crowd Productions P/L, since 1983. I will begin by briefly describing my own introduction to design and exposure to one particular role design can play. This framing of a role for design has led me to focus on engaging in technological innovation and consequently ways of constructing and then locating or introducing the idea of innovation and change to potential users and clients.

By a circuitous route through a number of disciplines I settled on the industrial design model of prototyping as the best way to explore, test and demonstrate the idea of design innovation. A prototype not only creates the opportunity to learn through the process of making, it also acts as a conversational tool, sitting as a locus for discussing the potential and opportunities of a project. It is a kind of intellectual and creative campfire.

The case studies – work by Crowd Productions – which establish the territory of the investigation, are divided up into four tranches of work. They are introduced in chronological order. The first tranche, a series of projects completed between 1994 and 2001, presents a body of work that explored and dramatised technological innovation in the context of industrial production [Vervette], technological innovation presented as concept prototypes for exhibition [Hyperkitchen, Hyperhouse, Appliances of the Future] and exhibition environments that spatialised these concepts as immersive experiences [Creating Culture, Home of the Future, Convicts]. Some of these projects invoked ideas about technological change and others demonstrated them. Collectively they were to act as a toolkit from which, later, much more intensive strategies for prototyping could be generated. The logic and approach of these projects, often to architecturally-related design problems, were drawn from the range disciplines I had been involved in. These had exposed me to a wide range of design tools – music composition and recording, video production, writing, narration, graphic design, market research, focus-testing, digital media production, theatrical production, fashion and product photography, publishing, magazine and book production, teaching and commissioning and building technology demonstrators and prototypes for industrial design commissions.

In this first body of work I imagined I could transfer these skills and techniques in a seamless fashion into architectural practice. I set about loosely organising these tools into a prototyping approach designed to give me a platform for engaging in technological innovation. These projects were by and large successful in that they delivered operating innovation or an appealing and positively received, technologically innovative scenario. They suggested to me that pursuing a strategy of technological innovation could actually deliver real-world projects that users and the public would embrace. They were, however, very limited in their operational impact. They functioned as individual furniture pieces for limited production or they functioned as theatre sets. They suggested possibilities
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rather than producing actual immersive tools for creating long-term change. In fact, at that time I was convinced that merely illustrating the positive possibilities of change, as I saw them, would convince an audience of their potential merit. This conception, on my part was to be significantly challenged by the course of later events. These projects were, however, also the result of a specific type of conversation that I had concluded was necessary in order to achieve these particular outcomes. That conversation revolved around prototyping.

In 2001 Crowd Productions was commissioned to design digital cinema capsules for the Australian Centre for the Moving Image [ACMI] at Federation Square. This is the second tranche of work and sets up the beginning of central body of work undertaken in this research by project. Framed by the client, ACMI, as ‘lounge rooms of the future’, and described inhouse as Hyperlounges, this project was the perfect and logical next step in scale and operative performance of the prototyping program we had been developing. However it was to bring a profound shift in how Crowd Productions operated. I discovered that I could not seamlessly introduce technologically innovative design responses solely by conversing with technology providers and engineers intent on solving the problems of fabrication and integration. The client brought to the process a new gap, that of the need to locate any notion of innovation, and the consequent change, into a programmatic shift that the client was also a party to. For me this was learning through doing, and as is so significant about this process, it often delivered previously unimaginable consequences. Rather than this project completing a series of strategic and technical steps that had developed in the proceeding seven years it proved to be the beginning. In my conceptualising of the role for technological innovation in design projects I had failed to understand the contribution and position of the client within the dynamic of each project. Without engaging the client it was not possible to realise the project as originally conceived. If, as designers, we wished to maintain the central project narrative of technological change and innovation we would have to invent entirely new conversational models to communicate these ideas and to locate them and make them relevant to our clients. This position gave rise to the final two tranches of work addressed in this essay. During the six year period from 2001 to 2006 the idea of entirely new and extended roles for the process of prototyping and the resulting associated conversations emerged: that of prototyping the processes that constitute the social and operative experience of our clients and the users of the eventual built environments.
02] Hoyts cinema complex at Melbourne Central. Twelve cinema complex with bars, ticket box and foyer. Design architects: Crowd Productions and studio dp. Melbourne 2005
My architectural education began at the age of 13 with the purchase of two books on the subject: *New Movement in Cities* by Brian Richards01 and *Architecture Action and Plan* by Peter Cook.02 I did not realise at the time that the work discussed was un-built or only existed in germinal form or that many of the protagonists were teaching because no one had worked out how to practise while designing in this way.01 The vision presented to me was like a liberating musical overture. It was a vision based on the speculative optimism of the early 1960s in London and drew on events like the 1939 and 1964 World’s Fairs in New York.03 It was future music. Unbeknownst to me it did not represent a commercial reality or cultural norm. It was in effect not real. Reading it instilled in me an unshakeable belief in and fascination for the possibilities inherent in formal and technological innovation. It became something I believed design could bring into the world. My eventual architectural undergraduate degree at RMIT did not feed this vision. The potential significance of Peter Corrigan’s lectures on the careful construction of a project brief and program, his theatre set design studio and Peter Downton and Greg Missingham’s interest in extended social frames of reference did not occur to me in relation to framing or approaching design as an experimental discipline. So I looked elsewhere to realise it, if only in a fragmentary fashion. I turned to magazine publishing, theatre production, electronic music practice, graphic design, advertising design, multi-media and website production, industrial design and teaching.02

These business activities provided three very valuable outcomes. They provided an income for the company at a rate that permitted free time for undertaking research and experimental design projects that had no immediate financial return. The business activities funded the production of prototypes and paid for research and fabrication staff. In short, they allowed Crowd Productions to become a research and development company for a percentage of each year. Finally they financed the development of a set of skills that would become crucial later in addressing gaps that suddenly appeared in the course of pursuing our architectural work. The graphic design and multimedia design skills became central to the communication strategies connecting us to our clients and the end users. We found the corporate identity design skills valuable for creating packages around our design outcomes, allowing our clients to frame the project innovation in their own marketplace. The research techniques central to advertising practice, such as focus-testing and market research, gave us formats and procedures to collect and evaluate research data. The teaching experience at university level was invaluable for understanding how to solicit engagement from stakeholders and clients and communicate ideas that were unfamiliar in a way designed to promote understanding. I eventually realised that the academy is unique in its culture of institutionalised engagement with innovation. This facility and these skills do not generally exist in business. Nor does there generally exist a culture in business of understanding how to initiate these processes, let alone marshal them in a productive way.
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04] Cultural Amplification. Second year Design Studies studio in the Industrial Design program at RMIT. Research and ideas explored in this studio quickly entered Crowd’s design methodology. Michael Trudgeon, Soumitri Vararadaragan, Daria Loi. Melbourne 2004

05] Poster for Elementa, an upper pool design studio in the Interior Design program at RMIT. These design studios were an ideal forum for honing tacit data-mining skills and ways of communicating collectively emerging ideas. Michael Trudgeon and David Poulton. Melbourne 2004.
The magazine publishing and advertising production experience introduced me to the idea of maintaining a very small production company that sits within a large, fluid and autonomous network of specialists and suppliers as a business model. Unlike consultants in design practice, specialists in advertising, film and publishing often directly participate in generating the final product, sitting in as part of an intensive but temporary production team that has been generated specifically for each project. The core initiating production team, in the manner of film production, sets up and runs the project but does not need to invest heavily in the specific knowledge required to address each project. Consequently, the small, core production team is able to tackle very large projects without then needing to find similar ongoing work for a newly enlarged team. This allows the core team to take risks and remain very agile in responding to market shifts and emerging ideas and technologies. This model of practice suggested to me a way of approaching large projects while not having to accept the inevitable inertia that comes from an increased company size.

Finally the idea of creating for oneself the necessary technological infrastructure that might be required for a non-standard design response was initially introduced to me through writing and performing in an electronic band in the early 1980s. The electronic musicians of the late 1970s and early 1980s were early adopters of emerging digital and analogue computers. The culture was strongly influenced by the core Punk ethos of Do-It-Yourself [DIY]. Punk, borrowing from the entrepreneurial methods of earlier artists like Andy Warhol and The Velvet Underground, espoused a completely self-contained approach to music production and performance. All aspects of music production from customising one’s own equipment and appearance to finding a venue to perform in, running the event and recording and selling the outcome on one’s own record label also came along with a complete disregard for any generally accepted convention. The innovative and autonomous nature of the early electronic synthesizers and production equipment encouraged electronic musicians to take over all areas of production in the manner of earlier Punk practice. In a further extension of the Punk approach, electronic musicians wanted the autonomy, but not at the expense of sound quality and technological innovation. The new electronic equipment provided this opportunity. This linked in my mind the enabling possibilities of emerging technology and a DIY design and fabrication approach with the fluid and agile specialist-and-supplier-network model of business as a way to maintain a risky business.

Armed with a set of resources and a growing body of research I became convinced that it was possible to create a hybrid practice model. The position that design should continuously entertain significant and disruptive innovation became a rather polemical and didactic position for me, framing the contribution design could make in the world: to change it entirely and populate it with a set of sophisticated, appealing tools for new ways of thinking and for creative action.
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4. The Plastic Exploding Inevitable Show. Music by The Velvet Underground and Nico, production by Andy Warhol. The Plastic Exploding Inevitable Show combined all of the elements that would later define Punk and New Wave music: experimentation, a DIY approach to innovation development and a highly theatrical and extensive use of art work, media and actors to create a complete performance. New York. This work synthesised for me the elements of experimentation, DIY prototyping and trans-disciplinary practice. Photographer: Steve Schapiro as reproduced in The Medium is the Massage. Marshall McLuhan, Quentin Fiore, Jerome Agel. 1967.
One of the core principles that emerged from a desire to pursue innovation in our design work was that of a quick and direct exchange of ideas and information between designers and makers or fabricators in order to rapidly create prototypes to test ideas out. This gave rise to an emphasis on the conversations we had with our prototyping fabricators to the extent that this expedient and efficient approach took on the role that drawing and documentation takes on for conventional architectural practice. This central role for conversation gave rise to a formal technique whereby we added additional elements – food and alcohol – to become the ‘Beer and Pizza Method’.

This method evolved initially as a result of a series of collaborations with Anthony Kitchener, a research engineer I met in a bar in 1980. His vigorous and informed engagement with technological research and innovation presented to me a way of constructing functioning and demonstrateable designs while engaging with technically challenging possibilities. His own intellectual facility for this enterprise was coupled with a large fully equipped factory designed for both prototyping research and industrial production. This factory belonged to his family company, Cash Research Engineering. They made screw compressors and custom pneumatic products and systems, and focused on generating patented innovation which they sold globally. They had evolved highly efficient and productive methods to design, fabricate and test prototypes for a wide range of engineering problems. The drawing studio was adjacent to the fabrication shop. Shop drawings for prototypes and demonstrators were initially kept to a minimum and testing and fabrication were conducted very early in the design process alongside the drawing process. Anthony and I began to build a number of experimental furniture technology demonstrators fuelled by a scant production of drawings and a lot of conversation and fabrication. At the end of the 1980s, in collaboration with Paul Schütze and Dominic Lowe, this produced an exhibition of prototype furniture and domestic machines, titled Deus Ex Machina. This was presented as a platform of technological experimentation and a reflection on the role of technology in our society. In 1990, at the invitation of Leon van Schaik, I developed some of these ideas further with Anthony into an architectural framework and presented it as a Master of Architecture project at RMIT, entitled Hyperhouse. This project then became a platform for further exploration of the opportunities that technological innovation might afford architecture.

In 1994 with Anthony Kitchener and David Poulton, an architecture graduate and maker teaching at the Melbourne School of Woodcraft, Crowd Productions embarked on the series of propositional concept prototypes for exhibition as described at the beginning of this essay. They were developed as vehicles for technological and form-factor research and to gauge reaction from the public at large. The exhibition installations and environments produced were intended to test these same ideas as spatial outcomes. The kinds of technologies I researched and the overall conception of their relationship, as part of an integrated spatial framework, was informed by the Hyperhouse project. I was convinced that I could practise architecture, with my self-imposed mandate for
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technological change, by building up a folio of concept prototypes and technology demonstrators which acted as fragments of a propositional whole. I hoped that through displaying these technology demonstrators and scenarios of future design directions for public exhibition, as Harley Earl had done with his concept cars or ‘dream cars’ for General Motors in the 1950s, I could demonstrate what we could produce and also introduce new ideas to the marketplace.

This experience and investigation of architectural practice led me to believe that while architects build many models and prototypes these are mainly artistic prototypes; form studies for internal evaluation or presentation to a client as demonstration of the design outcome resulting from already determined planning principles and aesthetic directions and decisions. In domestic architecture, display homes are built by developers, sometimes designed by architects, to show the public an exhibition of the options currently available from that particular developer. These display homes are generally composites of widely available appliances, presented as lifestyle packages in response to the developer’s conception of current consumer trends and developing niche markets. They are built as selling tools and their composition is often driven by marketing expertise and economic necessity and competition in a particular local market place. They are not built to explore or test the market potential of radical innovation. I am aware of some notable exceptions to this. Among these are housing prototypes developed for exhibition in World Fairs in exactly the same manner as General Motors exhibited their prototype concept cars – as exemplars of possible new directions in design. Famously these have included the Pavilion de L’Espirt Nouveau by Le Corbusier along with his presentation of his ‘Plan Voisin’ at the Paris World’s Fair of 1925, The German Pavilion or ‘Barcelona Pavilion’ by Ludwig Mies van der Rohe at the Barcelona World’s Fair of 1929, the House of Tomorrow and the Crystal House by Keck and Keck architects at the 1933 World’s Fair in Chicago, the Smithson’s House of the Future at the 1956 Ideal Home show and Habitat by Moshe Safdie at the Montreal World’s Fair in 1967. More broadly World Fairs have hosted architectural prototypes, developed within the exhibition brief but intended to act as research tools for design innovation. These have included The Crystal Palace by Joseph Paxton at the Great Exhibition in London in 1851, The Philips Pavilion, Le Poème Electronique by Le Corbusier, Iannis Xenakis and composer Edgard Varese at the 1958 World’s Fair in Brussels, The Pepsi Pavilion by Experiments in Art and Technology, The Takara Beautiful Pavilion by Kisho Kurokawa and the Symbol Zone by Kenzo Tange, all at the Osaka World’s Fair in 1970. Exhibition in a World’s Fair gave these projects a high profile and wide exposure before the public. These sites were intended as thoughtful and exotic experiments in developing new directions in architectural design, and initial reactions were often not favourable.

More recently Construmat Barcelona created the experimental building technology pavilion, Casa Barcelona exhibited in Barcelona in 2001. Ada, the intelligent room, a reactive light-emitting environment, was presented as part of Expo 02 at the Arptlage Neuchâtel in Switzerland in 2002. The PAPI Toyota Dream House was built in 2005 near the Toyota Museum at Nagakute, Aichi Prefecture in Japan as a demonstration of Toyota’s vision for ubiquitously networked, energy efficient domestic space built using techniques and design thinking developed in the automotive industry. As part of my research for this PhD by project I visited Expo 02 in Switzerland and was struck by the powerful impression many of the exhibition spaces and architecture made on the public at large and me. This exposition consciously pursued a program of technological innovation in the creation of the exhibition spaces and architectural space generally. The exhibition bore out for me the value of this approach. However this approach does not seem to have been integrated
into general architectural practice. In my Master of Architecture project at RMIT, Hyperhouse12 I concluded that the reasons might lie in the economic framework that the discipline operates within. However, I was convinced that such prototyping represented the only way forward to create technologically innovative architecture.

On the basis of these experiences and my interest in the culture of industrial design and its pursuit of technological innovation I decided to focus on prototype making. By this means, in the manner of Harley Earl, I hoped to eventually find customers for realising my design ideas on an architectural scale. As detailed in the following pages this process began in earnest In late 1993 when Michael Bogle rang me from the Hyde Park Barracks in Sydney. He was curating a show examining the evolution of the kitchen in Australian history and wanted to commission Crowd Productions to design a kitchen for the future. This was to be a fusion of speculative industrial design, a digital interface and information package and an immersive spatial scenario. This was the perfect project to test our ideas of factory-fabricated, modular and technologically experimental prototypes designed for public exhibition.
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references


footnotes

F1. In a conversation at RMIT in 2007 Ranulph Glanville described the journey of many of the Architecture Association allumni, Cook included, who were affected by these same ideas. Like a displaced diaspora, unable to practise the ideas that had captivated them, they had turned to teaching to keep the potential alive.

F2. From 1992 to 2000 Crowd was engaged in producing commercial magazines, brochures, catalogues and advertising campaigns for fashion distributors and shopping centres. We developed narrative content, prepared story boards, art directed and managed fashion shoots both in Australia and in Europe, writing, designing and producing the printed outcomes. For our clients we were often required to focus-test and market research content and format proposals to verify the potential for retail success these projects aimed at achieving. These projects employed contract teams of up to 30 people at any one time and introduced me to the demands of project management.

F3. In 1981 I co-founded and played in an electronic band, the Informatics. Though a circle of musicians met while studying art at Phillip Institute of Technology in the early 1980s I was introduced to the emerging development of the digital synthesiser and computer based music production equipment. This equipment allowed a single musician to create recordings that sounded like those produced by an entire orchestra from his bedroom using very portable and compact equipment. Many of the musical ideas being explored had arrived via popular music through proto-Punk bands such as The Velvet Underground from US avant-garde composers like Lemont Young and John Cage, who were also experimenting with electronic music from the late 1950s. This cocktail of technology and autonomy created an atmosphere of great anticipation and frenzied participation among electronic musicians in the 1980s. It was a very positive model for creative production.
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act 01: architecture as industrial design

beer and pizza: exploring the culture of the prototype
This first body of work articulates the initial proposition for this research project. Collectively this work was an exploration of the elements I believed could deliver technologically experimental solutions and programmatic innovation in response the demands of specific project briefs. Each individual project represented and tested a fragment of a larger territory of operation. The interest these projects provoked was defined by the degree to which I could respond to each brief with a fragment of this larger territory. This territory, that of approaching architectural design through the lens of industrial design’s strategic address of technological innovation and flexible solutions has, as previously stated, been outlined in my Master of Architecture project at RMIT: Hyperhouse.01

Presented in a computer program, as a taxonomy of technological opportunities and approaches, Hyperhouse was a script for applied research and a model for organising that information into an integrated, if incomplete, approach to designing and fabricating architectural space. It represented an attempt to contribute to the discourse of technological and programmatic innovation I had first encountered in the book Architecture. Action and Plan and in the work of Cedric Price. Following the prototyping logic developed by Harley Earl and the specifically scenario-and-narrative based design approach taken by the Domus Academy, which had just been introduced to Melbourne through the Domus Winter School program at RMIT, F1 I determined that we should build technology demonstrators and full scale maquettes as realised or physical manifestations of these ideas and present them for public scrutiny and response in any way that was possible. The furniture prototypes I had been designing and prototyping since 1986, often in collaboration with Anthony Kitchener and David Poulton had created a rhythm and set of work practices that was focused on producing physical outcomes for presentation. Consequently as project work arrived at the office I would select certain projects as platforms to pursue this wider program of technological exploration and concept presentation. Further to this, we also initiated a number of projects with the same intention.
01. The Hyperkitchen concept prototype under construction at the Crowd Studio at Brenchley Place. David Poulton, a collaborator and part of our production network, believed we could make the entire prototype ourselves. Melbourne 1994

02. The Hyperkitchen logotype. From seeing the Japanese production and prototype products and hearing the Domus Academy stories I felt it was critical that the concept prototype have a name, graphic symbol and a scenario attached to it at all times. Design: Crowd Productions. Melbourne 1994
The eight projects that became specific vehicles of exploration in this program were as follows: in 1994 Crowd designed two exhibition installations, ‘The Kitchen of the Future’ for the Domestic Revolution exhibition,\(^2\) curated by Michael Bogle, at the Hyde Park Barracks in Sydney and the Creating Culture exhibition\(^3\) for the Commonwealth Department of Communications and the Arts at the new Parliament House in Canberra. In 1995 Crowd designed and manufactured a system of modular table components. In 1997 Crowd participated in designing ‘The Home of the Future’,\(^4\) in a team consisting of The Centre for Design at RMIT and Neometro Architects. In 1998 Crowd was asked to submit to the Museum of Contemporary Art [MCA] for inclusion in the Seppelt Contemporary Art Awards exhibition in Sydney and in 2000 Crowd designed the exhibition environment for Convicts,\(^5\) the Hyde Park Barracks show mounted to coincide with the Sydney Olympics. In 1996 Crowd was asked to participate in the research project, Appliances of the Future, undertaken by The Centre for Design at RMIT.\(^6\) Documents detailing and describing these projects are in the following essay, risk. Each project allowed for the exploration and testing of a different fragment of the approach adumbrated in Hyperhouse, and also gave rise to a different outcome. Finally, contributing to the conceptual development, but not described in detail, was the Crowd project to design a corporate identity and graphics package including a web presence and multimedia presentation material for the International Institute for Industrial Environment Economics [IIIEE] at Lund University in Sweden.\(^7\)

In the case of each of the four commercial exhibitions, Domestic Revolution, Creating Culture, The Home of the Future and Convicts, the results that emerged from developing technological scenarios, based on research and then building exhibition prototypes, created successful outcomes. The table manufacturing project, Vervette, drew on research undertaken during Hyperhouse and the Domus Winter Schools and was a test of these approaches in a real-world commercial product. The tables sold at two furniture retail outlets, Space and Flair, which both specialised in imported furniture, and the department store It Inc. for two years with good sales. The MCA exhibition project focused on communicating the impact of the previous Hyperhouse technological research, but presented as an immersive environment, with a soundtrack and experience-path based narrative. This was well received. The IIIEE project forced us to focus for the first time on client communication and how to create a collective engagement by client stakeholders of a changed perspective. I did not realise the significance of this project to our work until much later.

Each project required an initial research component followed very quickly by a coalescing of the research into a physical expression. The emphasis was on embodying the consequences of the research into an object or space that would communicate the significance and potential of the research territory. At the heart of this process was the ‘Beer and Pizza’ method outlined earlier. This was seen as the generator that linked the research to creating a physical prototype. As result of my exposure to the Cash Engineering Research prototyping processes in Anthony Kitchener’s factory I had become convinced that to realise technologically novel or challenging solutions you had to move to physical testing and experimentation as quickly as possible. Only through a process of physical prototyping could the design propositions be tested. Additionally the most significant problems facing the realisation of a novel project
contrive  •  a reflection on the case study projects

03] The MVR Bathroom Module, developed for the Appliances of the Future project undertaken by the Centre for Design at RMIT, on exhibition as part of the Home of the Future prototype developed by the Centre for Design at RMIT, Neo Metro Architects and Crowd Productions. Melbourne and Sydney Home Shows. Design: Crowd Productions. 1996.
07] The Smart Kart concept proposal, designed for the Appliances of the Future project undertaken by the Centre for Design at RMIT. Design: Crowd Productions. Melbourne 1997.
are inevitably invisible until you actually begin fabrication. Rather than tying a project up in a lengthy process of documentation and attempt to create a resolved, and contractually hermetic design, I concluded that it was much more efficient and expedient to produce schematic documentation outlining the intentions of the project, a kind of performance brief with dimensions and impression of the intended formal and cultural impact, and then discuss it with all of the fabricators, consultants and suppliers. The realisation then became a distributed system of input and output. The design emerged as a product of the fastest exchange of data that we could manage. The performance brief dictated the territory of the design outcome, but not precisely how it was to be realised. The initial research drove the performance brief. The fastest way to communicate the design performance brief and exchange information and fabrication knowledge was face-to-face conversation. The best way to maintain a conversation was to make it as comfortable and enjoyable as possible. The best conversations usually occur in the presence of drink and food. The best place to have design conversations is in the presence of the design artefact. In our case that was the partially constructed prototype. All of these projects were developed using this logic. After the research had been undertaken to develop the performance brief I prepared a timetable for fabrication based on weekly meetings and conversations to discuss initial fabrication research and prototypes for evaluation through to final fabrication and finishing. In the manner of Gothic architecture, the project documentation was only generated after the fabrication process. Detailed drawings based on face-to-face design consultations with fabricators were circulated only as required to other suppliers or to acknowledge particular outcomes from meetings.

The ‘Kitchen of the Future’ project for the Domestic Revolution exhibition at the Hyde Park Barracks presents a good example of our processes. We were initially approached by the curator, Michael Bogle, in late 1993. Michael wanted to present a vision of the future possibilities for the domestic kitchen in Australia as part of the exhibition. Our ongoing research suggested that some of the most radical thinking and original products for the kitchen were emerging from Japan. I went to Tokyo to look at new domestic products like Panasonic Ultrasonic dishwasher and the National Panasonic virtual kitchen centre. Japanese designers and manufacturers were producing very biomorphic and organic products for domestic consumption in the early 1990s while most of the global design community was designing very rational and orthogonal products. This trend in Japanese design is partially due to the impact that Luigi Colani had on the Japanese design community at the time. This organic design in Japan convinced me that Colani’s vision of technology, which wraps around the user in a symbiotic hug, represented a powerful formal approach for presenting technological innovation. The technological research program for the project was quickly distilled into a set of design directions and specific products. These were quickly drawn up and presented for discussion with our fabricators on the project, David Poulton, who built the kitchen installation, and Joseph Brabet, who built the computer program that acted as the information interface for this vision of a future kitchen. The performance brief for the island kitchen installation revolved around a set of formal designs while the computer program was driven by a storyboard that identified all of the functions it would deliver in the kitchen. From here on the ‘Beer and Pizza’ method was followed, with most construction occurring at our studio workshop until delivery of the finished exhibition in Sydney. The only exceptions to the use of this process were a series of three-dimensional screens with translucent fabric stretched over them designed to act as space dividers and projection screens. These were to be fabricated in Sydney, and a set of documents had to be prepared for the tender process. This task was entrusted to our enthusiastic student army working in the office. I remember at the time thinking that this effort was a waste of time and resources.
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02] National Panasonic NAIS brochure describing the National facility as addressing the ‘applying of intelligence to Amenity environments. The NAIS program seeks to integrate new technology into the home. Tokyo. 1994.


04] Brochure. At the heart of the prefabricated National Kitchen production system is VIVA the Virtual Reality for Vivid A+I space system facility. Here a virtual kitchen is constructed for each customer who then dons VR goggles and gloves and tests it. Tokyo 1994.


07] Joseph Brabet developing the computer program that accompanied the Hyperkitchen concept prototype exhibition. The program explored potential uses for the computer in the kitchen. Melbourne 1994.


The process of conversationally-driven design development did not include discussion with our clients. I took on the role of representing the interests of the client. For this tranche of work this strategy posed no apparent problems and I was very unprepared for the profound short-coming that this represented in later projects. For these projects I agreed on a list of performance criteria with our clients which included absolute requirements and a wishlist based on how far we could push the boundaries of our fabrication and technology skills. The fact that we usually delivered a project that performed well into the wishlist zone convinced me of the effectiveness of our approach. We signed elaborate contracts with government clients. I didn’t read them. The time-frames for the projects were usually very tight. Our clients were brought to site, usually a factory, and shown the evolving prototypes as a measure of the project’s progress. They left convinced we could deliver, and satisfied with progress. No time was wasted on any part of the process, such as elaborate documentation, that was not manifest in the final fabricated outcomes. The process seemed very efficient and complete. We could process research that integrated technological experimentation with new ideas about program and actually deliver innovative products and partly functioning spatial projects.

With the Convicts exhibition installation we were required to produce a full set of working drawings for tender and this had a real impact on how the project evolved. The documentation process seemed at odds with the fluid conversational ‘Beer and Pizza’ method. There would be no dialogue with the builder and no possibility of building up speculative options within the fabrication process or exploiting the fabrication process through prototyping. Consequently, I decided after the initial research phase, which embodied ideas about immersive spatial strategies drawn from computer games graphics, that the project would in a sense be creatively shut down. The innovative dimension of this project became solely the conceptualising of the spaces and the spatial sequence as being an intense immersive experience akin to playing a computer or video game. The exhibition installation was conceived as a theatre set where the viewer became an actor situated within each story of the convict journey through Australia’s history. Michael Bogle had conceived of the exhibition content as being curated in five distinct stories, each presenting a significant evolution of Australian convict culture and bureaucratic procedures. Our installation design translated these stories into intense but abstract landscapes, each dramatising the changes articulated in the curatorial script. From the perspective of the technological research program I had conceived for Crowd, this installation became a prototype of spatial strategies focusing on articulating a dramatic script through insinuation and ambience rather than overly literal representation. This dramatic articulation was a critical component of the celebration of technological innovation in our projects generally as I wanted technology to appear as overtly liberating and a driver of significant change, much in the manner of Luigi Colani’s work. In this particular project the dramatisation was of a presented curatorial script, in the manner of Joseph Svoboda’s work, rather than a technologically-driven script.
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01] Construction documentation of an exhibition cocoon for the Creating Culture installation at David Poulton’s workshop, Melbourne. 1994.


The success of this group of projects and the streamlined nature of the contact I had with our clients, while successful in the short term, was to emerge as a critical source of weakness in the design process we were developing as we progressed to more demanding projects. This was to emerge as the first gap or hole in our design thinking brought to us by the client.
references


footnotes

F1. The Domus Winter School program at RMIT was conducted by the Centre for Design, then directed by Chris Ryan, from 1991 to 1993. At each Winter School a number of the teaching staff from the Domus Academy came out to Australia to take a ten-day workshop for designers and students.

This was augmented by public lectures and presentations. Ezio Manzini, Clino Castelli and Marco Susani presented the first workshop. I attended that workshop as a student and the subsequent ones as a facilitator. The Domus Academy’s concern with locating technological innovation within a carefully informed and researched cultural context suggested a methodological framework for me to approach, integrating technological innovation into a design outcome that could be interrogated or deconstructed by viewers as a way of understanding otherwise unfamiliar or novel objects and spaces.
contribute • a reflection on the case study projects
act 02: design embedded in narrative

class elephant in the room
In September 2001 Crowd was invited to submit an expression of interest and then a Request for Tender to design and construct a number of digital cinema capsules or ‘screen lounges’ as part of the construction of the Australian Centre for the Moving Image [ACMI] at Federation Square. Described in the brief as ‘lounge rooms of the future’ the finished capsules were required to be ‘on the edge of a profound change in content and technology’. The project vision outlined in the brief perfectly matched the kinds of deliverable project outcomes Crowd had been focusing on. The brief carefully identified a unique spatial typology, one that had not yet emerged but one driven by ubiquitous technological change. This was the territory the final design was to articulate and facilitate. The project presented the perfect opportunity to realise much of the prototyping and technological research within an outcome of a functioning architectural environment. We were selected as the design architects and fabricators for the project. Our client, Cinemedia, about to become the ACMI, was represented by Ross Gibson, an erudite academic specialising in video and installation art and a crime author. At the time he was the creative director and a senior curator at ACMI.

We began work on the project immediately, commencing research into a wide variety of what we believed were pertinent design issues, including a profiling of museum culture, the history of the lounge room, ergonomic studies for seated viewing configurations, the history of television, models and signifiers of domestic environments and domesticity, digital imaging technologies, video and installation art practice, as well as seeking to acquaint ourselves with the nature of the material from the ACMI archive that would be shown in the capsules. This approach saw us add a great deal more to the design response than was strictly necessary in a functional sense, but I was convinced that the design had to address cultural issues to situate the technological innovation. This had been our approach with the industrial design projects and it was an approach embraced by the Domus Academy in their design work. It struck me as a central tenet of our design philosophy and an instrument of our success.

As a condition of our contract we were required to give fortnightly reports on our progress. I determined that these should be magazine-like in their format and appeal, with articles, graphic headings and heavily illustrated with photographs and drawings. This created an ongoing recording and a ‘thick description’ of the project. American Anthropologist, Clifford Geertz’s concept of ‘thick description’, providing a model of presenting contextually dense information, seemed an ideal one to capture and animate the possibilities presented by this project. We circulated these reports to those staff at ACMI we had been introduced to; that is to say, about five people. Sixteen weeks into the project we were making good progress, having begun to synthesise our research into a modular, reconfigurable, re-locatable, factory-built, technology-filled design to which we gave the project name Hyperlounge, so dependent was it on the Hyperhouse project logic. It appeared to be a sound tool for enabling the activities required by the brief and framed the technological innovation in a way that linked the idea of change with the intimate domesticity of the suburban lounge room. The ACMI brief and our own research had identified the suburban lounge room as a formative site for positioning or locating technological innovation in communications technology.
01] Crowd Report to ACMI. Number 04 dated 26.02.02 featuring research into the history of the domestic lounge room.
02] Crowd Report to ACMI. Number 05 dated 08.03.02 featuring research into the impact and evolution of television.
03] Crowd Report to ACMI. Number 08 dated 22.04.02 featuring the first design concept that was rejected by the client.
04] Crowd Report to ACMI. Number 09 dated 02.05.02 featuring a reworked design in responding to client feedback.
05] Crowd Report to ACMI. Number 12 dated 07.06.02 describing the initial set-up of the theatre set prototype at ACMI.
06] Crowd Report to ACMI. Number 21 dated 21.10.02 reporting on new trends in architectural materials and strategies observed at Expo 02 in Switzerland.
07] Crowd Report to ACMI. Number 39 dated 30.07.03 reporting on the construction of the inflatable ceiling prototype.
08] Crowd Report to ACMI. Number 41 dated 03.09.03 reporting on the assembly of the first ‘Blister Pack’ acrylic wall incorporating an elaborate circuit of fibre optic lighting.
09] Crowd Report to ACMI. Number 52 dated 20.10.04 reporting on the final assembly of the partition elements for the ACMI installation.
On 22 May, 2002 we presented this design in the form of a computer-animated presentation, overseen and informed by very good input from Ross Gibson, to a large gathering of ACMI staff including the CEO, at a temporary auditorium space adjacent to their offices. Each design element was introduced with careful and extensive framing with reference to the appropriate research. I expected at this point that after an enthusiastic response we would quickly move on to building our first fully functioning prototype, address some technical hiccups which always arose and then deliver the production batch of between five to seven capsules. However this was not to be the case. The ACMI staff and the CEO hated the design. It in no way addressed their principal concerns. It did not embody their idea of what this project should deliver. Having never experienced this kind of reaction before, and in full-flight, focused on delivery and addressing complex technical challenges, I was thrown into a state of high anxiety and alarm. I had no strategies to cope with this event. The client had introduced a completely new actor into the equation: the client!

Reviewing our situation I concluded the following: the design we had presented was based on a careful reading of what was an imaginative if provocative and performative rather than explicitly descriptive brief. No one questioned that the result would not be technologically appropriate. No one questioned our careful research. Additionally, there was no precedent that we or anyone else could point to and say, ‘It needs to be more like this’. Our design did not connect with the vision that the ACMI stakeholders and staff had for this facility. It made no sense to them. No matter how meticulously researched our design was, all that research and our design response represented our story, our narrative. But it was not the ACMI narrative. They had not been involved in its construction and had no ownership of it or familiarity with it. Our design was alien. To make matters worse, Ross Gibson, a key linchpin in the process of developing and communicating our design, left ACMI. In the days after the meeting I determined that we would now focus on a much more intimate approach, one involving a more collective narrative construction. The future scenario we were designing had to be a shared one. We were not sharing the design process but we were extending the research process to actively include the client. As a new institution ACMI had a relatively open staff management structure. Individual program units and staffing departments were given significant autonomy within the organisation. Being an organisation with a charter to create a new institutional typology there was a sense of fluidity about a number of the final built outcomes that would make up the ACMI facility at Federation Square. The project in fact represented an ideal opportunity to engage with the experience and knowledge contained within the staff cohort and co-opt it for a more sophisticated design. Our design process suddenly became a lot more complex.
a reflection on the case study projects

01 | Detail of the first prototype inflatable ceiling for the ACMI Hyperlouges fabricated by Peter Bedggood. 2003.

narrative

Following the May 2002 presentation of our design I initiated three strategies. The first was to set up regular meetings with all of the stakeholder groups as a forum for acquiring information and feedback. The second was to circulate the ideas discussed and the conclusions from these meetings into the fortnightly reports and then ensure that the reports were circulated to the widest possible readership within ACMI. Finally, we constructed a crude prototype set of the capsule design at ACMI’s temporary offices. This became the site for most of our meetings, to help further situate our discussions and evolving ideas. The mock-up acted as a laboratory for how the capsule might look and, more importantly, how it would feel. This last strategy was to become much more central in later projects. In this project it performed in a nascent fashion as an adjunct to other communication strategies rather than being the central focus it later evolved into. In effect this strategy was to transfer the approach of prototyping from one of prototyping the technological outcomes of the project to one of prototyping the brief and the processes that constituted the events occurring within the space and enabled by the technology. This new system of strategies allowed for interaction with, exploration by and feedback from the user groups and a gradual growing of a collectively agreed to and understood platform for the design. This was the first time that I had conceived of prototyping the social and work processes.

I met with the ACMI curatorial staff, media and network interface designers, exhibition coordinators, educational officers, customer service staff and the public program providers. The result of these ongoing meetings was the development of a questionnaire about critical experiential and functional issues arising from the design work we had done. I used the responses from this questionnaire to create a reverse brief, one that played back to our client what we believed they wanted, as a way of establishing a publicly agreed platform on which to more precisely base a design. The results of these discussions and workshops could be tested or prototyped in the theatre set mock-up on site for verification or further changes. It had become clear to me that if we could engage our clients in the research and data-gathering process three valuable outcomes would arise. Firstly, the process could illicit a sense of ownership across the diverse client stakeholder groups; secondly, it actually provided very rich information drawn from the diverse individual client members or actors. I began to realise that the fine detail these people brought to the table suggested possibilities for the project that were far more adventurous then we in our own hermetic research bubble were prepared to contemplate. This anthropological data, when added to our technological and performative data, suggested much more adventurous, unique and richer scenarios for the final designed experience. The client stakeholders or actors could bring a specificity to the design response that allowed for a more engaging and idiosyncratic result. Far from diminishing the impact of the design response it could give it a much greater authority.

Finally, I discovered, utterly unexpectedly, that within ACMI the different stakeholder groups did not speak to each other at all about what they did, how their contribution to the organisation fitted into the larger picture for the organisation or even what they thought the organisation was about. As design consultants, coming in from the outside, we had the capacity to introduce the stakeholder groups
contrive • a reflection on the case study projects


02] Inspiration. A partially built mosque on the road from Melbourne to Echuca, where we fabricated the Hyperlounges, exhibiting a similar construction technique. Melbourne 2002.

03] Hyperlounge. Testing the movable seating prototypes and their upholstery, the Soona; a Deona or duntäcke for sitting on. Melbourne. 2002.

04] Hyperlounge. The ‘theatre set prototype’ with a mock-up simulating the presence of the proposed translucent ‘blister pack’ end wall.

to each other in a way that could help them begin to share ideas and their vision. I have since discovered that some senior managers specifically exploit this function when hiring external consultants. I was only to discover during our later projects that this condition of “siload” stakeholder groups or the condition of non-existent communication between powerful operational units of a single company is endemic and usual. It was a shock. I began to realise that the response we had had from our initial design presentation was as much a reaction by individual stakeholders to other stakeholders and the organisation at large, as it was about details of our design. Arriving from the outside and eschewing direct contact with a diverse range of individual stakeholders we and our design could only be responded to as an infraction on individual territory and one that in all likelihood was being directed by input from an antagonistic internal opponent. Our design intervention was being responded to as a socially motivated challenge rather than a technologically challenging proposition. We were moving from the position of the technologist to that of an anthropologist.

By November 2002 we had formulated, circulated and had a working brief for the project signed off by all of the key ACMI stakeholder groups. That brief had become far more challenging and interesting than the original one. The screen lounges were now to be production facilities as well as passive viewing lounges. They were to be designed to be entirely mobile, so they could be used off-site as ambassador museum modules. They could be used as enclosed or open pods with a set of accessories to compliment the technological requirements of either configuration. Their functionality had been distributed into a system of partition screens that configured the space surrounding them into external meeting, orientation and waiting spaces. The external walls of the pods could function as large projector screens. These brief requirements tested our capacity to find suitable technological solutions, but they also made the project far more meaningful in terms of the ideas it explored. We were now building real architectural responses to problems set around emerging technological opportunities defined in a way to create quantifiable value. I felt that we had made the promise of Harley Earl and Cedric Price real, albeit on a very small scale.
contrive • a reflection on the case study projects

01] A ‘beer and pizza’ discussion to resolve fabrication and performance issues of the ‘scissor arm’ prototype at the Riva Fab factory in March 2003.

In May 2004 I reflected on the outcomes and learnings from the ACMI project. This framed my understanding of our processes of engagement at the time. There was a strong emphasis on the significance of developing an operational network with a distributed expertise and ability to manage or predict risk. The following is an extract from it:

“In attempting to formulate a model of operation for a design practice seeking to respond to dynamic and uncertain or fluid conditions I propose that research and prototyping are essential activities. They allow for the formulation of novel responses and are essential if modular or mass-produced and factory-built techniques are employed, as such techniques are only economically advantageous if the tooling, design and programming is done prior to commencement of fabrication. This is the case even for mass customisation. Prior consideration must be given at least to the fabrication network before commencing manufacture. These decisions are most valuable if they are made with the greatest amount of consideration to the likely required landscape of outcomes. Traditionally, in low-volume design production activities such as architecture, research and prototyping have been avoided due to the economic burden they create for the connected projects. Given too, that undertaking research and prototyping is experimental in nature it can expose practitioners to risk in terms of the uncertain costs, outcomes and time consumption. Conversely, such strategies when carefully audited and managed, can be employed to reduce risk where there is agreement that innovation is necessary.

In contemplating a design practice that embraces research and prototyping one must also embrace the associated risk. I believe a key here is to minimise that risk by the following ways;

01.] Create an operational network of collaborators who already have embedded many of the resources necessary to do research and prototyping.

02.] Wherever possible ensure that the benefits or information gathered from research and prototyping can be spread to as many areas of the operational network as possible.

03.] Create an operational network with an economic resilience such that where losses are made in one area, due to such risk taking behaviour, they can be absorbed or accommodated across a number of actors or members without serious damage to the network or its constituents.

The project ACMI has concluded in three ways:

01.] The final built products from the project have proved to be very successful for the distinct client groups within ACMI. These groups have run extensive, documented feedback programs to ascertain customer responses and these have been remarkably positive.

02.] The project has been an invaluable laboratory for the development of organisational and fabrication techniques for Crowd Productions and its associated networks. In light of the model of a compact ‘light’ prototyping, manufacturing and organisational network, it has allowed the testing and formulation of a very efficient model.
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01] Rob Ivanic from Riva Fab and David Poulton constructing the final lounge in the Riva Fab factory in Echuca. December 2003.

Where our model of just-in-time, high risk prototyping and manufacturing has not been optimal [particularly in the area of time tabling client consultation and feedback] we have incurred financial loses. This, with hindsight, slowed up the overall process by some months and required additional work.

As a result of the ACMI Screen Lounge project outcomes we have been able to further examine and refine the operational model of the Crowd network.

The strengths of the process have been:

01.] The generation of a rich and diverse body of data from which to form a design response.
02.] The development of very sophisticated technical outcomes in a short time on a very limited budget.
03.] Through the development of a narrative-based approach, full-scale prototyping and use of a narrative-based ‘theatre set’ prototype technique, we were able to focus the client stakeholder groups on understanding very unfamiliar typologies of building and operating systems.
04.] Through the network development process we have been able to achieve generally high-performing and predictable outcomes from a diverse range of novel fabrication technologies on time and within budget.
05.] The use of our own on-site workshop to prototype, test and assemble components.

The weakness of the process have been:

01.] A failure to recognize and accommodate the heterogeneous nature of the client stakeholder groups within ACMI.
02.] A failure to quickly grasp the significance of the failure to accommodate this heterogeneous nature.
03.] A failure to engage with the legal and contractual frame-work of the project in a more creative way at the outset of the project. Conventional contract structures do not take adequate account of the impact of prototyping processes within a project framework.

The lessons learnt from the project have been:

01.] Using students and recent graduates to undertake research, develop prototypes and models in areas that are novel and unfamiliar is very successful. Our student work-force and collaborators have been intelligent and productive agents in the process. The value of their contribution is not predicable but often meets or exceeds expectation.
02.] The heterogeneous nature of our research, consultant and fabrication networks increased. This was necessary to continue developing ideas and techniques.
03.] Our selection process and continued maintenance of our consultant and fabrication network has proved to be mostly very reliable and cost efficient, even when the work undertaken represents serious technical challenges.
04.] While the use of graphically sophisticated reporting and feedback techniques is valuable in carefully describing and locating progress within a project it must be backed up by proactive face-to-face communication. Reporting can help establish the point where the project has progressed to but they are rarely read without additional intervention. They are a valuable record for the designers and may be very valuable, legally but they need to be seen as a record, not an introduction. They are like concert and theatre brochures,


5) Hyperlounge. Michael Parry, the Technical Project Manager from Pivod Technology, installing and testing the media platform connection and content delivery technology in the capsules. The translucent ‘blister pack’ is throwing a dynamic shadow across the upholstered panelled interior. Melbourne 2003.


7) Hyperlounge. Detail of the shadow line junctions between the different materials and components. The detailing and aesthetic were drawing from automotive production and design. Melbourne 2003.
valuable souvenirs for others to use to further propagate project information but unlikely to be effective by themselves.

05.] Full-scale prototyping, even very low resolution prototyping, is incredibly valuable for helping clients take risks with their decisions. Most people, even those interested in design, cannot read plans or genuinely grasp what they are seeing in renders and visualisations.

06.] Feedback, presentation and interviewing techniques developed within the academy are equally applicable in the commercial sphere when engaging with clients, particularly where you wish to present novel and unfamiliar ideas and material.

07.] Having a workshop directly adjacent to the design studio is vital. Novel ideas can be immediately tested and designs quickly developed that already have operational knowledge embedded in them. This process increases the range of experimentation possible while reducing cost and time, and makes the outcomes more predictable. Greater risks can be contemplated. Knowledge quickly gained can then be applied to other situations and challenges.

The conclusions from the project in the light of our previous experience have been:

01.] A student network and workforce is vital. Earlier projects such as the Crucible exhibition for Craft Victoria, the Hyperkitchen exhibition for Hyde Park Barracks, the Home of the Future, exhibitions as well as the ACMI Screen Lounge project all benefited dramatically from student participation.

02.] The research, consultant and fabrication network should be kept as heterogeneous as possible; students from many disciplines, academics from many disciplines, engineers, artists, boat builders, furniture makers, architects, industrial designers etc. to ensure the widest possible range of modes of practice, tacit knowledge and evaluation of problems and responses.

03.] Ongoing reporting, feedback and visualising is important in further involving the client in the design process, explaining it to them and making it more transparent. However, this production is not enough or sufficient by itself to wholly engage the client. This needs to be augmented with ongoing face-to-face consultation.

04.] Maintaining a prototyping workshop adjacent to the design studio is vital, for assessing new techniques and design possibilities, allowing greater innovation while reducing risk. It also facilitates full-scale ‘theatre set’ prototyping, a vital tool in communicating novel design strategies to clients. This also allows the designer to understand more precisely the consequences of proposed fabrication requirements.

05.] Developing further communication and client feedback techniques, both to solicit client ideas and responses and to facilitate the client’s understanding of the final designs impact, is critical.

06.] It is important to maintain and develop techniques derived from the academy for presenting and assessing and interrogating information.

07.] There needs to be a more sophisticated model for project management and cash flow projection, concomitant with a highly dynamic and risky operation.

All of this reflection was predicated on the idea of approaching design projects that are framed to aggressively embrace change and technological innovation. For Crowd generally, and for ACMI in relation to this project, these outcomes were explicit. Engaging the
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client in a process of creating the narrative, program or platform for the design, was crucial for the design to have coherence and to be useful. It was important to engage the client, not to give them what they wanted because in fact they didn’t know what they wanted, but to discover the possibilities that the project could deliver, and allow the client to extend themselves in participating in that endeavour. Initially I began the process with a graphic poster: a collage of technological and experiential possibilities for the project, samples of details and atmospheric scenarios. This was a very useful device to elicit responses and provoke discussion among ourselves and with our client. It was an ambiguous but evocative narrative device. However, it remained within the visual language of design rather than exploiting the more explicitly process-oriented nature of spoken or written narrative. We would later meld this device with an actual narrative to further develop its potential to expand the territory of design thinking.

Through the dysfunctional but natural process of internal division the client stakeholder groups did not communicate their individual ideas or requirements to each other. Consequently it was not possible for any part of the client group to know what they really wanted or needed. I saw the research, including the conversation and narrative-building process, as a crucial element in the design process, and the only way to establish and develop a program or script for the design. The logic of this idea had arisen from my teaching experience where the idea of drawing out possibilities from discourse is central to practice. It seemed that exploiting the tacit knowledge of the client stakeholders could contribute to strengthening the opportunities for pursuing innovative responses in the design outcomes while also collectively grounding them. In a sense, researching and prototyping what the client wants to become is an explorative and enabling strategy, drawing out, analysing, questioning, synthesising and reconfiguring the information into a viable program. It is also how we find out what we need to know in order to design a response. This process, in a formal sense, gave rise to the reverse brief, to the design and construction of a document that acted as a way of capturing the project potential and as a contract to move the project forward. This researching and then describing an agreed upon brief or program is a central component of upper level design studios in interior design and architecture at RMIT. The briefs are used to validate and test the students’ later design work based on them. Without an agreed programmatic platform the emerging design strategies or language cannot be tested, challenged or verified against a transparent set of requirements. For our project, the reverse brief situates or locates the territory of our design operation. It frames the potential for emotional or dramatic engagement as well as facilitating the potential for clarity and a manifest logic.

The result of introducing a series of communication strategies focused on distributing to and then engaging with our client, a heterogeneous and fractured entity, in an evolving narrative or scenario-based design model, was surprising to me. It actually allowed us to maintain most of the promise that we felt the project could deliver as a result of our initial research. The sense of alienation from the project and rejection of our first proposal that the client stakeholders brought to the table had created a critical opportunity to extend the logic of our previous approach to begin to include, if belatedly, the wider client. The client was not only included as an audience or spectator for the research and design process but also as a source of rich material for that research. The tacit knowledge held within the client cohort could be mined as a source of rich and surprising data that allowed for potentially greater innovation rather than less. This new addition to our process of project engagement could contribute to creating a brief or structure to ground our design program that felt more relevant to our client while still remaining true to our desire for an engagement with the possibilities
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01 to 03 Hyperlounge. Plans exploring the dynamic and configuration of individual capsules to create engaging public ‘urban spaces’ around the capsules as part of the overall spatial and architectural experience. Melbourne 2002.

04 Hyperlounge. Plan of an individual capsule showing the throw of the ‘scissor arm’ support for the control screen. The client insisted that all occupants had equal ease of access to the control interface. Melbourne. 2003.
made available through new and emerging technologies.
The project was finally completed in late 2004. Five cinema capsules and five screens of three different types were fabricated. The final results had tested our industrial design-focused approach to its limits but they were very successful designs and executions for the most part. They demonstrated to me the effectiveness of our physical prototyping processes and also illustrated a profound disjunction in my understanding of the role of the client. My interest in design is about making the potential of change and technological innovation real. Having initially understood that project designs had to deliver functional benefits I now understood the more important requirement that they had to make narrative sense to the users. Further and very significantly, the users could bring a great deal to the table in terms of information and ideas about how the project outcomes might be extended and exceed our initial expectations and, most critically, become part of theirs.
The drama of the undermining of our original design presentation and the difficulty of rescuing the project from such a compromised position had made me extremely sensitive to the idea of clients as heterogeneous, diverse and autonomous organisms. The first question I had for our next client was; “When can I meet and begin discussion with all of your stakeholders who have any sway in this project?” I was not yet comfortable with the shift from a technological focus to an anthropological or social one, even though I had witnessed some of the distinct benefits this change brought to the outcome. I wasn’t sure how repeatable this outcome was.
Ironically, one of the great weaknesses cited for industrial design is the inherent tendency for factory-based fabrication to produce identical replicas rather than diverse and distinct outcomes. Here, by beginning to extend the idea of prototyping to that of rehearsing processes and spatial outcomes I was beginning to reflect on whether it was possible to reproduce this method in later projects to illicit the same extended outcome. That is to maintain the opportunity to innovate and in fact facilitate it. Could I clone the process in order to initiate and protect the impulse to innovate?
At this point, as in the previous states of my own and Crowd’s development, I felt that insights had been gained and strategies had been developed, and that they represented an end to the evolutionary process of articulating a design approach that captured the potential I sought. My desire to continue the process of testing this approach was not because I was aware of its shortcomings but rather that I felt it required a repetition of application, as in a laboratory science experiment, in order to verify it. That subsequent applications would transform or extend the structure of the approach was not something I had imagined. My principal concern was a lack of practical experience within an architectural project milieu. Repeated application of the newly acquired strategies would make them more concrete and allow them a clearer or more intentionally planned application rather than acting as crisis management strategies. This change was not yet to come.

references

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01] Hyperlounge. Finished capsule 01 at ACMI, Federation Square. The 'blister pack' was designed to function as a soft or blurred boundary and as an evocation of an ambiguous domesticity. This collage of images was achieved through editing and re-photographing and cropping personal snapshots collected from the entire production and client team. We named it the 'memory wall'.

02] Hyperlounge. The first item we produced in 2001 was a collage of design and atmospheric references to help locate the design direction and inspire us, and to begin a conversation with the client. There is an interesting similarity in the aesthetic of this device and the final object.
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act 03: design as immersive education

building a laboratory for change
At the beginning of 2004, as the ACMI project entered its final phase of construction and delivery, I extended my teaching commitment at RMIT, taking design studios in the Interior Design program and a design studies studio in the Industrial Design program. In line with the academic model at RMIT, as a practitioner, I drew on my experiences and concerns emerging from commercial project engagement to frame the studios. Experimentation in practice can act as a vital underpinning of design teaching programs, just as tertiary studio teaching can act as research and prototyping for innovation in commercial practice. Additionally, the academic requirement to situate ideas within a more rigorous intellectual framework often necessitates further reading and research to ground and situate the ideas as part of a wider discourse. The studio subject matter I chose derived from experiences arising out of the ACMI project. These were the addressing of design strategies in prefabricated architecture and engaging with and identifying the range of actors or stakeholders – the client – in commercial architectural projects. In particular, the research and framework for the studio in Industrial Design, identifying and mapping the consequences of all of the social and technological influences on a project, provided me with a greatly refined strategic approach to engaging project stakeholders. At the time, in my interim PhD presentation in May 2004 I wrote:

“In January 2004 I designed a subject outline entitled ‘Cultural Amplification’ with Soumitri Varadarajan, Program Director, Industrial design at RMIT and Daria Loi, lecturer, for second-year Industrial Design students, focusing on developing thick descriptions of design scenarios and event spaces. In order to cite a model for developing thick descriptions, drawing loosely on the approach of Clifford Geetz’s anthropological model, we directed the students to Actor Network theory developed by Bruno Latour and John Law, and papers published on this topic by the Centre for Science Studies at Lancaster University. The Industrial Design students have, over the course of four months of study involving a series of encounters, begun to frame and model various design scenarios in ways that are thick and rich. Our intention here is to focus the students’ perception on the complexity, dynamism and uncertainty presented by real-world design problems.

This exercise has been very valuable for me in two ways:

01.] Thinking about the modelling of thick descriptions of heterogeneous networks. This relates specifically to describing operational networks.

02.] Thinking about ways of modelling, describing and responding to dynamic and complex situations and audiences. This relates to notions of describing the audience or modelling evaluation of performance [of design strategies or outcomes]. Such models may provide valuable tools for assessing the deployment of appropriate levels of innovation and for ways of measuring the robustness of a program and the success or impact of the outcomes.”
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The third body of work I undertook as part of this research project was to design two cinema complexes for the Hoyts Cinema Corporation in 2004. In April 2004 Crowd Productions, working in collaboration with maker David Poulton, won a limited competition organised by the Hoyts Cinema Corporation to re-conceptualise and redesign the experience of going to the cinema for their proposed new cinema complex at Melbourne Central. We won this project on the basis of our presentation to Hoyts management. This presentation stressed our research-based method and our desire to use this information in combination with client-based tacit knowledge. James Gately, in charge of the Hoyts Real Estate Portfolio, had determined that Hoyts needed a significant change in their architectural approach. From the ACMI experience I had drawn two major conclusions. Firstly that a research-based method combined with a hands-on prototyping program could produce significantly innovative outcomes, and secondly, that to ensure that this program was to be of optimal value, the client must be drawn into the process and ‘own’ the outcomes from a very early point in the program.

From previous experience I recalled that in working on the design of the corporate image for the International Institute for Industrial Environmental Economics [IIIEE] at Lund University in Sweden with Chris Ryan we developed the ‘open studio’ model, whereby we opened up access to our internal design studio processes to the wider client group. This was in response to Chris Ryan’s observation that Swedish society is oriented around consensus decision-making. In discussion with Chris, we decided to move the design studio and all of our computers etc. into the client’s building and create a dynamic and transparent model of design production. At any stage any member of the heterogeneous client group could come into the design space and add to the process, review our work or watch our methods and progress. It became clear that by employing the strengths of this process we would achieve two valuable outcomes: a rich and complex body of data along with tacit knowledge from the client group and a much greater sense of ownership of the design outcomes by the client stakeholders. I immediately tested the first point in our engagement with the Hoyts project. On our appointment to Hoyts we sought to interview some 70 members of the Hoyts management team. On the basis of this data gathering we prepared a report to Hoyts management on our findings. These findings covered some 60 points that we saw as key to a design strategy, drawn from comments, experiences and ideas from Hoyts’ employees.

Two weeks later, Market Equity, a Sydney-based market research agency, presented its preliminary findings on current attitudes and responses to the experience of going to the cinema. This was based on extensive quantitative research data drawn from telephone calls to members of the general public and qualitative data based on the results from focus-testing sessions held with selected members of the general public. Market Equity had deemed these respondents to be typical of the key demographic market segments identified by the quantitative research. The conclusions of this extensive, expensive and time-consuming process were identical to our own. They provided no further information. They presented, however, a powerful vindication of the techniques we had employed to create a rich data set. This process was a synthesis of the ‘open studio’ technique, described above, developed for IIIEE in Sweden and the ‘CSI-style’ data collection and mapping techniques developed in the ‘Cultural Amplification’ subject developed with Soumitri Varadarajan for the Industrial Design program at RMIT. The ‘Cultural Amplification’ studio had focused on the significance of extensive and broad data-gathering as a way to identify previously hidden factors that might in reality act as very influential components of the
01] ‘Ella’ presentation document.
Detail. ‘Ella’ was presented to Hoyts as a narrative evoking the possibilities for a redesigned cinema experience. Crowd Productions. Melbourne 2004.

02 to 04] ‘Data mining’ workshops at the outset of the Hoyts projects. We interviewed Hoyts staff across the network to capture as much of the company’s tacit knowledge as we could in order to identify new operational and design opportunities. This was played back to our client as a reverse brief. Sydney, 2004.

05] Thomas Lindhqvist, senior faculty member at IIIEE with Michael Trudgeon.
In 2000, designing a corporate identity for IIIEE in Sweden, we made the designing process more transparent, opening it up to ongoing interaction with our client. This ‘open studio’ strategy became a template to address later client resistance to our design intervention. Sweden. 2000.
scenario under investigation. The speed and comfort with which we were able to collect the data was a result of the experience I have gathered lecturing in design at RMIT.

In addition to these techniques I sought further ways to both communicate our ideas and their practical consequences for the client and to involve the client stakeholder groups in decision-making processes. From the experience with ACMI it was clear that framing the project outcome within a coherent narrative, as well as creating full-scale mock-ups of proposed spatial solutions, allowed us to communicate the experience and functionality of our design. It meant involving stakeholders more meaningfully in the assessment and refinement process and created a sense of ownership on the part of those client stakeholder groups of the final design decisions and directions.

Operating in the manner of the ‘open studio’, described above, I proposed to Hoyts Cinemas that we construct a series of full scale mock-ups of parts of the proposed design to address processes. The design options were to be constructed rapidly and cheaply out of cardboard boxes. All the Victorian operations managers were invited to this workshop and asked to comment on the design options and contribute to them. This method of building prototype spaces with cardboard boxes allowed us to quickly modify or reconfigure the designs at full scale as we discussed them with the client. Functioning like a ‘walk-in doll’s house’, the client stakeholders could quickly assess the impact of discussed suggestions and changes. The workshop was very successful and allowed us to convince the client to reduce the footprint of the main concession counter by half. Given the heterogeneous nature of the operations group and the diversity of opinions and attitudes expressed, a unanimous result surprised even the Hoyts management team. The outcome of this workshop confirmed the significance of the ‘open studio’ or transparent and carefully communicated design approach and the full-scale building prototype or ‘theatre set’ techniques as ways to achieve the kind of consensus between client and designer necessary to pursue risky or innovative design strategies that involve broadly based changes in client processes and practices.

These examples demonstrated to me the value of employing what are considered as conventional ‘thinking-tool’ techniques within the academy and translocating them to a commercial context. While the commercial sector sees itself as lean, responsive and capable, it does not, from my experience, generally possess the creative techniques to quickly reconceptualise or reconfigure problems or manifest this kind of thinking as embodied in a potentially tangible outcome. The academy, while being constantly accused of inertia and having a poor grasp of commercial reality has a conversancy with uniquely effective thinking tools, which it appears, are extremely valuable as tools for addressing commercial problems, particularly where speculation is needed to adjust routines, assumptions and attitudes.
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01 to 03 Hoyts cinema projects. We built a full-scale cardboard box mock-up of a key operational area, the candy bar, we wanted to change. It was a readily reconfigurable tool to focus and direct discussion. Management and operational staff came to a workshop and we achieved agreement on the changes along with gaining new insights. Melbourne 2004.

Learning from the dramatic response to our initial design proposal at ACMI, I was determined to pre-empt the potential for a similar result at Hoyts. My plan was to quickly articulate our design intention and approach, to the widest audience within the client stakeholder body. While I did not have a formatted strategic plan of our approach I could adumbrate generally on our proposed approach and the steps. This project saw the initiation of a number of prototyping approaches aimed exclusively at testing and experimenting with the programmatic concerns of the project from the outset. On the basis of the outcomes of this process we then could move to technological research and component prototyping. This process could be said to have four parts: firstly the initial introduction of a narrative to underscore the potential of the desired design outcome and all of its components; secondly, the collection of data from the client to develop a richer program and engage the client cohort; thirdly, the immersion of the client cohort in spatially formatted process-focused prototypes, theatre set prototypes, to test and develop the program and provide an amelioration of the sense of risk that inevitably arises from invoking change; finally, the prototyping and testing of technological innovation, an activity now circumscribed and driven by the development of the program.

The initial step, that of introducing a narrative or scenario-based logic to our design approach and outcome, was presented at the first meeting we had with the Hoyts management team. I presented a simple three-page story-board of text accompanied by very abstract atmospheric images. The document told the story of Ella, a young cinema patron, and her experience of going to the as-yet unbuilt or designed Hoyts cinema complex at Melbourne Central. Ella, the character, was loosely based on one of our RMIT Interior Design students and she was chosen because she fitted the core demographic for cinema patrons. The presentation was drawn from the idea that our design intention to engage overtly with technological innovation would need a carefully constructed script or narrative to locate these gestures and make them coherent. The storyboard, developed as a narrative and scenario-testing, communicating and prototyping tool in the film and advertising industries, allowed us to introduce our design intention as being experientially driven from the outset. My exposure to the Domus Academy storyboarding of design scenarios, and then having used it to prototype the communication and exhibition experiences of the Hyperkitchen and Creating Culture projects alerted me to the significance of this tool. Additionally, I was influenced by Joseph Svoboda's scenographic practice of developing Modernist abstract designs, which through the rigour of a script-driven design-development process delivered a coherent and readable scenario without resorting to simulacra or literal representation. This meant that the story board became the beginning of an exploration and not a series of formal limitations. The storyboard became a tool to open up the organisation of the architectural planning as a series of experiential destinations rather than compile it as a geometric sequence to be logically understood from a plan. The storyboard framed the design problem as a social one, to be experienced and unpacked by the users, not by planners. The design rhythm was to be explored and presented as an experiential adventure composed of sequences or adjacencies of distinct and possibly modular event spaces in the manner of the Baroque hôtel designers of the seventeenth century, as described by Michael Dennis in his book Court and Garden. As
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01 'Ella' presentation document. Detail. 'Ella' was presented to Hoyts as a narrative evoking the possibilities for a redesigned cinema experience. Crowd Productions. Melbourne 2004.

02 A storyboard of stills from a scenario-based video, framing the operation of a concept prototype developed by Philips as part of the Vision of the Future exhibition. The Netherlands. 1996.

03 Hyperkitchen Computer program. Screen capture. This presentation of a scenario provided a template for later work. Design: Crowd Productions. Melbourne. 1994.


06 Hoyts cinema projects. User interface and menu for the information program. We developed this prototype computer program to show how Hoyts could communicate their cinema ‘offer’ more effectively. Based on our previous work, this was integrated into the final design package. Design: Crowd Productions. Programming: Pivod Technologies. Melbourne 2004.
with the hôtel planning, an urban form where the spatial sequence presents as the figure rather than the structure acting as a form in a surrounding spatial ground, the eventual plans of the Melbourne Central complex are ugly, apparently haphazard and do not reveal their logic from an aerial perspective. Similarly the storyboards could lead us to devising a script which then called for an appropriate set of enabling environments or tools in the manner of Cedric Price’s architecture. We later found out that this idea of a vision for the cinema complex design’s operation and ambience won us the job. The key message behind the narrative was that as a cinema user, Ella was most focused on the social experience of going out. We proposed that the cinema design had to pivot around the idea of hospitality.

‘Ella is running late. Ella is always running late. At 25 she feels that she is already running out of time. She has parked her car down-stairs and detoured on her way to the cinema via her favourite record shop. She is meeting two friends to see this latest period drama staring Johnny Depp. They have arranged to meet in the foyer for a drink, but she knows they will all be late and that gives them an excuse to have a much longer catch-up after the movie. She loves the bustle and layered, textured feel of this ‘foyer’. Its not really a ‘foyer’ in the traditional sense, like one of those dead, lost spaces where people hang around fidgeting. This space is full of life, yet not in your face. As you arrive there a some small intimate bars looking out onto the Melbourne Central concourse. At times with your friends you can almost take over one of these bars. They are great for people-watching too. The area feels both modern and old, with a dense, rich feel, with a great mixture of rough natural surfaces and slick, curved space age surfaces. Like a market, you can be distracted by what’s in front of you but your gaze can easily travel through the immediate surroundings to what is beyond.

The area around the ticket office is cool. Its not full of tacky signs but easy to spot because it glows as though it were made of ice and has been lit up from inside. You walk through it like a special gate on your way to an adventure. She has already bought her ticket on the Internet and she only has to run the barcode on her printout past a scanner in the wall. A friend of hers said coming here was like a visit to Broadway, full of life and the chance to escape. After a tough week Ella has been looking forward to this experience of escape.

Past this portal there are a number of chilled-out bars and lounges. The lighting is much more subdued. The space is divided up with walls and screens of different materials that are all partly see through. Even-though the floor plan feels quite organic it’s easy to know where you are as the long wall leading you to the cinemas softly glows and seems to hover along one end of the space. Ella sees her friends standing next to the snack counter. This is an amazing red blade wall that projects at full height into the room. It’s like a giant vending machine and the snacks are sitting in clear dispensing tubes projecting from the red blade.

You can buy your snacks in the conventional manner at the end but contemplating the array of brightly coloured food and buying it with change or using your mobile phone is much more fun.’

The presentation of this narrative was accompanied by an initial research paper, drawn from the accumulation of data and strategies collated from the ACMI project, and a collage of evocative images suggesting technological, spatial and social or programmatic
Hoyts cinema project, Melbourne Central. Plan of the ticket box, Level 3. Mirroring the logic of the French hôtel designers, our planning was driven by unfolding spatial sequences and relationships. The space became the figure and the structure the ground. Design: Crowd Productions and studio dp. Melbourne. 2004.

Detail of the plan of the adjoining Hôtels Crozat and d’Evreux by Pierre Bullet. Exhibiting the logic of privileging the spatial experience, the plan has none of the symmetrical grace of Italian planning of the period. This plan is driven by a social script. Paris. 1702 and 1707.

Hoyts cinema project, Melbourne Central. Internal elevation of the ticket box, Level 3. The digital content, narratives and graphics were integrated into the design approach. Design: Crowd productions and studio dp. Melbourne. 2004.

possibilities for the project. Immediately on our appointment, as described above, we undertook a program of client investigation – client data-mining – to solicit as much tacitly held information as we could, and a broadly-based engagement of client stakeholders. Firstly, we instituted data collecting road trips, ‘Tarago tours’. In a ‘people mover’, with the management team from Hoyts, we visited fourteen cinema complexes in Melbourne and Sydney, Hoyts’ own complexes and the most successful of the competitions’ sites. We documented these locations and interviewed sales staff and local managers. As described above, we interviewed a broad spectrum of Hoyts staff at their Sydney headquarters in ‘open studio’ workshops. This was followed up by the construction of cardboard-box building-prototypes or ‘theatre set’ workshops to challenge existing operational assumptions and explore new possibilities with staff and stakeholders, role-playing key work processes in crude immersive reconfigurable prototypes built on the day. This information was compiled into reports which were circulated to Hoyts management and key stakeholders. The reports were presented in point form as a sequence of strengths and weaknesses about the existing design and as a questionnaire about improvement. They were designed to function as an open-source reverse brief. They solicited very valuable feedback. The reports were based on the magazine-style format of the ACMI reports with extensive photographic and illustrative content. This time they were written, compiled and designed by the Interior Design and Industrial Design students in the design studios David Poulton and I were teaching in at RMIT. The students excelled at these tasks, creating two-part reports, a commercial front-end and a privately circulated RMIT student project review back-end. We were taking a studio called ‘Reality Cinema’ where we invited students to sit front-row in our experimental commercial architecture practice, attending client meetings and contributing to the prototyping process. I compiled a customer experience-path from existing data collected from Market Equity, and contrasted it with a proposed experience-path that our design would seek to address. We were seeking a longer customer stay-time onsite with a concomitantly higher return on the food and beverage income. We discovered that 50% of a cinema’s profit comes from the food and beverage offer. This dovetailed perfectly with our proposed hospitality model for the new design. Shortly after this initial engagement with Hoyts I reflected on the process at RMIT at the May 2004 Graduate Research Conference. I attempted to locate the way innovation could be of great value to certain clients and how our emerging data-gathering and engagement techniques had helped realise the potential of that innovation. I began with a quote from the then Director of Business Development at Hoyts:

“People used to sign up for a twenty-year lease for a building tenancy and imagine that the renovations they initially undertook would last the distance. Now they are re-renovating after 7 years as an average, with the whole building being gutted creating chaos and expense. We cannot predict what we will need in 7 years so we must plan for maximum flexibility and constant change.”

Anton Stanish, Hoyts Cinemas Director of Business Development, 25.05.04

I then went on to say: ‘The market place in which commercial design operates is now more dynamic than ever, not fixed and not predictable. Innovation, which used to be the province of a few companies is being seen broadly as a valuable competitive tool for marketing, cost-saving and brand image. Commentators like Richard Florida, Michael Porter and Michael Schrage observe
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01] ‘Tarago Tour’, Hoyts cinema projects. With key stakeholders from Hoyts, we travelled by minibus to existing cinema complexes looking at facilities and listening to the staff. Sydney. 2004.


03] Hoyts cinema project, Melbourne Central. Detail of report 03, produced by Crowd Productions and the team of students from the design studio David Poulton and Michael Trudgeon were taking at RMIT; Reality Cinema. Melbourne 2004.


that companies employing innovation are now seeking to respond more quickly to market changes and increase market share. This approach is being led by companies such as Sony, Xerox and Smart. In the marketplace there is now the perception that innovation is a sexy story that can indicate a manufacturer’s concern with customers and a commitment to the future. It also suggests that the company intends to be around in the future, with a potential responsibility for its actions and to its relationships. Michael Schrage suggests further that prototyping within companies can reconfigure the internal culture in a uniquely valuable way. Car shows are now advertised by images of concept cars indicating the organiser’s perception of the significance such activity holds for their audience. Companies are seeking to gain access to this kind of product development in order to be identified with the activity and to gain market advantage from the leap-frog effects of innovation in terms of production, cost or performance.

Innovation, vision and scenario-mapping require a different set of expertise to the set required to run a successful manufacturing or design organisation. Therefore companies are now seeking ways to gain access to this kind of product development. Rather than try and change the fundamentally homoeostatic nature of existing companies, many are seeking to graft research-based [and I would argue partially academic in nature] innovation practices onto the company as a separate cell. To do this the innovation and design cell needs to be able to engage dynamically with the entire host or client organisation. Traditional design models see design as a rather static profession like surgery. A practitioner learns a set of techniques and then goes out and applies them in a fairly predictable and universal fashion. This system has worked fairly well for a long time.

In a more dynamic marketplace, made so partly by the great increase in the density and speed of information transfer stemming from the communication revolution, much greater emphasis is being placed on the engagement with, and significance of, innovation or change as a generator of economic or strategic advantage. In such a climate a hermetic toolkit of design responses and techniques will no longer deliver the kind of result such a client is looking for. The innovative solution requires a complex and dense investigation of the client’s networks, both internally and externally, in order to sift through enough data to find patterns that give clues to possible valuable change, to exploit existing tacit knowledge and so on, that may give rise to new perspectives and possibilities. The process amplifies two characteristics of design – design is a social process both in respect to gathering-data from clients and users and in addressing a market and delivering a product to the marketplace. It is a data gathering exercise. In an environment of increasing complexity and competition this data-gathering can become very extensive. Like the investigators and profilers on contemporary forensic investigation TV shows, a rich map of the company’s internal and external networks and systems of operation needs to be constructed. This involves historical, technical, social and physiological information as well as technical and functional information. In response the design agency will need to initiate a much more intense and open relationship with the client.”

The success of the techniques mentioned above, the research, reporting, storyboarding, open studio and theatre-set prototyping strategies allowed us to question many of the conventions of cinema operation and design from the pattern of the carpets, staff uniforms and dinner menus to the function of the foyer and the role of movie trailers. The direct and pre-emptive engagement with company stakeholders was very successful. It allowed for disputes and rejection of our ideas to occur in a timely and ‘timetabled’ way. When we presented our idea of converting one of the cinemas from the original developer-driven plan into a cinema-enabled foyer
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bar space the Hoyts’ General Manager of Programming, Noel Collier, responded very violently, exclaiming it would not happen in his lifetime. Two weeks later, at a subsequent meeting in Sydney, he enthusiastically described the new possibilities this strategy would bring to Hoyts’ engagement with customers. These exchanges formed part of the design process rather than arriving as opposition to a completed design proposition. With an agreed, albeit at times shakily so, platform of programmatic and operational changes we returned to our technology prototyping techniques to meet the demands of the new requirements. In my mind the process had converted the compelling potential explored in the writings of Robin Evans\textsuperscript{15} for questioning and unpacking convention, here not only to understand it better but also to liberate us as designers from slavishly being subject to its often myopic censure of design’s possibilities. On the basis of our proposed program we prototyped centralised ceiling sign systems, personal electronic media players, computer-controlled and programmable LED light walls, ceiling-mounted pattern projectors, computer-controlled light-emitting tabletops and suspended polyurethane ceiling pods.
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14] Mobile and in-cinema candy bar concept.
The Hoyts Cinema project saw us evolve an informal menu of client engagement strategies developed from those created to address the ACMI ‘client crisis’. As mentioned above, these strategies included creating storyboards or ‘devices’, photographic assemblages referencing desirable atmospheric or performative design outcomes, acting as or combined with imagined narratives of possible scenarios. It also included ‘Tarago tours’, mini-bus-based inspection tours, to collect data directly from client networks, research reports, customer experience paths and scenario mapping, studio-based workshops to interview client stakeholders and foster client cross-disciplinary discussion; and immersive building mock-ups or ‘theatre sets’ for prototyping new spatial and business process configurations and to test and communicate innovative design proposals. These strategies had been developed quickly and made up of techniques from the other activities I was engaged in: teaching, advertising and product design. We did not formally present these techniques to Hoyts at any stage as a schedule of engagement. Nor did we lay out the expected deliverables from each technique. The process of employing these techniques was rather intuitive and ad hoc. In the short term the results were generally successful. On the basis of our design work for the Melbourne Central complex we were commissioned to prepare concept designs for cinema complexes at Blacktown, Fox Studios, Erina Fair, Northland, Highpoint and Rouse Hill. Additionally, we were shown sites at Sylvia Park in Auckland, New Zealand, Norwood in Adelaide, Victoria Gardens in Melbourne, Eastland in Melbourne, Chatswood Chase in Sydney and Westfield North Lakes in Queensland in order to begin thinking about possible designs that would exploit the strategic directions articulated in the design approach to the Melbourne Central complex. Unfortunately this frenzied activity and the euphoria from receiving such a broad program of work was short lived. Events outside of our understanding of the dynamic of these architectural projects took over. In 2005 there was a downturn in cinema patronage, due in fact to the unusually poor offer of new movies at the box office. Although none of the new cinema complexes had been completed, the CEO of the Hoyts Corporation, Darrin Walters, who had initiated the idea of an innovative design program, was asked to resign to appease the new shareholders at Hoyts, brought in by the owners, the Packer family. An acting CEO, Stuart McInnes was appointed. He had no desire to risk his own career within the company by proactively supporting the adventurous and unproven building program of his predecessor. Without boardroom support the design program was difficult to champion, even with strong stakeholder support at the operational level. While we had laboured to communicate and develop the design strategies at an operational level, because this was where the program for the project would be realised, no attempt had been made to package the process or the significance of the outcomes in the language of business. The process had not been framed for quick assessment or engagement at the boardroom level. It was a design proposition not a business proposition and as such, tended to look like a risk when seen from a purely financial point of view. The Hoyts board decided to proceed with two of the proposed designs, Melbourne Central and Blacktown. I hoped that when the financial figures started to come in, verifying the greater than projected patronage for these two complexes, the board would quickly reinstate the remaining projects. Without a proposal at boardroom level any project outcomes were explained or framed in terms of pre-existing financial planning and


programs. The substance of our design strategies had no coherence or leverage at this level where critical business design decisions for the company were made. The impact or relevance of the new design strategies was invisible. In the months ensuing the exit of the CEO a significant percentage of the senior managers also left. The careful engagement of the stakeholder cohort produced a grounded and innovative design strategy, but in terms of corporate decision-making it had not achieved a presence. If we were to secure a stable platform within the company to roll out a design program we would need to frame the design strategy in a new language, not the language of design or design outcomes, but the language of the client.
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01] Hoyts cinema project.

02] Hoyts cinema project.
process and place

The two completed Hoyts cinema projects, at Melbourne Central and Blacktown, demonstrated for us the advantageous possibilities of narrative and immersive prototyping strategies for engaging our clients in the development of a program. The projects had further revealed the previously hidden advantages of tapping into the ocean of tacit stakeholder knowledge. Through our prolonged conversation, research and workshop processes, drawing on the specific experiences of individual area managers and frontline staff we began to understand the heterogeneous nature of the Hoyts’ network, along with the potential advantages of exploiting the network connectivity. As a multinational corporation it presented itself to customers as a monolithic unified entity. In reality it was composed of very diverse operational sites, each subject to highly localised cultural variations. Our approach to the Melbourne Central site drew heavily on the research undertaken during the ACMI project. The balance of our response came from sifting through our own experiences of living in Melbourne. Central to our approach was the idea that the cinema complex needed to be a distinctive local destination. On our being commissioned to develop a design for the second cinema project at Blacktown, Sydney, I began to research the local cultural context there. I wanted to understand how we might frame the experience of going to the cinema for that particular user group in a way that maintained the additional hospitality focus we had brought to the Melbourne Central design, while creating a uniquely Blacktown-focused manifestation of the approach. Having identified a range of experiential opportunities from our initial research for the Melbourne Central project we had implemented them in a modular fashion as discrete destinations within the plan, the conceit being that the complex could be thought of as an urban infrastructure. Our approach was designed to optimise on differentiation within the complex rather than homogeneity, which we saw as one of the existing problems with cinema-complex design. We stated that this modular approach would allow us to address each site in the Hoyts network with a unique mix of the modules, maintaining a uniform quality of operation and experience while allowing us to tailor each design to the specific culture and scale of the location. Research done specifically on the cultural context of each site identified which modules should go into that site. Hoyts had committed to building a complex at Blacktown some years previously, to replace an existing complex in the area. That site had been dogged by vandalism and the very antisocial behaviour of its patrons. Hoyts management did not visit the site often and when we asked them about Blacktown they generally advised us not to go there. The research I undertook provided us with some extraordinary material. The Blacktown City Council Social Profile revealed an energetic, uniquely youthful and technologically savvy and engaged population. The Blacktown Cultural Policy Framework and Plan identified very strong local support for cultural and artistic activities in the community. It is the centre of Australia’s Hip Hop music culture. Organisations like Urban Theatre Projects, Casula Powerhouse and the University of Western Sydney were bringing some of the most adventurous arts practitioners into this community. Our design response to this information was to propose that this cinema complex should be a technologically sophisticated creative toolkit for the audience, in a manner much like the ACMI cinema pods’ ability to act as production facilities. We proposed that the foyer of the Blacktown site should be a digitally mediated environment interfacable with customers’ mobile phones
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along with a vending-machine based, cashless version of a traditional cinema candy bar. We designed a second customer lounge specifically to act as a foyer for local film festivals and we proposed that the stainless steel personal media players playing trailers at the cinema entrance should also act as electronic communication portals to other cinema sites, connecting and referencing the wider network of cinema locations and audiences. Our research and prototyping processes had given us a way to amplify the site-specific nature of each project while technologically exploiting the experiential possibilities for users of the distributed network, set in place by the corporation. For new users each site would bring a unique experience. Any user at any site could also benefit from the global footprint of the corporation by being able to connect to other Hoyts sites. Simultaneous global releases of Hollywood blockbusters could initiate a calendar of network-based events. The logic of this approach drew on the writing of David Turnbull and his reflections on networks and place,18 and the idea, articulated by Manuel Castells in his book *The Rise of the Network Society*, of a ‘space of flows’.19 This symbiosis between differentiated places and globalised networks afforded additional and unexpected value from the research and prototyping regimes. We could identify and entrain difference as part of enhancing the effective operation and place-making of individual projects and we could also leverage the presence of transnational corporate connectivity as a way of creating more conversations and potential richness of experience for our users. Communications technology could be exploited for both experiential and commercial ends. This seemed like a powerful story to tell our distributed and network-based corporate clients, as a way of driving the design of their retail projects and giving us an enhanced leeway for design opportunities. This positive reflection, along with the negative consequences flowing from our lack of an effective board room presence, set the stage for the next body of work.

**references**

08. Ibid. p. 09
Footnotes

F1. In 2000, at the invitation of Chris Ryan, the director of the IIIEE at Lund University in Sweden we had developed a design strategy to engage with the uniquely consensus-based social dynamic of Swedish society. We had been asked to create a corporate graphics package and multimedia presentation about the environmental research facility, the IIIEE, for the Hanover 2000 Expo. In anticipation of the problems that full consensus-based decision-making would produce we developed a design strategy called ‘open studio’. Our design studio was set up on site with the client, within easy reach of all parties. We invited everybody from within the client organisation to visit us constantly and always left the door open. We also presented our work in progress at weekly breakfast forums for comment and feedback. With constant client interaction and the transparency of our process we progressed the design in record time and got full agreement on a quite radical solution that required some difficult decisions from the client.

F2. The report by Market Equity, released in May 2004 was the third of three research papers about cinema going and the Melbourne Central shopping centre development. The first was Project Movie Star, prepared by Jigsaw Strategic Research in September 2002. It was originally commissioned by Coca Cola Australia to identify new marketing opportunities in cinema advertising. It presented a very conventional, segment-based market analysis of national cinema going audience profiles and trends. As with much of this material you need to seriously read between the lines to find any real design value in it. This type of research generally gives rise to a ‘tick the box’ marketing response and a formulaic campaign outcome. This was followed by Lend Lease Retail, who commissioned a development brief for the Melbourne Central complex in August 2003 and contained a very sophisticated performative evocation of the proposed Level 3 Entertainment Precinct, including a description of the public space around the imagined cinema complex. It included many contemporary ideas and approaches currently discussed in marketing and advertising circles and made specific reference to particular local communities such as the RMIT student cohort and key characteristics of inner Melbourne’s urbanised culture. The Market Equity Report in May 2004 extended the market segment profiles to include desirable experience outcomes that should be addressed in the design of the cinema complex. These closely matched the conclusions we had independently come to through our own research regime.

F3. While developing the material for the studio ‘Cultural Amplification’, it became clear to me that forensic methods for collecting and organising data represented a good model for describing the notion of a thick description and a notion of how one might assemble one. I have come to call this process a ‘CSI’ or ‘Crime Scene Investigation’ model. This has helped because it is a non-academic term and students and the public have had exposure to these ideas in popular commercial television series and in films such as the Bone Collector. I have even noted specific terms from these programs such as ‘walking the grid’, the term used to describe methodically searching a crime scene for minute clues. These strategies and nomenclature have a resonance with the design activities of building up a detailed picture of the context or scenario in which the design program or response is to be located.

F4. Urban Theatre Projects located at 6 – 8 Old Town Centre Plaza in Bankstown, a suburb adjacent to Blacktown, describe themselves on their website as ‘having established an international reputation for “intimate spectacle” performance events’ with and about the people of Western Sydney. ‘Many of our works are made and presented in active, populated urban locations’. UTP were recommended to me as experimental and professional practitioners by Ross Gibson and Nicholas Tsoutas, the then Executive Director of Artspace Visual Art Centre, Woolloomooloo, Sydney. UTP’s repertoire included a Hip Hop dance show called ‘Hip Hopera’ which was performed on suburban trains and train station platforms.

F5. The Casula Powerhouse is a cultural initiative of Liverpool City Council, a suburb adjacent to Blacktown. Casula Powerhouse runs an extensive and innovative arts programs exhibiting and fostering local participation in the visual arts, theatre, cinema and community education programs. Casula Powerhouse has made a point of promoting confronting and radical art and theatre and has attracted a community of culturally diverse, experimental and politically active artists, performers and commentators. Its curator, Nicholas Tsoutas, has a long and distinguished career in creating, producing and curating experimental art work.
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act 04: space as a social platform.

recognising the language of the client
In April 2005, Crowd Productions was invited to make a presentation to the National Australia Bank (NAB), at their headquarters at Docklands in Melbourne, as part of a limited competition, to develop an architectural template for the upcoming upgrade of their national retail-branch network. As with the ACMI and Hoyts projects, I teamed up with designer-maker David Poulton and on the 5 May we made our presentation to a room full of NAB executives. From the emerging toolkit of Crowd communication techniques we presented a short scenario-based narrative or ‘Ella’ story, describing the experiences of a customer in an imagined future banking environment. Additionally, we presented a set of quickly assembled cultural and historical observations entitled ‘The kingdom of banking’, which explored and suggested the conversational and trust-based nature of successful banking business models. For the first time I attempted to put down in written form an overview of our working method. The basis for this document was the reflection I had been undertaking as part of this PhD just prior to the NAB presentation. The bank responded very positively, but they required a more careful account of our intended working methods and design strategy. The NAB Marketing Group were so taken by the ‘Ella’ narrative that they requested a copy to study. The ‘Ella’ narrative format later became a component in a key confidential internal report, the Customer Value Proposition Team’s Customer Workshop Takeaway Pack, released in August to all major stakeholders. Ten days later we again presented, this time with an account of our intended design program that was as extensive as I could produce. We got the job.

We were quickly drawn into a team of enthusiastic collaborators formed around the customer experience research being undertaken by the ‘Brand and Customer Value Proposition’ team at NAB. The group included John Douglas from SEE Advertising, the NAB’s retail advertising agency; Michelle Jordan, an informed and imaginative technology consultant from IBM Business Consulting Services; Kieron Letts, Jo Rozario and Louise Long from the NAB ‘Brand and Customer Value Proposition’ team and Dennis Quinn who was head of the NAB Physical and Self Services Delivery, the real estate stakeholder. We began with a series of collective trips in a minibus, a ‘Targo Tour’, of the Victorian retail-branch network, interviewing staff. We organised workshops to discuss ideas and the concerns of the management teams from various stakeholder groups based at the Docklands headquarters. We participated in and contributed content to large workshops organised by the ‘Customer Value Proposition’ team. Megan Genat, from our team of Interior Design students working on the Hoyts project, prepared reports which we circulated to a wide audience of NAB stakeholders. We wrote a reverse brief, identifying significant design opportunities that were drawn from the workshop conversations. Again these conversations produced ideas previously unimagined by managerial staff or ourselves, and were refreshingly relevant. These were then formally distilled into a set of conceptual zone plans presented in July. In early August we presented an animated fly-through of our proposed modular, scalable, destination filled and communication-and-technology-enabled concept design. We built in a wide range of spaces designed to allow greater customer access to banking information and for conversations with staff. We designed a modular display system specifically for use by local bank branch staff, to communicate to their own customers with a focus on
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02] NAB project. ‘Ella’ narrative. Detail. The ‘Ella’ narrative was presented to NAB management as an experientially-focused evocation of an imagined bank from the customer’s perspective. Crowd Productions. Melbourne. 2005.


06] At the end of the NAB project we assembled the presentation tools into a computer-based presentation pack to explain the process to prospective corporate clients. Crowd Productions and Dennis Quinn and Associates. Melbourne. 2006.
community activities – a community wall. This was designed to be integrated into the overall architectural build rather than appear as an ad hoc afterthought. We developed a series of mobile meeting pavilions designed to make it easier for local staff and customers to link up with the expertise available from greater NAB national consulting network. As with our Hoyts design response, we proposed that the national NAB network and all that it could provide needed to be digitally accessible and manifest within each branch, as well as each branch having its own local identity. This way we could capitalise on the size and resources of the distributed network yet provide a sense of valuing customers at a local level. We had come to understand these as being necessary components for building an appropriate experience to attract customers back to the bank branches. The design elements and the animated fly-through were presented to a national conference of NAB managerial staff in August. This produced some real excitement and raised the spectre of serious opposition as the reality of the changes we had begun to propose started to sink in. To our key client contacts we stressed the importance of now moving to an immersive prototyping process. We needed to communicate the ideas spatially and engage with the social consequences of the design proposal in order to test the ideas and bring some comfort to those who were alarmed by the apparent risks associated with our design proposal. At this point Dennis Quinn, our principal client contact at NAB, committed the bank to building a full-scale ‘theatre set prototype’ of a typical branch footprint. We were given a substantial budget, a site inside a large, secure factory, owned by NAB as part of their data processing centre at Knox in Victoria, and told to start immediately. We appointed a builder familiar with the techniques of set construction for the film and television industry. David supervised construction onsite and we introduced our latest group of students, studying industrial design at RMIT, to the construction realities of large-scale prototyping.

The 1000 square metre set succeeded as a conversation generator and design tool. This prototype was literally a theatre set, like a giant set for an interior location you might see on a television program like Neighbours. It looked like an environment constructed from various substantial materials from inside but it was in fact made from painted chipboard and polystyrene. However the technological banking infrastructure was real. Walls were removable to allow forklifts to move new banking technology in and out. We used it to test newly developed cash-handling technology, some of which had never been trialled in Australia before. We prototyped and tested new graphic display systems, advertising strategies and communication technology. We photographed the set for NAB conference presentations, workshops and promotional material. We trialled new work processes and safety practices with a huge cast of diverse and sometimes antagonistic stake holders. SEE Advertising developed an entirely new advertising and information communications campaign to trial inside the set. We developed a new language for the NAB’s furniture, display and work pavilion components and ways of manifesting individual bank-branch community and neighbourhood relationships as integral to the architectural fit-out. We reconceptualised the role and intention of the doors within the bank between the customers and staff. The set was used for extensive role playing workshops by the NAB marketing, Customer Value Proposition, work process and security groups. The CEO Executive Director of NAB Ahmed Fahour was escorted through and introduced to the redesigned processes a customer would experience in this new retail environment. Management acted out the roles to be played by branch staff. Fahour requested ten new branches on the spot for immediate construction across the eastern states of Australia. Our scaleable, modular and reconfigurable planning strategy allowed us to quickly generate plans for real site locations. The approach, developed during the Hoyts project, of reflecting
01] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Entry zone with information kiosks. All of the key destinations developed from the reverse briefing process were presented as modular zones able to be included and scaled as required. The intention was to allow for differentiated outcomes responding to local demands while maintaining a uniform standard of service and experience.

02] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Information kiosks.

03] **NAB project.** Computer-animated fly-through of concept design. Screen capture. ‘Fast Service Wall’.

04] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Information wall.

05] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Central conversation space.

06] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Teller zone and meeting pavilions from the conversation table zone.

07] **NAB project** Computer-animated fly-through of concept design. Screen capture. Mobile meeting pavilions and teller zone.

08] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Teller-assisted zone with Teller Cash recycling machines.

09] **NAB project.** Computer-animated fly-through of concept design. Screen capture. Mobile meeting pavilion.


and expressing the local potential in uniquely configured and diverse destinations coupled with a strong, communications-technology-based embedding of the bank-as-a-networked-presence was ideal for the demands of the company’s roll out. Partial implementations of our design strategy were constructed as NAB bank branch refurbishments at Burleigh Waters and Southport in Queensland for live trialling and the first complete branch was constructed at Victoria Point, also in Queensland. Finally our ‘theatre set’ bank mock-up was used to train the Queensland staff for a week prior to the Victoria Point opening. The theatre set has been retained by the bank for ongoing testing, training and technology trials and demonstrations. With this theatre set we had further extended the earlier cardboard-box constructing and prototyping of spatial designs and strategies for Hoyts and the single capsule prototype for ACMI to a much more immersive and larger, evolving conversation space. Scenarios were developed, the performance and implications of the design elements discussed and the results were taken away to inform the making of new prototype components. This process was critical for the desking, storage and security elements. We used it to trial existing and new work processes and ideas. Management and staff role-played different iterations of work processes and assessed likely customer reactions. This regime extended the logic of the very fluid cardboard-box theatre set mock-up while making the experience more tangible, and allowed for a very detailed analysis of potential outcomes. This was something the very risk-averse banking staff felt comfortable with. Like the cardboard box set technique, this quick and crude construction approach was a form of rapid prototyping. New iterations could be quickly generated. No one felt too attached to any single iteration providing that the intended decision to innovate was kept alive. The process of prototyping allowed for an evolution of the final specification as the users realised the consequences of their requests by physically playing with them. The process sped up the development of the components of the new operational infrastructure considerably, often to a matter of weeks rather than months or years. The learning process occurred on both sides, the client’s and ourselves. It reaffirmed the significance and unexpected contributions that arose from providing an immersive, full-scale conversation space and the necessity on our part of being able to quickly build new design elements, albeit in an expedient fashion, as well as to draw or document them. Participation in the evolution of this conversation to shape the programmatic foundation of each design element gave us as designers enormous freedom to experiment and take risks. The client, meanwhile, felt an appropriate sense of control and engagement. The prototyping regime also changed people’s expectations about what could be achieved through the design process. Design and prototyping could be a catalyst for change. The iterations explored through prototyping were akin to the improvisational techniques employed by actors or jazz musicians to develop a script or composition. In Ken Burns’ famous television documentary series JAZZ, Wynton Marsalis, the jazz trumpeter, describes the structure of jazz music as akin to a conversation. The prototypes become generators of conversation. As Michael Schrage observes in Serious Play, prototypes make the fuzzy explicit by externalising thought so as to allow ideas to be interrogated through a collective experience and the resulting conversation. Within our method they were essentially acting as a social mechanism. Often the process helped to establish what it was that people really wanted to accomplish. The traditional architectural brief assumes that the users actually know what they want. All parties are then trapped into accepting the validity of the initial assumptions, until such time as one of the key actors or stakeholders suddenly changes their mind. Prototyping allows these assumptions to also be tested along with any response as part of grounding the broader design process. At the time I described our approach as holding hands while walking the plank. At the RMIT Graduate Research Conference in May 2005 I presented our process as ‘A view from the plank.’


‘Central to our method is to begin by loosening the ground or preparing our clients for the idea of investigating or questioning the conventions that surround their practice and their expectations. We see our process as a bit like hijacking the client’s view, a bit like having pirates board your ship. It comes with all of the uncertainties that accompany such an event. Stepping off the ship onto the infamous plank, we can look back at it from another perspective. Ultimately we hope that this process will allow us much greater freedom to address the project. We want to explore and experiment and this requires creating uncertainty but we have to provide a safety net or it is too dangerous for our clients. We need to hold their hands’.04
The introduction of our prototyping methodology to address and realise change and innovation proved very useful in the NAB project. We had proposed a model for designing the bank concept based around the idea of conversation. This had come out of the initial research and stakeholder consultation. As a consequence we had removed all security barriers within the bank to facilitate staff customer communication and allow staff to move freely into the customer browsing and waiting zone. This was possible because of a new piece of technology, the ‘Teller Cash Recycler’, which incorporated an elaborate anti-holdup system within each bank teller’s individual cash drawer. Through our research of precedent, including a quick trip to see this technology in use at the Bank of Scotland, and the product-testing as part of our prototyping program, we had secured the agreement to use this new technology from the security and health and safety stakeholders, and staff union officials. We had moved from initial research to realising built operational facilities in a matter of months while also establishing and developing a programmatic script and a set of design strategies that called for significant change. At NAB, Crowd had become quickly integrated into a set of wide-ranging stakeholder conversations. Inter-disciplinary working groups met regularly, initially as part of the Customer Value Proposition program and later guided by Dennis Quinn, the NAB real-estate stakeholder. We discussed findings from prototype workshops conducted at the Knox theatre set site and presented our design responses. The process demanded a greater volume of formal and process-oriented paperwork but the trade-off was that stakeholders could sign off on design decisions and have an appropriate paper trail to establish liability and possible blame later on. The process was now being presented as a business proposition with timeframes, staged activities and deliverables. By early 2006 the process could be presented as a taxonomy of tools and strategies, diagrammatic work-flows and an outcome-focused digital presentation. The process, and elements of it, were regularly being presented to different groups within NAB and to external suppliers developing material for the project. Quick and coherent communication of the process and easy access to its raison d’être were crucial in order to frame the objectives for the project and their value to NAB. I realised that our approach, which had been conceived of as a design strategy and articulated in the language of design, needed to be framed in the language of the client. As our clients were large commercial organisations this meant that the design strategy made most sense when it was articulated in the language of business. Design was our way of thinking and we had to introduce it into a business milieu as an active and coherent business strategy. This design process was not a passive response to, or an outcome of, an externally applied or conventionally derived program. Communication of the intention at the outset was just the beginning of the communication trail. Our method was a path that everybody had to travel on. Once we had established new processes and new enabling tools and environments for their operation, the staff and stakeholders had to keep to the new script. They were part of the design’s operation. If the staff did not engage with the new tools and opportunities provided within the design, then our new design would in fact only deliver the old outcome. We could design a banking environment for the bank to engage in new conversations with their customers to develop new business opportunities, but if the staff didn’t undertake their new roles the design effectively fell over. Similarly, if our new infrastructure of content and
information delivery did not get supported by the ongoing generation of appropriate content then these tools too would cease to deliver the intended changes. I realised that our design in fact had three components: the tangible environment along with mechanical technology, the information and communication content, and, finally, the physical presence and activity of the staff and customers operating and interacting within the built space. The method relied on addressing and changing a very extended and complex system, with a heterogeneous group of actors or stakeholders. They all had to understand and participate in the new narrative and program. The moment they stopped the design ceased to work. The narrative, communication-based and dramaturgical techniques were critical in an ongoing maintenance of the design organism. Just as J. Scott Turner in his book, *The Extended Organism*, identifies insect life as really being bounded by very extended external processes that are fundamental to survival, so the physical skin of our design did not represent the boundary of operation of the system we were designing. Turner, working as an entomologist, has identified many examples of complex and vital chemical exchanges that can operate outside an insect’s body which act to draw in or create the chemical requirements necessary for its survival. Though well beyond the traditional idea of an insect’s carapace or physical skin, these processes function in the same manner as the organs within the body. This presented to me a very appealing model to describe and understand how we were now approaching the problem of designing space. The operation of our architectural design traded in widely understood conventions in favour of specific, newly conceived and orchestrated processes. These would need to be learned and maintained for the design to be actualised. Our architectural designs were consciously conceived of and operated like extended organisms. The life of the design required the ongoing support of a raft of dynamic processes and flows, many of which did not exist in their required form prior to the design process.
01] **NAB project.** The porous entry zone of the retail banking concept design with a 24 hour access ‘Fast Service Wall’ and interior elements designed to create a deep shop window. Render: Costa Gabriel. Design: Crowd Productions and studio dp. Melbourne. 2005.

02] **NAB project.** Integration of information as a fluid and easy-to-manage element of the architectural design was a significant design objective. Design: Crowd Productions and studio dp. Knox. 2005.

03] **NAB project.** Prototyping and managing the new banking and staff processes along with the information and content management extended our role as designers of the retail banking environments. Design: Crowd Productions and studio dp. Melbourne. 2005.

In late 2005 NAB called for tenders to begin documenting the individual bank-branch building plans as the concept design was endorsed and national roll-out got underway. At the time Crowd was not in a position to tender for this massive project, involving the documentation and administration of up to 100 building and renovation projects each year over a three-year period. We did not have a documenting network in place to collaborate with on such a project either. The tender was won by one of Australia’s largest architectural practices. Unfortunately this practice did not share or understand our conception of an architectural design process embedded in wide-ranging research and a conversationally based programmatic evolution that was designed to drive and shape all of the subsequent architectural decisions and detailing. In early 2006 we prepared a ‘Design Principles’ document, followed by a lighting-strategy report prepared by one of Australia foremost lighting engineers, Kevin Poulton. These documents were intended to safeguard the project’s design intent by operating as a set of standards for material specification, lighting design and architectural planning. While they were not a complete building standards manual, they were intended to function as a menu of design options that had been agreed to by a wide range of client stakeholder groups. As the architectural documentation for the national roll-out proceeded the resulting designs began to diverge quickly from the original design template as the various actors in the design supply-chain contributed their own creative input. The very first complete NAB bank branch of the rollout process, at Victoria Point in Queensland, was to be the closest any branch would come to embodying the design elements forged within the theatre set laboratory. The evolution of our working methodology had effectively engaged an ever-broader group of client stakeholders during the concept design process for the NAB project and was now framed in language that communicated the intent and course of our design approach more directly to our clients. This had seen significant internal work-process changes at NAB and new channels of communication set up, but these were not enough to fully maintain the new design ‘organism’ at NAB. As at Hoyts, many of the talented and energetic senior staff at NAB started to leave as the project’s progress was slowed by unanticipated resistance at the level of upper management and from newly appointed external suppliers. A number of NAB management staff involved in the project have gone on to other organisations where they are seeking to introduce the dynamic of our prototyping-based design. Consequently, through this network of business people now familiar with our architectural design approach and convinced of its effectiveness, we have been invited to begin projects at the New South Wales Road Traffic Authority, the Newcastle Permanent Building Society, Australia Post and Medibank Private. However, at NAB with the departure of key operational staff also went the narrative component. Without these content generators and actors, able to communicate the design intent and explain the new roles and activities or processes that constituted vital parts of the design strategy and realisation, the built or spatial component could only appear incomplete or difficult to comprehend. Communicating with our clients opened up the possibilities for our design scope very significantly but we had produced a more exotic outcome, more sensitive to the maintenance of an extended set of conditions and actors. For the NAB project, this has meant a slowing up of the rollout as the remaining NAB stakeholders attempt to carry it forward with a new team of architects,
01] NAB project. Plan of Victoria Point, the first full implementation of our design in a ‘live’ branch. Design: Crowd Productions and studio dp. Victoria Point, Queensland. 2005.

02] NAB project. Concept design of key zones within each retail bank. Detail showing the information, web access, conversation zone and meeting pavilions. Design: Crowd Productions and studio dp. Melbourne. 2005.
suppliers and contractors. While this project demonstrated to us the veracity of a prototyping-based design approach to develop an innovative script or program to then drive an architectural response, it also confirmed the vulnerability of generating such a specifically tuned and disciplinarily-extended design. The prototype-based approach could deliver an innovative and sophisticated design, configured to enable real and valuable change. The approach was sensitive to the opportunities presented by the need to engage with diversity and flexibility. It was an effective tool for creating a design strategy to design and build a distributed network of commercial and retail environments, exploiting the appeal of local variation combined with personalising and making more accessible the greater corporate network. In industrial design ‘prototyping parlance’ we had achieved the ‘hard freeze’, locking all of the key points of the design package and this could be demonstrated in an appropriate concept prototype taking the form of a building mock-up or theatre set for display to an involved audience. We could then build a limited number of ‘production’ outcomes, but it was very difficult to translate this strategy into sustainable long-term and network-wide change for our clients, as was our intention. There is still more to learn.
references


footnotes

F1. As with the previous presentation to Hoyts of a narrative, imagining a customer experience within a reconceived environment, this ‘Ella’ story was presented as a digital storyboard of small still images accompanying text projected from a laptop. With our continuing focus on how we communicated design intentions and opportunities we quickly went on the improve this tool to make it more cinematic. By early 2006, at the conclusion of the NAB project, the ‘Ella’ format consisted of sequential cross-dissolve full-screen images accompanied by a recorded spoken narrative. This more closely resembled an ‘anamatic’, a more contemporary digital storyboard format used to present television commercial concepts to clients. I had been introduced to these by McGregor Knox, a commercial film director, who had produced all of the digital content for the *Creating Culture* project in 1994.

F2. Michelle Jordan produced a technology report at the inception of the project, *Branch Design – Technology Initiate Assessment*, July 2005. She had identified many key opportunities from the outset, which we then sought to derive maximum benefit from in the following development of the reverse brief.

F3. Throughout the consultation process and during the development of the reverse brief and the concept design, the ‘Customer Value Proposition’ Team held workshops and produced reports. These included *Making the Brand Real, July 2005*, *Customer Experience Workshop Outcomes, August 13, 2005*, *The Customer Experience, Consideration and Proposition, 19 August 2005* and *Branch Design Update, 19 September 2005*. This highly motivated team within NAB took over the role of reporting research outcomes from the design conversations and workshops. They also taught us a lot about how this kind of information is presented, the language used and how it is distributed in large corporate organisations when it is done with conviction and imagination. Groups participating in workshops were often described as leadership teams.

F4. This piece of technology had been found by Michelle Jordan and described in an early report from the Technology Leadership team in June 2005. The technology team had scored all of the possible technology opportunities in terms of their potential to impact on the business processes of the Bank. Teller Cash Recyclers, while being highly problematic in terms of how to integrate them into a bank layout most effectively, scored very highly.
contrive • a reflection on the case study projects
Case study project documentation

version 1.0
Michael Trudgeon 08.08.08

zukunftsmusik: prototyping the social and technological construction of space 2008
risk

case study project documentation

version 1.0
Michael Trudgeon 08.08.08

zukunftsmusik: prototyping the social and technological construction of space 2008
risk contents

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Imagine a kitchen as a large appliance: a loose docking of food storage, preparation, cooking and cleaning-up machines. They are all chosen by you, the cook, as a unique custom package; perfect for your needs. When you move dwelling, as we all increasingly do, you take it all with you. It's all on casters. After all it has taken some years to assemble your perfect cooking package and the last thing you want to do is start from scratch again in somebody else's kitchen. The machines are compact and designed for reduced environmental impact in operation. They are electronically linked to a central computer that monitors and reports on their operation and connects the kitchen to your local ‘Smart Store’ for shopping and reordering. The computer program connects the internal food inventory of the kitchen to the processes of purchasing food, researching new recipes and keeping of dinner party deadlines.

Imagine a kitchen as a space not defined by a structure but by activity, a space designed to enhance the quality of the social ritual of eating. This kitchen is defined by a series of objects or tools around which people prepare food or mill in anticipation. It is a campsite. As urban densities are increasing there is a need to achieve a high standard of livability in a wide variety of spaces, from the small and irregular service or leftover spaces in existing dwellings to the vast tracts of amorphous open plan office space left vacant by corporate downsizing and decentralisation. These trends, combined with an increasingly nomadic lifestyle for many people require more flexible, portable and self contained solutions for domestic servicing. The Hyperkitchen project is a response to these social, economic and environmental changes.

The Hyperkitchen is a system of compact interchangeable and upgradable, modular service units, loosely connected, that establishes all the functions of a kitchen without the need for an enclosing room. It is a self contained, mobile island, able to be inserted into any appropriately serviced interior space.

At the core is a wrap-around work surface, somewhat like a car dashboard, on 6 telescopic legs for adjustable work height. The individual machines sit beside, over and under the work surface to create a kind of linear factory for food preparation from freezer to consumption. The technology required for all the machine variants shown already exists, although not necessarily in the kitchen. A number of two meter high mobile pantry and crockery-draw units park to form a convenient back-wall of storage. Docked into the pantry is a Smart Kart. This contains refillable and removable storage capsules for bulk wet and dry food stuffs. The supermarket or ‘Smart Store’ where you shop no longer packages most food stuffs. The store is filled with dispensing machines like petrol-pumps for food. Product advertising including videos wrap the dispensing units. Your smart creditcard gets you access to the dispensers, debits your account and loads up an inventory of purchases for you to download at home.

Light translucent roll-away screens are included for space division and visual separation, if required. The screens contain active noise-
Hyperkitchen concept prototype on display as part of the Domestic Revolution exhibition, March 1994. Showing the central island wrap around work surface with the under-bench service units, digital scales, circular fridge at far left and pivoted breakfast bar. The main preparation area is fitted with a replaceable Jarrah chopping-block. Installation photograph at Hyde Park Barracks showing the translucent projection screens and overhead translucent cloud. Photograph: Dominic Lowe. Sydney. 1994
damping units similar to those developed by Bose in the United States for pilot’s and passenger’s headphones. This way acoustic privacy can be maintained without space or weight penalties.

Flexible umbilical cables connect the Hyperkitchen to electricity, fresh water and sullage services with a quick-fit Drybreak universal coupling [similar to those used in Formula-1 motor-racing refuelling]. It does not require professional assistance for hook up. The coupling sockets for these services are mounted in the floor.

The materials used to surface the modular elements range from brightly coloured hardened plastics to natural wood. The organic forms and bright colours are a deliberate departure from the tyranny and antiseptic sterility of the prevailing hospital and laboratory metaphors in kitchen design. The kitchen is concerned with more than hygiene. It is concerned with participation.

Your kitchen system can be continuously refined, expanded and upgraded to suit your personal requirements without fear of losing your investment. While all the elements are mass-produced any individual combination is unique.

The kitchen system is composed of the following elements

The centrepiece of the kitchen is a bright curved, biomorphic floating work surface on 6 telescopic legs that are easily adjustable in height. At one end is a circular, energy efficient, Fluorocarbon-free fridge, opening vertically. Along the main work surface is a put-down and preparation area between the fridge and the sink and a swirl-sink with built in water jets to rinse vegetables and dishes more effectively with less water, like a spa. Behind it is a programmable tap for different water temperatures with a built in hi-pressure water filter. The clear filter head allows you to preview your drinking water. The hot and cold taps are flexible rubber stalks. Four disposal chutes beside the sink are for separated waste disposal. This leads directly to a roll-away compartmentalised waste capsule below. The compartments are designed for separated recycling. The soft rubber stoppers pop out when pushed down. The compartments are self-sealing to prevent odours permeating the area. Slide-away bench-mounted digital scales are included for weighing food stuffs. The main preparation area is fitted with a traditional Jarrah chopping block. This is removable and replaceable. A surface embedded electric motor is included to power food processors and juicers, etc. The motor shank projects from a heat resistant plate used to park hot utensils. A ceramic, fully programmable, electromagnetic cooking surface sits at the end of the main work surface. It has an integrated drip tray at the leading edge and is completely smooth for wipe down cleaning. The cooking tools, such as barbecue grillers, wok rings or high speed heat rings are all interchangeable to facilitate any cooking style. These cooking tools are easily removable from the cooking surface and can be washed in the dishwasher. The cooking tools are operated by the touch sensitive control panel to the right of the cooking surface. The control panel can be configured in different ways to suit the cooking method used. A removable and pivoted breakfast-bar projects from the end of the central island for food preparation and fast eating. This can be swung around to create an enclosing preparation area or swung back out of the way. In the centre of this is mounted a horizontal ‘lazy susan’ style rotary condiments pallet. At either end is a contact activated heating strip for warming prepared food. This can also be used to activate the new generation of fast-foods that cook in their own bags via the heat strip and ‘flower on opening to create
**1** \textit{Hyperkitchen} central island wrap around work surface, showing circular fridge, electromagnetic cooking tools and pivoted breakfast bar with horizontal rotary condiment pallet and contact activated heating strips in the foreground. Flexible umbilical cables connect the \textit{Hyperkitchen} to electricity, fresh water and sullage services with a quick fit Drybreak universal coupling \textit{[similar to those used in Formula-1 motor racing refuelling]}. It does not require professional assistance for hook up. The coupling sockets for these services are mounted in the floor. Installation photograph. Photograph: Dominic Lowe. Sydney, 1994.

**2** \textit{Splash screen} from the accompanying computer program Maitre' D. Screen capture.

**3** \textit{Food Monitor access screen} from Maitre' D. This program contains an encyclopaedic store of information on available food stuffs; meats, vegetables, dried foods, liquids and condiments. Their appearance, weight, size, origin, flavour and usage is documented. A remote food probe can be inserted into fruit, vegetables and other foods to determine their freshness and even to identify them. Screen capture.
instant nutritious and beautifully presented meals. The rich and intensely coloured graphic packages act as serving containers and add ceremony to the occasion.

Below the central island work surface are a number of mobile systems An ultra-sonic dishwasher, which uses sound to shake the dirt free from the dishes, requiring less water and detergent. A compartmentalised waste disposal capsule with a front mounted LED display to alert you when the compartments are full. This capsule is rolled out for garbage collection. No further handling of the garbage is required. A rack mounted enclosed cooking unit. This contains a convection microwave-oven and a flash-bake oven, able to perfectly cook a pizza in 50 seconds [that’s cooked from scratch, not reheated!]. This unit is designed to contain other below bench cooking systems in the manner of audio equipment racks.

Above the central island bench hangs a floating cloud [not shown] providing further services. These are a micro-herbarium and alfalfa garden with watering system and artificial light source, a condiments and dried herb dispensing unit, an overhead light source combing diffuse and adjustable spot lighting. A retractable, interactive LCD screen suspended below the cloud provides access to the central kitchen computer. Electronically connected to this is a pen sized food-probe.

Behind the central island sit the storage capsules. These include a mobile Crockery storage and display unit, a mobile pots, pans and lids storage capsule and a mobile pantry and larder with a built-in bulk wet and dry foods dispenser. This is removable. Called a Smart Kart, it has a fold down under-carriage, so as to function as a shopping trolley. It also locks into the boot of your electric city runabout allowing hands-free containment from supermarket to pantry. Purchase information from the ‘Smart Store’ on your swipe card can be directly entered into the Maitre’ D computer program to update your food inventory.

A pod of tiny bio-machine scavengers, like electronic cockroaches eat dust and food scraps to clean up the kitchen. After sucking up food spills and dirt the Micro-scavengers wait for the ‘mother’ vacuum cleaner to pass by and transfer their meal. The machines are programmed to avoid light and noise, to protect themselves from being trodden underfoot and this also prevents them from getting in the way. When their batteries run low the Micro-scavengers seek the nearest power point to recharge.

The Hyperkitchen tools are supported by a computer based information program: Maitre’ D

The Maitre’D computer program features a retractable interactive LCD screen and a pen sized food-probe. All functions are voice activated or touch-screen controlled. The monitor can be wiped clean after use. This interactive computer program checks and identifies food, controls the inventory, provides nutritional information and plays ‘how to’ recipe videos of requested menu options and makes menu suggestions based on requirements and available ingredients. The screen is suspended below the cloud. The hand held pen sized food-probe works by infra red communication with the overhead computer. The computer program is divided into 6 parts

1] Inventory of food stocks. Purchase-information from the ‘Smart Store’ on your swipe card can be directly entered into the Maitre’ D computer program to update your food inventory. The inventory is divided into refrigerated and pantry food storage, meat, vegetable and delicatessen food stuffs. Information on the quantities of food available can be imported into the recipe program. By storing patterns of use the inventory program will advise the household on impending shortages.
1) **Plan of the Hyperkitchen installation** at the Greenway Gallery, Hyde Park Barracks, Sydney, 1994.

2) **The Hyperkitchen central island work station** showing the service machines below: a compartmentalised waste disposal capsule, an ultra-sonic dishwasher which uses sound to shake the dirt free of the dishes, requiring less water and detergent and a rack mounted enclosed cooking unit containing a convection microwave oven and a flash bake oven. This unit is designed to contain other below bench cooking systems in the manner of audio equipment racks. Along the main work surface is: a put-down and preparation area between the fridge and the sink, a swirl-sink with built in water jets to rinse vegetables and dishes more effectively with less water, like a spa. Behind it is a programmable tap. Four disposal chutes beside the sink are for separated waste disposal. This leads directly to a roll away compartmentalised waste capsule below. The compartments are for food waste, plastic, paper and glass. The soft rubber stoppers pop out when pushed down. The compartments are self sealing to prevent odours permeating the area. Slide away bench mounted digital scales are included for weighing food stuffs. Photograph: Dominic Lowe. Melbourne. 1994.
2] Recipe Book. This contains a vast store of recipes, able to amended, appended, removed and added to. The recipes can be accessed and grouped by alphabetic order, difficulty, length of cooking time, principle ingredients and number of people they serve. Whole new cookbooks can be entered from CD-ROM or downloaded. Each recipe displays both text and a “how to” video along with final serving and presentation suggestions.

3] Nutrition. This contains nutrition and diet information including food stuffs and diet supplements. Recipes can be selected and diets can be formulated to conform to a desired regime. The relative nutritional values of food stuffs can be examined. The program can offer basic advice on health problems including possible allergic reactions and vitamin deficiencies. A pill dispenser can also be programmed from the computer.

4] Food Monitor. This program contains an encyclopaedic store of information on available food stuffs; meats, vegetables, dried foods, liquids and condiments. Their appearance, weight, size, origin, flavour and usage is documented. The remote food-probe can be inserted into fruit, vegetables and other foods to determine their freshness and even to identify them.

5] Appliance Control. This program monitors and can control all the appliances in the kitchen. Dishwashers, stoves, ovens and cleaning equipment can be centrally timer controlled and you can receive a warning if any machine overheats or breaks down. This program controls the pod of tiny Micro-scavengers.

6] Entertainment. The computer also functions as a video phone, answer machine, VCR and TV, music player and download portal.

**Project credits**

Design: Michael Trudgeon.
Prototype maquette made by: David Poulton.
Materials: Polyurethane coated MDF
Size: 950 x 3700 x 900mm
Computer program implementation: Joseph Brabet
Further computer graphics: Glynis Nott
Rendering: James Murray
Drawings: Cassie Fahey
Photography: Dominic Lowe

Hyperkitchen was developed for the exhibition The Domestic Revolution, curated by Michael Bogle at the Hyde Park Barracks, Sydney 1994
1] **Hyperkitchen**. Detail of the ceramic induction cooking surface with integrated drip tray. Cooking tools [not shown] used on this surface are operated by the touch panel interface on the right. The control panel can be configured in different ways to suit the cooking method chosen.

2] **Hyperkitchen**. The swirl-sink with built in water jets to rinse vegetables and dishes more effectively with less water, like a spa. Above it is situated the programmable tap. Detail of full scale maquette.

When the Australian Cultural Development Office decided to hold a conference in 1994, the notion of a concurrent trade show, albeit on a fairly limited scale, was bandied about. This idea rapidly gave way to more coherent, but at the same time more exciting, thoughts about the impact of new information technology on culture - and how they could be illustrated in an exhibition. The Australian Cultural Development Office asked Crowd Productions to develop a modular reusable exhibition installation to provide a physical context for the conference, an orienting environment along with an exhibition of Australian new media. Crowd Productions created a suite of cocoons, pylons, screens and monitor walls to build an exhibition environment that could be reconfigured and used in sections as required.

The exhibition was staged initially in August 1994 in conjunction with the Creating Culture - the new growth industries conference at the New Parliament House in Canberra. The intention of the exhibition and installation was to challenge preconceived notions of our cultural industries, stretching the boundaries of current definitions. It focused on new information technology, placing it firmly among the cultural industries. In a desire to stimulate and provoke responses from visitors, each component was designed to work interactivity - without seeking to threaten or intimidate.

The abstract, conceptualised content elements of the curated exhibition were set in a very physical landscape, establishing a conjunction of the ethereal and the material. A different kind of space was created in the parliament building not only to make the experience of the conference unique, but also to say ‘here is creative intervention’. It was not only an exhibition of new information technology and its cultural connections, but also a total composition incorporating architectural, graphic design, interior design and environmental elements.

**Exhibition elements**

The blue motion-sensing screens are the components which flag the entry to the exhibition. They are intended to draw people into the conference. Their luminous blue colour, sudden light emission and sensitivity to human movement provide an excitement and unpredictability at the very start of the exhibition and they help define the location within the vastness of the New Parliament House. They are friendly, optimistic, colourful and bright; they are not about setting things in concrete, but exploring ideas, anticipating a direction into the 21st century. At the same time, the soft curves generated by the fabric give them an organic nature.

The red video monitor wall and the orange graphics wall create the entry portal to the exhibition. Again, the colours are bright with an unlikely juxtaposition of colour. Through large cutouts in the first wall are glimpsed parts of words relating to the cultural industries and the themes of the conference - growth, export, future. But as you progress towards the walls, your perception shifts, allowing other


views of the text. Your progress also reveals that the walls are not confrontational and blocking, but in fact create a path through to the rest of the exhibition and reveal a completely different sense of space beyond. The video content screening on the monitor wall explores the extraordinary range of Australian creativity. It is impressionistic, designed to muse upon - it is not literal, not a shopping catalogue.

Beyond the entry space is the large meeting area. The room has been converted into a landscape by producing a field of pylons and placing the central exhibition cocoons in this field. It's a landscape of ideas and future possibilities. The pylons refer to both the surrounding natural landscape, through the river rocks they are mounted on, and to fibre optics and optical communication, through the flexible, Perspex rods swaying vertically above. They create a landscape for social exploration, with the cocoons presenting a more private investigation space.

At the centre of this field are the green and purple cocoons. These are the important foci of the exhibition. These two pavilions create a communication nexus for the interactive programs. The viewing environment is both different and intimate.

At first glance it appears the cocoons are solid, but on closer inspection, a ramped passageway between the two parts is revealed. The convex wall of the first structure radiates content from its four video monitors out into the main body of the room facing the field, while the concave outer face of the second cocoon is directed into the corner of the foyer and provides a more sheltered viewing space for the TV monitors.

Project credits
Design: Michael Trudgeon.
Fabrication coordinator: David Poulton
Modular installation environment built by: David Poulton, Damien Ibott, Alexander Knox.
Computer program implementation: Joseph Brabet
Further computer graphics: Glynis Nott
Exhibition curator: Belinda Cusmano
Multimedia content production: Macgragor Knox
Drawings: Cassie Fahey
Photography: Dominic Lowe
01] Creating Culture Exhibition installation at the New Parliament House, Canberra. The interactive computer program exhibition is clustered in a semi-private space between the cocoons. An additional meeting point is provided in the crook of the semi-circular cocoon. Photograph: Dominic Lowe. Canberra. 1994

02] Creating Culture Exhibition installation at the New Parliament House, Canberra. Plan showing the distributed nature of the designed elements, intended to form a landscape of spatial experiences and technological surprises. Canberra. 1994
Vervette is a modular table system, a collection of components designed to meet the demand for continual flexibility both at work and in the home. Interchangeable cast aluminium legs of differing lengths can be teamed with a variety of table tops for use as dining, sideboard, occasional and coffee tables as well as café tables and work-stations. Any furniture piece purchased can be upgraded for a different use at a later stage. Legs, tops and storage units etc. may be bought separately by end users and the elements use a common connection format. The end user can configure their set up in a way that is unique to their needs and in response to changed requirements as they arise. This allows a ‘hot rod’ approach to customising your furniture.

Central to the concept, and the starting point is the idea of connection. With a singular connecting system an infinite array of configurations is possible from a finite but expandible range of elements. The table collection features one joint system to connect all elements. This is a fast locking and release mechanism that connects the table legs to the tops while maintaining strength and durability. The table can be easily disassembled for storage and the legs can be easily adjusted to sit squarely on an uneven surface. This is a durable and elegant ‘knock down’ solution. Technically it is based on aviation technology. Any component in this first table range will be fully interchangeable and interconnectable with all later system elements following the philosophy of such upgradable products as the Nikon camera range.

**Vervette and the home office**

The *Vervette* modular table system is a loose collection of furniture elements that can make up a workplace where ever it is required. This furniture has been designed to capture the spirit of an informal huddle rather than rigid organisation The elements are designed to accommodate the portable, electronic office, an environment demanding great flexibility and rapid change.

When configured as a work-station a storage unit can form the anchor for the workplace. This acts as the support at one end and the return for the work desk. The work desk [easily demountable] pivots about the end of the storage anchor to swing in, out of the way when not in use. For an additional work surface a light but stable conference table can be easily attached. When not in use this easily pulls apart and stacks vertically against the wall or in a closet.

Work desks and conference ends will accept additional legs to make them free standing. The tabletop shapes are designed to loosely interlock to create larger meeting tables when required.

The pivot between anchor and desktop also acts as the base for the ‘Satellite’ light tower with adjustable reflecting vanes for illuminating your work surface. These reflector vanes are fabric; silver or white for different light qualities. This tower may also act as a vertical cable duct [from the ceiling as required in many government tenancies.

02] **Vervette modular table system.** Photograph showing the rapid release connectors designed to emphasis the modular nature of the system and suggest that the parts are almost floating in relation to each other. Photograph: Dominic Lowe. Melbourne. 1996.

03] **Vervette modular table system.** Detail. Graphic packaging for the assembly key and instruction manual showing colour range and logotype. Melbourne. 1996.
Components and Materials

*Vervette* tables come with die-cast aluminium legs and tops in 32mm solid Craftwood finished with either a coloured urethane surface or a timber veneer, 25mm veneered plywood or 12mm glass.

The materials for the system include cast and machined aluminium, wood, glass and composites to provide a range of tactile and visual experiences. Mobile storage units, similar in height to the storage anchor, can be placed under the desk, along the wall or used to define a territory. The core aesthetic is light but stable, friendly rather than monolithic, using simple forms with soft curves. The storage elements are more rectilinear and solid. Privacy screens, modesty panels and shelving are all attached to the desking using a simple bracket system.

There is a variety of table top shapes from the biomorphic to the rectilinear with slightly softened edges. The table tops are currently available in 6 shapes: palette, elliptical, circular, rectangular, wrap around [banana] and a hall stand table [wing].

7 colours are available: 1 gloss metallic blue, 2 gloss metallic charcoal, 3 gloss yellow, 4 gloss lime green, 5 matt aluminium, 6 matt purple and 7 matt crimson. The timber veneer is Silver Ash.

Assembly is easy: To remove the legs. Turn the table upside down. Insert the supplied key up into the elliptical hole under the head of the leg. Turn the key clockwise to unlock the leg. Repeat until leg is loose. Withdraw the key between turns. Pull the leg directly away from the table. To attach the legs. Drop each leg onto its connector as far as it will go. Insert the key and turn anticlockwise until the leg is held very tightly. Re-right the table. To adjust leg length [were table is rocking on an uneven surface]. Insert the key into the leg sitting farthest off the ground, as above, and turn clockwise to loosen the leg. Drop the leg so that it sits firmly on the ground. The legs can be adjusted up to 7mm in length to allow the table to sit squarely.

**Project credits**

Design: Michael Trudgeon.
Design development: Michael Trudgeon, David Poulton
Engineering and connector design: Michael Trudgeon, Anthony Kitchener, Dennis Miller
Fabrication coordinator: David Poulton.
Fabrication of table tops and returns: David Poulton
Project graphics: Glynis Nott,
Rendering: Joseph Brabet, Glynis Nott
01] **Vervette modular table system.**
Table system elements configured as a work-station with a pivoting work surface designed to fold out of the way. Photograph: Peter Clarke. Melbourne. 1996.

02] **Vervette modular table system.**
Table system elements configured as a work-station. The return is composed of deep pigeonhole storage spaces. Photograph: Peter Clarke. Melbourne. 1996.

03] **Vervette modular table system.**
Detail of work station accessories including privacy screen, connecting clamps and mesh cable tray. Photograph: Peter Clarke. Melbourne. 1996.

04] **Vervette modular table system.**
Upturned table top showing the exposed connectors and detached legs. Photograph: Dominic Lowe. Melbourne. 1996.
This project has been developed as a component of the Hyperhouse program. The MVR bathroom is a roll in, roll out stainless steel module with a built-in bath, shower, toilet and hand basin. It has been built around a 200 litre water storage and recycling unit. This bathroom can be rolled into any serviced space to make it habitable, either as a living, working or retail space. This mobile unit can be connected via flexible hoses and electrical cabling to traditional service outlets or to a flexible dry-break connection service system. All the sanitary fittings can be folded away to allow for flexible programming of the space.

The bathroom systems are conceived to minimise water usage. The fitting profiles are designed to reduce water capacity for effective use by up to 50% over traditional fittings. The design cross-sections of the bath and basin have been carefully reduced through ergonomic study to do away with water holding space that is non-functional, without sacrificing comfort or functionality.

The toilet employs ‘dry toilet’ technology, using only 10% of the water required by a traditional toilet. The unit features a non-mechanical system to liquefy solid waste for efficient disposal. Sewage plumbing cross-sections are thus also be reduced, to 30mm. The toilet pan and shower-head retract into the bathroom module and the bath folds up into the shower recess.

Grey water from the shower and hand basin is distilled and purified by the mechanical vapour recompression unit. By boiling water in a vacuum, like boiling a cup of tea on the top of Mount Everest, boiling occurs at a lower temperature due to lower atmospheric pressure, requiring much less energy. The water is then sterilised by an in-line ultra violet light source. This water, now potable, is stored in the 200 litre holding tank for reuse in the shower and hand basin and for flushing the toilet.

**Project Credits**

Design: Michael Trudgeon, Anthony Kitchener, John Burne.

Engineering: Anthony Kitchener

Sculpted wooden components: David Poulton

Graphics: Glynis Nott

This project was originally undertaken as part of the RMIT Centre for Design Appliances of the Future program.
01] **MVR bathroom module.** Concept prototype. Installation photograph showing the flip down hand basin and retractable toilet, shower head and bath. Melbourne Home Show. Photograph: Peter Clarke. Melbourne. 1996.


03] **MVR bathroom module.** Diagram showing the mechanical vapour recompression cycle linking the key components of the water recycling system. Melbourne 1996.

04] **MVR bathroom module.** Isometric drawing of the module with services extended. Melbourne 1996.
This product has been conceived to respond to demands for a hyper-flexible building tenancy program, where there are rapidly changing requirements from users or occupants or from the demands of very nomadic lifestyles. We asked how do we allow for any range of functions in a given space? The first step is to integrate all the services. The Integrated Service Loom is a flexible servicing system where all of the building services are bundled together in a dedicated channel or ‘loom’. Then any habitable space can be cabled and serviced in a single operation. Services can be ducted in a floor channel or along the inside of a perimeter wall at floor level or at chair-rail height. The services may be contained in a single extruded loom casing that is flexible and does not require joins or corner pieces like traditional plumbing or made up of a loosely connected bundle of protected flexible servicing conduits. The loom contains: sewage out, mains water in, electricity in, telephone, optical and data through. In a dedicated channel, the individual services are easily accessible for maintenance and the reconfiguring of outlet and access points. This approach is widely used in the design and manufacture of panel-based work-stations. Such a flexible system engenders longer life for a space without expensive and materially demanding renovation and contributes to financial and environmental savings. In developing the detailing of this project we have gone to the chemical industry to utilise existing drip-free connection-disconnection technologies, which have been extensively tested in hostile and demanding industrial-processing environments. By deploying this type of service-infrastructure space can be essentially characterised by a facility for connection, for change, flexibility and for a longer life. The loom is manufactured or fabricated in a factory environment to the required specifications and arrives on site as a complete system.

This project was first developed as part of the Appliances of the Future project organised by the Centre of Design at RMIT. We have subsequently continued to develop the idea and to integrate the thinking into a number of propositional architectural projects.

**Project Credits**

Design: Michael Trudgeon, Anthony Kitchener.
Visualisations: Glynis Nott.

This project was originally undertaken as part of the RMIT Centre for Design Appliances of the Future program.
01] **Integrated Service Loom.**

Concept render of the connection components needed to create the proposed system. Melbourne. 1997.

02] **Integrated Service Loom.**

Diagram of the operation of a generic drybreak rapid-decoupling valve used in the chemical industry. Melbourne. 1997.

03] **Integrated Service Loom.**

New ideas for packaging, storage and transport in supermarkets, food retail outlets and the home.

The *Smart Kart* is a modular food transport and storage system for shoppers. The *Smart Kart* concept has been developed as a convenient alternative to supermarket packaging that would dovetail into the emerging use of smart and expert systems in food handling, storage and measuring and minimise handling. The cart is composed of 4 elements. At its core is a milk crate sized stackable plastic bin filled with a matrix of removable, interlocking containers, like large Lego blocks, with colour coded lids. The shopper can take as many of these as is required to the supermarket and can purchase additional ones.

Dry and wet bulk food produce is purchased from large hygienically sealed dispensing units at the supermarket or store. Like petrol pumps, a flow meter calculates the value of the goods bought and down loads the appropriate debit onto your credit card or a bar-coded chit for payment on exit. Product advertising once carried by the product packaging is replaced by banks of video monitors covering the dispensing machines. The product videos, updated daily via the Internet, display the latest prices, improvements and tips for use. Information on product use, legals and offers can be downloaded to print form, transferred to a customer flash card or smart card or sent to a customer’s internet address or mobile phone. Colour coded lids on the trolley containers differentiate the various categories of use for the different containers. For purchase of only a few bulk items the customer might take a few of the containers in a conventional carry basket.

The containers, each about 1.5 litres in size, fit as a matrix into the square plastic bin – the main body of the trolley. Once home, the container matrix can be pulled apart and stored in different parts of the kitchen depending on the requirements of the food or products purchased. The containers can also be evacuated for long-life storage. Different dispensing tops can be fitted to the containers for the most convenient form of food delivery at home. Different sized trolleys are available for different sized user groups. Empty containers are sterilized and cleaned at the supermarket to ensure a uniform, high level of hygiene.

The bin attaches to the trolley’s folding undercarriage. This undercarriage can be stored in the customer’s car, when not in use. The trolley can be used for the entire journey from supermarket to home with the least amount of additional packing and unpacking. Finally a conventional-style shopping basket, integrated with a pusher handle and accessories pouch, is clipped to the main trolley body. This shopping basket can also be used on its own. This project is based on the GM ‘Shopper’ concept car prototype.

**Project Credits**

Design Team: Design: Michael Trudgeon, John Burne, Anthony Kitchener
Project collaborators: Professor Chris Ryan, RMIT Centre for Design.
Design detailing, model making: Liam Ryan
Visualisations: Glynis Nott
01] **Smart Kart.** Concept render showing the Smart Kart being filled at a supermarket equipped with 'petrol pump' style dispensing stations. Render: Glynis Nott. Melbourne. 1997.

02] **Smart Kart.** Concept render showing the matrix of refillable containers stored inside the detachable stackable plastic body of the cart. Render: Glynis Nott. Melbourne. 1997.

03] **Smart Kart.** Concept render showing the interchangeable plastic storage bodies and containers. Render: Glynis Nott. Melbourne. 1997.

04] **Smart Kart.** Concept render showing the detachable shopping basket and handle. Render: Glynis Nott. Melbourne. 1997.
**Hyperhouse: A project exploring new strategies for designing the home**

In today’s world of building, purpose, program and event change rapidly. A single location can give rise to many simultaneous events. Within the home all rooms have become living rooms. Distinctions in terms of use are now time based, not made so much by the provision of dedicated space or services as they were in the past [even the bathroom has a television in it and you can always take in the mobile phone]. Furniture and mobile partitions, rather than fixed walls, can define boundaries, to create and distinguish many of the desired activity zones. In this project we have focused on the capacity for space to allow or encourage change and for connection or networking of the home and its occupants to friends, family, work colleagues, news and entertainment along with the potential to make the outer skin of the building expressive.

Architecture can be defined as a control system for our experiences of the world, filtering out the unwelcome and celebrating the desired. Architecture creates an artificial reality. The infiltration of electronics into the vocabulary of building brings with it the capacity for connection, not only of all systems within the building but also of the building itself to the surrounding world. Buildings have the potential to metamorphose into dynamic interfaces. This connection might simply be enhanced communication with other people outside the building or it can be interaction with, or a response to, the emission of data from any source. As a media skin for the occupants, the identity and character of the house evolves as it responds to and stores data from the needs and use patterns of the occupants. Favourite ventilation patterns, privacy and illumination settings and graphic displays programmed onto the outer skin of the building forge for the house a dynamic evolving character. Such a building does not need to celebrate a history to be unique, it can constantly create or express a history. It is a space crafted from. The facade is a media strip, a flow of projections, no longer a static event, but a momentary and constantly moving one.

The glass envelope of the house is a high performance composite incorporating electronic and mechanical systems including ventilation. It employs an electrochromic coating; a small voltage changes the opacity, and a photovoltaic coating; incident sunlight is converted to electric energy. The energy generated powers the window and ventilation systems. This is a process of ephemeralisation, where a single, fine, multi functional envelope takes the place of the separate cultures of structure, aesthetics and service systems. A single integrated loom cables services to all domestic spaces. It uses dry break self sealing, spill proof, couplers, like the LPG hose at your local petrol station, to allow rapid connection to any service. The loom conducts grey water and sewage out, mains water in, electricity in, telephone and optical in and data through. This allows connection for any function in a given space, and different ones at different times. A living space can be cabled and serviced in a single operation. The loom is fixed in a channel in the floor. Access ports can be added at any time, positioned at any point along the loom.
01 to 02 | **Hyperhouse exhibition installation.** Screen capture from the story board projection sequence. Exterior. Render: Glynis Nott. Sydney 1998.

03 | **Hyperhouse.** Screen capture of the computer program detailing the operation and elements of the Hyperhouse proposal. Graphic design and programming: Glynis Nott. Sydney, 1998.

04 to 09 | **Hyperhouse exhibition installation.** Screen captures from the story board projection sequence following the stereo soundtrack recording of the journey of the imagined owner entering the building. Render: Glynis Nott. Sydney 1998.
The kitchen is conceived as a campsite within the home, an integrated appliance, easily movable to the outside deck or any other part of the house. It is made up of compact interchangeable and upgradable modules for food preparation. The bathroom module, extrapolated from aircraft toilet modules is designed around a recycling unit. This recycles and distils grey water though an energy efficient evacuated evaporation system. All the fittings can be retracted allowing other uses for the bathroom space.

A heat pump drives a thermal cycle in the building to collect, dissipate, store and redistribute heat for year round temperature control. Heat is stored chemically within the hollow support columns. The floors and roof act as a ducted circulation system like a ‘printed circuit’ for heating and cooling. Air ducts are cut into composite floor and roofing material. Such a building can be likened to a mammal in its ability to conserve its temperature by controlling the permeability of its outer skin.

**Project Credits**

Design team: Michael Trudgeon, Anthony Kitchener.
Computer program implementation: Joseph Brabet
Installation sound track: Steve Adam
Visualisations: Glynis Nott
risk • case study project documentation

01 to 06] Hyperhouse exhibition installation. Screen captures from the story board projection sequence showing the flexible servicing infrastructure and the operation of the electrochromic computer controlled glazed skin. Render: Glynis Nott. Sydney 1998.

This design for the exhibition environment for *Convicts* at the Hyde Park Barracks divides the exhibition into a series of abstract but emotionally charged landscapes. Confinement and isolation or separation are key motifs in generating the five landscapes and the enclosing structures. The landscapes follow in a rough chronological order, the sequence of a convict’s experience through the Australian penal system and the evolution of Australia as it grew into nationhood.

Landscape 1

This first space addresses the incarceration and transport of convicts to Australia. Micheal Bogle, the exhibition curator saw the themes of this section as ‘banishment’ and a template of cruelty’ The space evoked is strange, alien and compressed. Towering canyon-like steel walls compress the viewer. The walls are rusted metal, damp, dripping with water. Sounds of dripping water can be heard in the background. The viewer enters the first space walking over a metal grate above a dank pool of infected water. This is bilge or some effluent from an industrial or mechanical process. The space is intended to disorient the viewer with the distorted geometry. The interior suggests a futuristic but oppressive transport ship or an abstraction of the transport ships from the first fleet. The space is confining and uncomfortable. A metal grating high overhead separates the viewer from work lights above. The space is dimly lit with small lights above exhibited works. The space is intended to convey the distressing confinement of convict transport and the intended disorientation and isolation of this transport to another world far away from any familiarity and from friends or family contact. The metal walls are punctured with TV monitors, maps and prints. There are three bays in this section. The material displayed in this section of the exhibition is 2D and video based with one interactive piece.

Landscape 2

This space addresses the convict’s journey from the transport ships into the vast and alien Australian landscape. The themes are ‘vanishment’, desolation and the grandeur of the natural landscape. The viewer enters this space inside a makeshift jail structure. Outside this skeletal confinement is a harsh barren landscape, a bare over lit room. On one side of the prison runway is a long monolithic sandstone wall, on which drawings are fixed. On the other side is a plinth, on which objects, models, drawings and prints are arranged. At intervals it is possible to leave the prison runway and enter the surrounding landscape space. The sound of native birds can be heard softly in the background. In this space the relationship between confinement, isolation and disorientation has changed. The danger of the isolation has become more significant than the confinement. The disorientation is now due to the expanse of the alien landscape rather than intercontinental travel. Some relationship with this landscape must be forged.


Landscape 3
This environment addresses the themes of early nation building and the emergence of a social infrastructure. The viewer enters a structure reminiscent of a stockade rampart. From the outside, as a structure, it suggests some substantial, if paranoid building has been going on. A beach head has been established in the landscape. It is earth coloured like stone or mud brick. Inside the space is very different. The viewer is confronted with a mini agora-shaped opportunity shop. Prints, objects, models and clothing are stacked up behind glass panels, reminiscent of a shop front. One confronts the clutter of a more human existence for the first time. A move to a more normalised pattern of life has happened. The scale is more human and intimate without as much menace. There is still confinement, but it is ambiguous. It could be protection.

Landscape 4
This landscape presents a human-scaled infrastructure of recognisable institutional storage lockers. This section of the exhibition addresses the emergence of the institutions of a civil society. The viewer emerges from the stockade structure into a room of closed closets, filing cabinets or lockers. Isolation has been normalised to the point of civility. It now falls within the trappings of day to day existence. In order to view the exhibits the viewer must approach and open the cabinets. They are all identical, reminiscent of prison cell doors or work lockers. This room also has the air of a very traditional museum, a respectable institution. To add to the atmosphere of the traditional museum the pig skeleton is mounted on a plinth in the middle of the room.

Landscape 5
This final section of the exhibition is framed by architectural elements. We have now arrived in an Australia trying to deal with a convict history. This area is denominated by a grand staircase structure. The exhibits are housed in the base of it, under the stairs. They are in a sense buried or at least over run by the momentum of the staircase. The stairs are also heroic. Larger than life exploits are possible. There is in fact the possibility to contribute and make a difference. Some objects, the ephemera of convict tourism are displayed on the stairs themselves. This space still has some sense of compression, in the space between the stairs and under them, but now there is also a sense of anticipation and grandeur that the viewer might even enter into. The stairs however lead no where...

Project Credits
Design: Michael Trudgeon.
Documentation and design detail: David Poulton, Julia Lehmann
Graphic design and Visualisations: Glynis Nott
01] Convicts exhibition environment. Landscape 2. ‘Vanishment’. An over-lit, white sparse landscape where all detail is bleached out. The idea was to suggest an alien, overpowering and vast landscape. Photograph: Peter Clarke. Sydney, 2000.


Hyperlounge [hyper as in hyper-text, information designed to connect you] has been a two year research project by Crowd Productions and studio dp to develop ideas for that great Australian institution; the lounge room. The project’s outcome is a series of nomadic media-on-demand viewing capsules for the Australian Centre for the Moving Image at Federation Square. These capsules are the first fully functioning built spaces to come from Hyperhouse, a project begun in 1990 by Crowd Productions, Cash Engineering Research and David Poulton to experiment with new ways of making space.

In research conducted over the last decade with Anthony Kitchener from Cash Engineering Research we came to the conclusion that to exploit the possibilities for the design and construction of built space using new technology, time and money for research and development must be considered vital elements. Architecture and the traditional construction industries believe they operate on a scratch-built or craft model. Architects, clients and builders pretend that each new building starts with a clean sheet of paper. This is in order to make each project authentically unique and novel, just like a piece of art or craft. In fact all today’s buildings are kits of parts, and often almost identical, as a visit to any building site will attest, save for the addition of some last minute trimmings. The windows, service systems, structural members and internal and external skins are all made from modules industrially mass produced offsite by general suppliers. The builders then spend 8 months to 2 years in the rain, on a mud-covered site putting it together. This does not seem logical to us.

Our response has been three fold. Firstly we accept that buildings are already made of mass produced components. So we have thought about how to exploit this fact; to make things interchangeable, upgradable and reconfigurable. How we connect the systems becomes our art. Secondly the entire building is built in a controlled environment with ideal conditions and the best machinery; in a factory. Thirdly because the first two decisions give us the optimal way of constructing and integrating diverse elements we have used this opportunity to source and construct far more technologically adventurous elements. Using this strategy we have copied the car industry construction model. However, rather than give the problems associated with new construction techniques to others to solve we have made the understanding of this technology our concern. Like the composers of contemporary Techno dance music, who use the computer to allow them to build and mix their own music, often without leaving the bedroom, we wanted to control the cost of research and development by implementing a hands on approach, experimenting with and building the new systems ourselves. This diverges significantly from contemporary architectural practice. Few architects spend time wrestling with the assembly of building components on site. In fact I’m sure it’s probably illegal and anyway the image it conjures up is terribly undignified. However it seems to us that unless one has had first hand experience with the elements one is building with, you will not really know their nature and this will reduce your ability to learn and innovate. It is strange that in other disciplines from art to surgery we do not trust those who
Hyperlounge. Entry to completed digital cinema capsule with partition screens at the Australian Centre of the Moving Image. The project allowed us to explore the design and construction of factory fabricated, modular, reconfigurable and nomadic structures. The internal electronic systems are tethered to the central media platform at the heart of ACMI which feeds in the content. Photograph: Peter Clarke. Melbourne. 2004.
are not practitioners as well as theoreticians or conceptualises. Our desire is to fold all of the experience in developing new forms or techniques into both our design thinking and detailing to optimize its impact on our ability to respond as designers. These responses are not incidental to our designing but central and the whole process is a dynamic one.

The project outlined below has been for us an experiment in designing and constructing this way. It has produced four key lessons. The process has focused us on the need to prototype and resolve all detailing before any construction. While traditional buildings are extensively drawn up prior to construction, in fact a high percentage of design detailing about the way built elements connect and are therefore visually resolved, is executed by subcontractors or the builder on site. This design component by others is only acknowledged by architects through their expression of preferences for particular builders and subcontractors. In developing buildings and building systems that do not require extensive on-site design and resolution by others a much higher level of detail design is required. The extent of this difference has taken us two years to fully appreciate. Secondly, interchangeable modular construction of components requires much greater precision. Tolerances on building sites are in the order or 10mm. These discrepancies can be ‘disappeared’ by the builder with extra plaster or a bigger shadow line. With only prefabricated metal components, tolerances of between 1mm and 3mm are required.

Thirdly, like a car, all the real design happens at the chassis stage. It is important that everything appears to join together seamlessly and without clumsy bolts and ‘afterthought’ brackets. Everything needs to connect from brackets built into the chassis, so long before the building is complete every possible variation and option needs to have its connection point established and resolved on the chassis. For this you need a prototype and lots of scenario mapping. Ironically when the project is complete the chassis and all these connection points, thought and work disappear behind the finished surface. Yet the finished result can only ever be as good as the chassis.

Finally in focusing on developing the design through new systems our sense of a completely determined aesthetic had to be suspended, as we had no real idea how the systems would resolve themselves. In the Hyperlounge project the blister pack wall is a case in point. To design this system of floating images with no mechanical lighting elements involved, as in no bulb structures or electrical armatures, we could only propose an imagined general outcome. We then set about designing each individual element; acrylic containers, diffusing light guides, optic paths, connecting strategies, image medium and the clips to suspend the images and light guides within their spaces. Each element had its own team of specialists and a very long, separate problem solving path and all we could do, to hope to achieve any coherence, was to make each element as simple and minimal as possible, in the hope that some notion of economy would unify the outcome. In the end the system of parts bought its own aesthetic borne of the logic of the system and how the parts interacted. The result, while very pleasing to us, was not something we imagined other than that we thought that the ideas behind it all were relevant to the project.

These lessons will now shape our design strategy for the next project in this series, the design of a private house on a highly sensitive rainforest site on the Queensland coast, to be completely constructed off-site.
Hyperlounge. Rear view of a cinema capsule showing the ‘blister pack’ and the public seating integrated into the body shell. Much of the design focused on developing a sense of domestic intimacy and informality in what was essentially a public viewing pavilion. Integrating photographic content became a central strategy for creating the desired architectural experience. Photograph: Peter Clarke. Melbourne. 2004.
Describing the *Hyperlounge*

In 2001 the Australian Centre of the Moving image asked us to design a mass-producible ‘lounge room of the future’ for their Federation Square exhibition complex. To design and build functioning spaces that explore the possibilities open to us rather than replicate existing templates required a combination of research, conceptualizing and an ability to follow through to reliable operational outcomes. This project to design Screen Lounges for ACMI was the perfect test of our ‘Techno-architectural’ proposition and our Hyperhouse research.

The Screen Lounges are micro lounge rooms designed to bring the domestic experience of television into the range of experiences at ACMI. They are intended to provide a high level of viewing and listening experience, somewhat like a home theatre experience, a concert hall for home, a little opera box. They provide access to a range of screen-based content; short films, television programs, new media works from the ACMI collection and computer games. Each capsule has a 42 inch plasma display screen and a 17 inch control screen.

Our homes and particularly our lounges are increasingly places designed for accessing information and connecting. They are becoming interfaces and filters for experience, extended social contact and entertainment. The range of experiences the world offers us is no longer described by our immediate neighbourhood and is not satisfactorily framed by our windows and doors. We need other, more dynamic points of connection.

In imagining the Hyperlounge we were keen to emphasise the idea of the flow of data and energy through space to the surrounding environment and vice versa, to create curiosity, using surfaces that wrap around the spaces but do not isolate them. Drawing from the vocabulary of video and film production we have worked to design an exterior skin that reflects this character, alluding to scanning, sampling and the jump cut, to create a discontinuous and fragmented porous surface that suggests the voyeuristic and participatory nature of television. We also see this discontinuous nature as being reminiscent of the experience of the city.

The principal wall of the capsules consists of three layers. The outer surface of the wall is louvred to break down the solidity of the surface. Behind the louvres is a black mesh grill. The louvres offer the illusion that the interior can readily be glimpsed, an invitation to voyeurism. The inner surface of the louvres is mirrored so as to reflect and distort any image that does present itself from the interior. This amplifies a sense of activity from within while further fragmenting it. The passerby, in motion, glimpses the peepholes discontinuously, in a row interrupted by the screening rhythm of the outer vertical louvres. The pattern of the peepholes spells out words in the Braille alphabet. This apparatus acts like a Zoetrope, the early hand held mechanical forerunner to cinema, creating a strange slightly suspended sequence of fragmentary images. From within, the view of the outside is also distorted and fragmented by the louvres.

Architecturally, the shuttered, latticed, slatted, screened and fretworked envelopes of the lightweight timber houses of tropical Queensland provided us with the model of this indeterminate, layered and porous skin.

The louvred skin wraps around under the capsule in the form of an external translucent fiberglass seat. This fiberglass material is the same material used to construct or support the front colour coded bumper of your car.
01] Hyperlounge. View showing the installation of three of the cinema capsules at ACMI. The external surfaces of the capsules are also used to project content onto. Photograph: Peter Clarke. Melbourne. 2004.

02] Hyperlounge. Interior of a digital cinema capsule. The client requested that the capsules be designed to function as production facilities as well as cinemas. The translucent ceiling is designed to act as a photographic lighting diffuser for a roof mounted theatre spot. The interior is lined in upholstered panels, easily removable for access to internal cabling and technology and for easy repair. Photograph: Peter Clarke. Melbourne. 2004.
To create the sense of a domestic, informal intimacy within and around these Hyperlounges we made one of the walls a giant transparent blister pack, like those used to package children’s toys. This holds a series of images, details taken from personal photographs supplied from the ‘family’ of collaborators and fabricators who have contributed to the creation and history of the project. This collection of fragments, intimate yet ambiguous, is designed to read like a mosaic wall, inviting a participatory and involved viewing. As a source image we were constantly drawn to one of our early reference photographs of images cemented into a wall in a family home in a Moroccan village. Here the images appear to be worn down and frayed, expressing the idea of use, even if that use is an emotional one not a physical one.

The blister pack wall of domestic memories is designed to evoke the idea of our own histories and stories that we celebrate in our homes, the very thing that makes our own domestic spaces home. The Memory Wall has been designed to employ contemporary media and eventually take moving digital images as well as still images. The fibre optic lighting system linking the images is reminiscent of an organic living form and the idea of a family tree.

The construction of the capsules is based on contemporary car construction techniques. The car is the traditional way Australians connect with each other and to our places of escape and entertainment. We wanted to maintain a link to this tradition. We think of these Hyperlounges as taxis that navigate you to and connect you with virtual worlds. We have made the capsules modular and able to be pulled apart in sections for easy relocation or storage and to allow them to be put together in different ways to suit different exhibition requirements as they arise. We have designed them with a chassis that locks onto a transport system so they can easily be moved around. The ceiling has been fabricated as an inflatable pillow, translucent to let in light but also to defract it to avoid point reflections off the plasma television monitor. The inflatable ceiling is acoustically insulating and physically very light. These ceilings have been engineered by one of the world’s foremost inflatable-structures engineering firms, Tensys, based in London.

The seating in the Screen Lounges is inspired by the very informal way Australians use their living spaces. The seating curves around so that the viewers form part of a circle includes all of them and the television screen. We wanted to emphasize the importance of the social aspect involved in viewing television and media. We wanted people to talk about and discuss what they are seeing with each other. The seats are upholstered with Soonas, a cross between the very informal bean bag and a Doona that you might wrap around yourself while sitting up to watch TV. The Soonas can be folded into different profiles to suite different sitting styles and body types.

The complex digital communication technology inside each capsule is contained in the Mantle Piece/Technology Boot or Mantle Boot. We wanted the technology to present a domestic face. It is clear from our research that with the rise of ever more home entertainment technology every home will soon need a Mantle Boot. The control unit for all of this technology is an LCD control screen. This screen is conveniently stored inside the Mantle Boot and pulls out on a mechanical arm that can extend and rotate for easy access to any seated user.

We have designed a family of free standing partition screens to help create a soft boundary between the Screen Lounges and the surrounding public space. These partitions act as a kind of interior street sign system, directing traffic around the spaces. The woven partition screen or Navigation Partition Screen draws its form from the Micronesian navigators who wove their maps. These maps guided them to and connected them with their desired destinations. The Micronesians saw all knowledge as being like travelling
• Hyperlounge. Digital cinema capsule configured as a ‘convertable’, or un-enclosed version. The client wanted to be able to create situations where the capsule could be used by larg groups or be an animated attractor for a large space. By removing the roof and upper walls any capsule could be converted into this open air format. Photograph: Peter Clarke. Melbourne. 2004.

02] Hyperlounge. Digital cinema capsule with additional entry screen. The capsules are designed to provide some privacy while also leaking some of the internal activity in order to activate the surrounding space. Additional partition screens can be deployed to modify that porosity and even create entirely new spaces. Photograph: Peter Clarke. Melbourne. 2004.
“between parts of a matrix”. This woven form also echoes the navigation interface developed by Jane Ellery on the Screen Lounge control screen. The Micronesian’s need for precise directions to guide them in their journeys across vast oceans reflects a similar need for us today for guidance and navigational aids through the vast matrix of contemporary media now available. The woven Navigation Partition Screen has been created by one of Australia’s foremost and celebrated weavers, Wendy Golden.

**Project credits**
- Design: Michael Trudgeon, David Poulton
- Engineering consultant: Anthony Kitchener
- Contract administration: Crowd Productions
- Visualisation and documentation: Glynis nott
- Industrial designer: Mario Loyo
- Interior designer, Blisterpack project coordinator: Veronica Saunders
- Blisterpack project art director and photographer: Peter Clarke
- Researcher, interior designer: James Lamb
- Researcher, interior designer: Michelle Cox
- Documentation architects: Live Load
- Vision Engineer: Kevin Poulton
- Fibre optic systems consultant: Lionel J. Barden
- Certifying engineer: Robin Bliem
- Fibre artist: Wendy Golden
- Model making: Loop 8

The client for the *Hyperlounge* project was the Australian Centre for the Moving Image at Federation Square, Melbourne Australia

The *Hyperhouse* research program formed the basis for the design and fabrication response by Crowd Productions and studio dp. This program is conducted in conjunction with Anthony Kitchener from Cash Engineering Research and is ongoing.
Hyperlounge. Red acrylic partition screen. The partitions were designed as a secondary system of spatial organisation. Some are designed to enhance acoustic isolation and privacy. Some like the red screen are designed to reflect and scatter the cinema content coming from the capsules and also act as devices that fracture reflections and images in the manner of cinematic devices like the jump cut. Photograph: Peter Clarke. Melbourne, 2004.
The new cinema complex at Melbourne Central, a shopping centre in Melbourne's CBD, has been designed to bring the experience of cinema out into the public, to get cinema out of the box and in front of potential cinema patrons and to create social spaces that are engaging and welcoming, to create a richer more varied experience and a better event. One idea is about exploiting contemporary technology to expand the cinema experience, the other is about the significance of hospitality.

The power of light frames both the possibility of cinema and the contemporary city. The electric city and cinema were born at the same time and live an overlapping existence. Electric light illuminates the city to create our urban lifestyle and cinema has become an indelible frame for seeing that city. Cinema thus acts as a cultural map and a mirror. It reflects the presence of the surrounding communities and their current and past attitudes, memories and ideas. Australia has a very rich, diverse and heterogeneous population. We wanted this to be reflected in the experience of going to the cinema. The cinema can reflect the nature of film as a microcosm of the society around it. Like the hero of Jean Cocteau's groundbreaking film, Orphee, Blood of the poet, made in 1950, with film we walk through a mirror of our world to a world of dreams and fantasies that are a reflection of our own world.

The interior has been conceived of as an urban environment made up of discrete experiences and destinations. It is not a homogeneous and predicable experience. Its an adventure. Each time you go you can treat yourself to a different experience. You are not always in the same mood or with the same people with the same expectations so this space can be used in different ways. A night at the movies can be a big night with a large group of friends or family or it can be intimate and sophisticated. This is space as equipment for entertainment with a range of choices left in the hands of the users.

The new design elements begin at the ticket box. In the public spaces and queuing zone in front of the ticket box users are greeted by interactive display touch-screens. These screens are designed to provide information about films, exhibition times, information about special offers and a tantalising rush of movie trailers. Traditionally cinema foyers are static and empty spaces. That’s crazy. Such a fantastic ever-changing menu of films and with their million dollar promotional trailers should be driving the cinema environment from the moment of entry. Cinema is a dynamic cultural feast. We go to experience new things. We felt the cinema space should capitalise on and exploit this dimension. We wanted the building to be a kind of software, a programmable space, a changeable space that embraced contemporary technology in order to celebrate the drama of cinema. This was our recognition of the legacy of Broadway.

So is the drama of the new release, the anticipation of a new experience. We wanted to capture the seasons of the cinema, changing the cinema experience at different times of the day and year and also reflecting the mood and thrill of the changing menu of new releases. We have further addressed this by treating a number of the principal internal wall surfaces as programmable electronic canvases, able to change colour and mood in response to the changes in content and patron expectation.
01] Hoyts cinema project. Melbourne Central. Main foyer on Level 4 showing LED programmable lightwall wrapping the candy bar, the operable wall isolating the cinema-bar Lounge 9 and the marble corporate entry box to Lounge 9. These devices were part of the design strategy to create a programmatically flexible space. Photograph: Peter Clarke. Melbourne 2005.

02] Hoyts cinema project. Melbourne Central. Plan of the cinema complex. Level 4. The main foyer space is designed to address the existing central atrium of the Melbourne Central shopping complex. The planning of the complex was driven by a desire to create differentiated destinations within it. Plan: Crowd Productions, studio dp, Gray Pucksand. Melbourne. 2005.
The ticket box is skinned with a 30 metre long computer controlled LED light wall. The wall is programmed to change the ambience throughout the day and to respond to the different movie menus on offer. A cinema needs a very different ambience at 10am on Tuesday from that at 8pm on Saturday night. The walls have been programmed to run on a cycle that subtly changes throughout the day. Light becomes a key actor in dynamically framing the ambience from a chilled experience to the frenetic one. Every two weeks the cinema is a different place, transformed by the films being shown. Imagine if restaurants did this! For us the ‘intelligent wall’ or programmable surface is a new spatial or architectural interface; framing, activating and energising city spaces and interior spaces. The intelligent wall is a fusing of new computer mediated communication technologies with architecture to create a mixed reality. It is a child of a cinematic vision and cinematic techniques.

At the entry to the main cinemas, foyer and lounge level the cinema logo has been designed as an architectural screen, both a massive sign to be seen from the adjoining public multi-storey void and a see-through filter connecting the foyer to the great atrium in the shopping centre. The historic tower preserved at it’s centre is seen as the site of large public events. In pursuit of the destination we have created intense zones, each with a singular feature like the wrap around stacks of back-lit poster boxes. These are luscious menus. Film is by its very nature is voyeuristic. It challenges our notions of public and private. The power and seduction of voyeurism to intrigue people is very strong, inviting in people’s imagination and emotional participation. The framing of public and semi-private space within commercial precincts gives us the option of reinvigorating those spaces, seeking a sense of voyeurism, adventure and discovery. Cinema is social, on a grand public scale. It’s an event. Like the opera it can be as much about other people and other activities, like the passegiaire, that happen to converge at the theatre. Cinema is about catering for people together. Cinema is hospitality. The richness of the collective social experience is central.

Within the foyer the candy bar is again wrapped in a programmable LED skin. The candy bar folds around from the foyer to a lounge that is in fact a fully functioning cinema, open to the foyer. This lounge allows patrons to come into the cinema complex and see trailers before buying a ticket and it is a unique bar café space where the whole feeling of the space is transformed by information from the large format cinema screen. .The double height Cinema-bar lounge space gives us a surprising and grand hospitality space. Pendant lighting from the ceiling creates intimate moments within this large void. Through this facility we want to find new ways of entertaining cinema patrons while exploiting systems of cinema projection. The whole lounge space can be closed off and then the entry is through a marble box on set to the side. When the lounge is closed using a translucent operable wall for special functions the entry point becomes ceremonial.

The cinema boxes have been divided up into different zones or destinations each with their own unique experience. They are the East End, thehalfpipe and Directors Suite. The public space at the East End of the cinema complex announces the very big cinema screens. It is designed with the industrial functionalism of a freeway. These spaces get their colours, graphics and sense of speed from freeway signage. Freeways to us are part of Melbourne’s suburban growth, where most of us live. We wanted to link the energy of the rapid suburban transit to the blockbuster movie launch.
01] **Hoyts cinema project.**
Melbourne Central. The cinema-bar Lounge 9 with the operable wall closed. This is a fully functioning cinema space used as a foyer or as in this configuration for private functions. The candy bar wraps around into this space. Photograph: Peter Clarke. Melbourne 2005.

02] **Hoyts cinema project.**
Melbourne Central. Main concourse on Level 4 leading to the largest cinemas. This zone, the ‘East End’ has been designed for blockbuster film releases and acknowledges Melbourne’s freeway network as the arterial core of the cities suburban expansion and the source of the cinemas’ patronage. Melbourne 2005.
The halfpipe is on the menu to give patrons a different way of engaging with cinema: on your own bean bag on a skateboard ramp covered with a lawn in front of the big screen. It is chill out cinema. Layback luxury inspired by the local skateboard park and the great Australian back yard. It has already achieved cult status with Melbourne’s inner city cinema goers. The Directors Suite is the most sophisticated cinema offer. The seats are leather. The food has been designed with Melbourne’s best restaurants in mind and the bar reflects contemporary hospitality trends. The industrial baroque interior combines motifs of classical luxury, like the spiral staircase that plunges down into the lounge, with gritty details from the modern city like the laser cut Gobo-chandeliers and the stainless steel bump rails protecting the English wallpaper. Guests come here to combine privacy, comfort and the luxury of fine food with a good movie. It designed to maximise the sense of escape, more like a private club or a cigar bar.

While the viability of the traditional cinema offer is constantly being questioned, cinema is still the undisputed queen of the mass media arts. Focus testing tells us everybody still goes to the movies. Corporate investment in cinema production is Pharaonic, the glamour and excitement; legendary and infectious. It is both a mirror and a record of the evolution of contemporary urban life. With this project we wanted to respond spatially to the opportunities generated by the burgeoning presence of digital space. We have sought to explore or identify in-between spaces where people can interact with digital space and narratives, of which cinema is just one example. It has seemed to us that the digital environment and the physical one are evolving in parallel yet strangely disconnected ways. The interface in digital parlance is only understood as the Graphical User Interface not the space the user must inhabit to connect to the digital domain. We have sought to address the social, psychological, physiological and haptic dimensions of this connection.

**Project Credits**
- Design architects: Michael Trudgeon, David Poulton
- Documentation: David Poulton, Stephen Mellars, Warren Parker
- Visualisations, interface design and graphic design: Glynis Nott
- Project Architect: Andrij Rostek
- Main cinema auditorium design: Andrij Rostek
- Media Platform design and installation: PIVoD Technologies
- Digital Skin technology: Joe Casamento, Lightmoves
- Interior design consultant: Veronica Saunders
- Documenting architects: Gray Pucksand
- Photography: Peter Clarke
01) Hoyts cinema project.

02) Hoyts cinema project.
Melbourne Central. The Directors Suite bar and lounge. A special menu was devised along with the inclusion of a spiral staircase to create an unexpected volume behind the translucent façade of the lounge. Photograph: Peter Clarke. Melbourne 2005.
01] Hoyts cinema project. Melbourne Central. Plan of the Lounge 9 cinema-bar facility indicating the overlay of digital technology. The cinema spaces were conceived of as both discrete experiences and as part of an extended digital network. Melbourne 2005.

02] Hoyts cinema project. Melbourne Central. Elevation of the Lounge 9 cinema-bar facility indicating the overlay of digital technology. The functionality of a cinema was augmented by presentation technology including performance lighting and lounge and bar services. Melbourne 2005.
01] Hoyts cinema project.
Melbourne Central. The Directors Suite bar and lounge. The fit-out was designed as a set of modules for a scalable and customisable roll-out of this facility across Australia while allowing for distinctive local variation. Photograph: Peter Clarke. Melbourne 2005.

02] Hoyts cinema project.
Melbourne Central. A Directors Suite cinema. The in-cinema dinning tables were designed as ambience generators for the room as well individual functional lighting for diners. Photograph: Peter Clarke. Melbourne 2005.
The new cinema complex at Blacktown in Sydney’s west is the second designed by Crowd Productions and Studio dp for the Hoyts corporation.

In approaching each cinema complex we have sought to draw on elements from the local cultural context to evolve unique destinations that still form part of a recognisable commercial chain.

Blacktown has a unique cultural environment and energy. 70% of the population is under 45 years of age making it the youngest demographic zone in Australia. It’s population has the highest uptake of domestic digital technology and Mercedes Benz cars in the country. It is also the heartland of Australian Hip Hop culture and the location of Australia’s biggest home grown theme park.

To celebrate this rich fusion of contextual elements, that help define the surrounding community, we sought to make this cinema complex a laboratory for exploring digital technologies in public environments. We wanted to celebrate the possibilities of programmable space, develop an approach path suitable for the biggest multiplex cinema screen Australia and present a colourful and robust public space.

The core of the interior is the Generator, a programmable digital light wall that bounds the foyer and is reflected off the half silvered mirror façade of the candy bar back out through the glass shop front into the public mall beyond. The generator acts both as an attractor, activating the foyer space for passers by and enabling the interior ambience to be tuned to changes in the daily or weekly cycle of use and to the ever-changing cinema menu. The generator can be upgraded like computer hardware with more sophisticated software to change its performance. It can, in the future, be interfaced to mobile phone SMS messages allowing patrons to program changes to the ambience. Media bollards in the foyer play trailers on demand and advertise the cinema menu.

The long central corridor running through the centre of the complex has been broken up by saw-tooth mirror ceiling arrays and LED floor stripes that distort the natural perspective of space and distance. The lightbox cinema entries bulge from the corridor wall like the flared guards of a hotrod. The black rubber floor, stainless steel leaning rails and cement sheet wall panels lining the main corridor are offset by a 100 metre long bright orange wall.

The main corridor terminates in a second public and social space at the entry to the 600 seater cinema at the heart of the complex. This lounge features a series of translucent boundary partitions and an array of plasma screens playing trailers. The lounge has been designed to be retrofitted with interactive vending machine merchandising technology and mobile food and beverage kiosks. This space anticipates the possibility of staging cinema and media events showcasing local products.
01] **Hoyts cinema project.**
Blacktown. The main foyer showing the LED programmable light wall, a mirrored entry arch and the candy bar. The light wall was positioned to be visible from all of the main traffic spaces within the complex so as to act as a central lighting effects generator. Photograph: Peter Clarke. Blacktown 2005.

02] **Hoyts cinema project.**
Blacktown. The main foyer showing the entry, LED programmable light wall and the mirrored entry arch. Photograph: Peter Clarke. Blacktown 2005.
Project Credits

Design architects: Michael Trudgeon, David Poulton
Documentation: David Poulton, Stephen Mellars, Warren Parker
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Digital Skin technology: Joe Casamento, Lightmoves
Interior design consultant: Veronica Saunders
Documenting architects: Gray Pucksand
Photography: Peter Clarke
Photographic compositing: James Neuman
01] Hoyts cinema project. Blacktown. A second entertainment and meeting space in the main corridor of the cinema complex. Originally this space was to be equipped with food vending machines. Photograph: Peter Clarke. Blacktown 2005.

02] Hoyts cinema project. Blacktown. The main access corridor with individual cinema entry detailing. An central circular dropped bulkhead lighting fixture was inserted to punctuate the corridor space. Photograph: Peter Clarke. Blacktown 2005.

03] Hoyts cinema project. Blacktown. The main access corridor showing the suspended saw-tooth mirror ceiling. This reflected LED lighting strips in the floor, set to a logarithmic interval sequence to distort the apparent length of the corridor. These devices were developed from early cinema technology. Photograph: Peter Clarke. Blacktown 2005.
The National Australia Bank had identified a need to create a new branch design, with a real customer focus, that leveraged retail design principles and identified opportunities from new technologies. The first step was to choose a suitable design team. A limited call for tenders was put out to the market place. Crowd Productions and Studio dp won this limited competition. Dennis Quinn, then Head of Physical and Self Service Delivery at NAB said “We were looking for an innovative design company that could create a unique customer experience within a “bank of the future”. We did not need a design company that could make the branch “look nice”, but rather an organisation that was driven by creating a unique experience via the physical environment. Crowd was therefore chosen. They worked closely with the marketing and brand teams to create an environment that aligned well to their defined customer experience and brand promise.” Dennis Quinn and the National Australia Bank team worked closely with Crowd and Studio dp to achieve both a prototype of the new store and complete a roll out design concept that has now been implemented in a first “live” branch at Victoria point.

In addressing the redesign of retail banking space for NAB we proposed that the bank space is not a blank canvas to act as merely a background to advertising graphics and merchandising campaigns. The space and the people within the space are key actors in creating the real banking experience. As in all retail experiences this must dovetail with the branding messages but we argue that the physical bank spaces and human resources need to be presented as a core experience and that the NAB network, in its own right and not a blank background, is the anchor of the spatial design.

Based on research conducted as part of the NAB’s wider research program we have focused on:

- Enhancing the functional experience of banking and information gathering for the customer and accommodating a suite of contemporary technology options designed to increase efficiency and speed for the customer and increase efficiency and security for the tellers and other banking staff.
- Enhancing the quality and appeal of the working environment and experience for bank staff.
- Exploring the possible linkages and synergies available with local communities that enhance the banking experience for customers and staff and accommodate these within the built design. We needed to address how that relationship to the local community is expressed. The maintenance of that expression needs to be easy for the bank and for community input and to ensure that the bank’s intent is coherent.
01] NAB retail bank project. Prototype banking facility constructed as a ‘theatre set’ to test new ideas and banking processes. View from the exterior showing the entry and ‘front window’ zone. Photograph: Peter Clarke. Knox. 2005.

02] NAB retail bank project. Render of the concept design showing key zones within the retail bank. Detail showing the information, web access, conversation zone and meeting pavilions. Render: Costa Gabriel. Melbourne. 2005.
Given the extraordinary range of building stock, an architectural program needed to be very flexible while achieving increased performance and presenting a harmonious and coherent image for the bank. A modular approach was required both in terms of conceptualising the banking zones and activities but also in designing the actual fixtures.

Ensuring that the new experiences are coherent and easy to identify for customers

Ensuring that the current disconnect between the bank’s media presence and the experience of the built bank branch environment was removed.

In discussion with the NAB we identified a number of core principles and zones which the bank was keen to pursue operationally and that we should develop spaces for.

**Core principles**

The new retail space design for NAB revolves around 3 core principles:

- **Conversation**
  The banking space is designed to allow NAB staff the opportunity to converse with customers readily in a variety of ways.

- **Network**
  The bank is designed to express and facilitate connection to the local business and community networks in which it operates and to enhance connection to the wider and significant NAB network.

- **Efficiency**
  The introduction and deployment of new technology is designed to enhance the ease and efficiency of the banking process.

Each core principle has a number of zones allocated to it.

**Conversation zones**

01] Exterior shop front zone: combining clear messages and information on the shop front and interactive information kiosks

02] The Exhibition wall: Providing rich and up-to-date magazine style information for customers on life-event banking ideas, hosted by staff.

03] Information desks: Designed for providing customers with quick access to staff.

04] The Conversation table: Providing a technology free meeting and research area within the bank, ideal for relaxed customer staff communication.

05] Teller assisted zone: TCRs [Teller Cash Recyclers or teller activated ATMs] are used to remove the barrier between staff and customers to allow easy communication and staff assistance to customers.
NAB retail bank project. Concept plan. The plan for the prototype banking ‘theatre set’ identifying the core activity zones. This archetypal plan was based on the average size and most common real estate footprint used by NAB. The modular zone planning allowed this to be scaled up or down to suit sites and performance demands across the retail network. Knox. 2005.
Network zones

01] Web kiosks: A research area for customers to access the NAB information network.
02] Meeting pavilions: Private meeting spaces for NAB staff and customers equipped for tele-conferencing for rapid connection to the wider NAB network of experience and knowledge.
03] The Community Wall: Providing a dedicated area to showcase the activities and achievements of the local community network associated with the branch.

Efficiency zones

01] The Fast service wall: A wall of automatic transaction machines to reduce queuing, teller load and it's right next to the front door. A number of the machines allow 24 hour access.
02] Media bollards: Designed to give your customers fast and personal access to the NAB information network. They also act as attractors and advertising points

Banking zones and design elements

Store front branding and information zone.

This is where the conversation with customers begins. The messages link the reality of the local branch service offer and spatial experience with the broad nationwide NAB media presence. The interactive window displays and a range of digital displays that convey a sense of life, change and interest rather than being static messages. The storefront intrigues passers-by in an intimate way rather than addressing them as though they were in a football stadium.

An information desk, where customers can ask for help, is the first port of call. They are especially important at the introduction of this new banking offer, as there will be many questions in customers’ minds.

Information lounge

This zone is central to communicating the potential relationships the bank can have with its customers in terms of the banks ability to act as a partner in fulfilling customers ambitions. This zone is not about speed. Customers are invited to explore a range of information sources. Rather than the focus being on immediate transactions this space allows for customers to develop their understanding of the possible relations that could be developed with the bank. This is a place for customers to sit down to digest information, children to be entertained while waiting. Screens and kiosks in the space will play a variety of information and banking related entertainment content. The kiosks will allow for interactive content and be menu driven.

Media Bollard/Kiosk

The media bollard/kiosk is a single user electronic touch-screen information point. The content links the reality of the local branch service offer and spatial experience of the bank with the broader nationwide NAB media presence. The content and the range of digital display material are animated and filmic and convey a sense of life, change and interest that is greater than purely static messages.
01] **NAB retail bank project.** 'Theatre set' interior view showing the information zone with the large concertina exhibition wall, information desk and web kiosk. Photograph: Peter Clarke. Knox. 2006.

02] **NAB retail bank project.** 'Theatre set' interior view showing the meeting pavilions. We wanted these to appear very approachable and porous so we designed the doors to side back from the corners. The room can almost dissolve when both doors are open yet feel private when closed. Photograph: Peter Clarke. Knox. 2006.

03] **NAB retail bank project.** 'Theatre set' interior view showing the web kiosk. We wanted to create semi-private zones while maintaining an inviting and open environment. Photograph: Peter Clarke. Knox. 2006.
The storefront and the media bollards engage passers-by in an intimate way rather than addressing them as though they were in a football stadium. The bollards are ideally placed in small groups. There is one outside the glazing line available on a 24-hour basis and further bollards inside. Customers can use these while they are waiting or whenever they wish.

**Exhibition Wall**

This zone is central to communicating the potential relationships the bank can have with its customers and exploring the theme of life’s potentials and possibilities. The wall sized graphic posters present a contemporary magazine style landscape of information. The custom display system allows the poster elements to be easily changed. The impact of this collecting of all large format graphic display information is to build a very dynamic zone within the bank that also becomes part of the shop window when seen from the exterior.

**Web Kiosk**

The web kiosk is a semi private research space for the bank’s customers. This facility with web browser, printer and keyboard allows the customer to access bank and finance websites and to print out information. The space is a soft space with an intimate domestic scale. The web kiosk can seat three people on small upholstered banquettas.

**Fast service blade wall [‘Keep’]**

This element is to be a unique identifying feature of the NAB’s new retail planning. It is an emblem of modern banking space. This wall is the high security zone of the bank and is emblematic of the position of trust that banking traditionally holds. It starts as the front facade of the bank with the street facing ATMs. Where possible it even projects out beyond the front of the bank or is readily visible as the front facade. It contains the ATM service zone, all cash processing fast service machines, lead teller positions and the strong room at the back. It is only accessible to staff via sophisticated screening technology. The most forward section of the Fast Service Wall is accessible on a 24 hour basis. This is achieved by a combination of cranking the shop glazing line back into the tenancy adjoining the FSW wall and by projecting the Fast Service Wall as far forward as possible. This facility is about providing and communicating the greatest possible efficiency and convenience for customers.

It is like the keep in a castle. It is visually identified as a very strong and secure zone representing the banks commitment to the safe keeping of the community’s wealth. This will be done through form and materials. The Fast Service Wall is clad in a stone or another durable and strong material indigenous to the local architecture or a locally available material. Integrating all of the high security zones into one such element has allowed us to liberate the rest of the banking plan and take away the more rigorous security demands. This has allowed us to create more fluid and open banking space for staff, customers and their activities.

Finally from the locational sense we have sought to develop a range of materials to clad the Fast Service Wall for each of the different geographic communities: CBD or urban, suburban and rural. We are keen to develop a material language that also responds to regional change, allowing the bank to be both a network of connected branches but one where the nodes are expressed as unique destinations rather than entirely homogeneous.
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NAB retail bank project. ‘Theatre set’ interior view showing the conversation zone. We felt that it was important to express the idea of conversation and dialogue at the centre of the space. Staff were retrained to approach customers for casual discussion and customers were encouraged to use the space for research or a pleasant place to wait. In an environment teeming with technology this space was kept technology free. Photograph: Peter Clarke. Knox. 2006.
Conversation Zone
The conversation zone contains a number of meeting places for connection within and beyond the bank space. This space is a key gateway to and representation of the bank as a wide network. For the local customer, investigating financial options, the conversation spaces can allow for informal dialogue with staff. For the rural customer needing immediate expert advice, the bank can use internet connection as a virtual gateway to connect customers to expert knowledge, where-ever it resides in within Australia. Every node in the bank network is close to every other node. It’s being part of the network that is important. For the city customer wanting to invest in remote country property, they too can also be put in touch with the experts in the network that can help. This emphasis on connection is designed to optimise the value of each employee and the service and knowledge delivery to the customer. By this the bank is valuing its own human resources, to the benefit of it’s customers.

Conversation table
The conversation table is an area where customers can comfortably wait, do research or engage informally with NAB staff. This is a place for customers to sit down to digest information, children can be entertained while waiting. There is no technology in this area. The focus of this space is real and warm conversation - a place where the staff can simply listen to customers. The conversation table is positioned out in the open and should be placed near the exhibition wall, for reference, should the need arise. The chairs in this zone are placed on either side of the table but staff sit on the same side of the table as the customers, working with them like a great coach. Staff can speak to customers in a relaxed way on neutral territory.

Meeting Pavilions
The meeting room facilities have been designed to appear open, offering privacy yet accessible. They project into the retail banking space in an inviting way. While the notion of privacy is crucial it is important that they have a comfortable connection to the main public area. This is less intimidating for customers. The translucent walls add to the idea of openness as do the doors situated at the corners, allowing selective privacy or communication. Colour is used to create a less formal environment. These spaces are also a key gateway to, and representation of, the greater bank network. While the meeting rooms allow for easy access by customers and staff for a private meeting space they are also seen as spaces where customers can gain access to specific fields of knowledge and expertise from the bank. These meeting spaces can be described as virtually extendable as they can be linked by conference telephones and video conferencing plasma screens. When a conference call is occurring or the screen is on and you are in contact with another meeting pavilion the meeting space is virtually extended and completed in that other location. For the rural customer needing immediate expert advice, the bank can use this virtual gateway to quickly connect them to expert knowledge, where-ever it resides in the network. Every node in the bank’s network is close to every other node. It’s being part of the network that is important. This connection portal is designed to optimize the value of each employee and the service and knowledge delivery to the customer. By this bank is valuing its own human resources, very effectively, to the benefit of it’s customers. This resource will also be used by the staff to locate information within the network. With the appropriate equipment evident, we have identified these pavilions as space prepared for people to do conversations and transactions. These spaces can also be used as private meeting and work spaces by bank personnel.
NAB retail banking project. Plan of the Queen Street branch in the Brisbane CBD. Here we multiplied the elements in the various zones to scale up the infrastructure. Within this heritage envelope our free-standing pavilions were very cost effective and visually appealing. The 'Fast Service Wall' became a large stone wedge inserted into the open plan interior volume. Un-built project. Brisbane. 2006.
Within the full design program these virtually extended conversation pavilions may be mobile or fixed. The mobile versions are fabricated off site and can be removed or relocated easily. More can be added as required. The light mobile rooms have pursued the virtually extended spatial program by being designed as half a room. The key meeting table within the room abuts the end wall where a large video conferencing plasma screen sits. When the screen is on and you are in contact with another conversation pavilion the table is virtually completed in that other location. In your extended table meeting half of the participants are physically present, the other half in another location. The room has two focus points; one reaching into the virtually extended meeting space and one within the room where the space is being used as a venue for entirely local business.

**Teller assisted transaction zone**

We have designed the banking space with teller positions scattered across the banking chamber to create a much more fluid interaction between staff and customers. The security aspect of the older isolated teller counters is tackled with the introduction of TCR twin safe machines. These provide each teller with a secure cash transaction source. With this technology we have freed up the teller positions from the restriction of a protection barrier as the TCR makes access to cash impossible by unauthorised persons. Tellers are now free to guide customers through the information lounge and to take up concierge and coaching rolls.

**Community Wall**

We needed to address the idea of the individual bank branch as a community and then as part of the greater local community, then as part of the wider bank network community. We also needed to address differentiation for the different communities. The Community Wall is intended to create a space for expression by the local bank staff of their community and its activities within the formal system of elements for the bank design. The content demonstrates how active the bank has been in the community. It also shows projects jointly undertaken by bank and community and celebrates goals and benefits. The alcoves in the store trophies, photographs, certificates and gifts.

**Project Credits**

The Bank of the Future Project was developed from research and initiatives undertaken by the NAB. Crowd Productions and Studio dp developed the spatial planning and strategies as part of that program and as part of the teams developing those initiatives.

Design architects and research team from Crowd/studio dp: Michael Trudgeon, David Poulton

National Australia Bank Head of Physical and Self Service Delivery: Dennis Quinn

Detail design: Elena Panagiotidis, Tristan Burfield

Interior design: Veronica Saunders

Visualisations: Costa Gabriel

Graphic design: Glynis Nott

Report writing: Megan Genet

Prototype fabrication co-ordinator: David Poulton

Graphic campaign design: SEE

Vision engineer: Kevin Poulton

Photography: Peter Clarke

Photographic compositing: James Neuman
‘Theatre set’ interior view showing the community wall. This element was designed to create an architecturally coherent container for the very important but uncontrollable collection of staff and community memorabilia. Based on the ‘Blister pack’ from the Hyperlounge project this feature sought to bridge the formal language of the architectural fit-out with the messy nature of personal mementos. It was produced from a small number of repeated modules that could assembled into apparently varying patterns. This item expressed the idea of the importance of maintaining relationships within the business of banking. Photograph: Peter Clarke. Knox. 2006.
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epilogue: future music

conclusions drawn from reflection on the case study project work
This research by project began with a focus on ways of making, testing and then situating and integrating technological innovation into the design and functioning of architectural projects. This took the form of prototyping proposed design solutions. The intention being to deliver greater performance and quality in the design outcomes through the use of more sophisticated technology. The original gap explored by this project was that a number of disciplines, such as industrial design and musical production, could deliver innovative outcomes through forms of prototyping very effectively and therefore that identifying these processes and testing them might be valuable in our architectural projects. These processes often acknowledge the dangers of innovation and incorporate ways to moderate them. In the industrial design practice manual *Total Design*, readers are warned to avoid innovation at all costs unless it is absolutely necessary. The author then proceeds to describe a careful evaluation process to access the risks of innovation and the research and prototyping steps to address these. Central to the contribution of these prototyping processes is their focus on what can be learned through the dynamic of making itself and how the outcomes can then be evaluated and analysed.

At the outset of this research project I focused on how to optimise the advantages that could be gained from prototyping objects and technology. To this end with the *Hyperkitchen* and *ACMI Hyperlounge* projects, much of the actual construction and fabrication was undertaken on the ground floor of our design studio at Crowd Productions in Prahran. Following the Lockheed ‘Skunkworks’ rapid-prototyping model developed by Kelly Johnson and my own experience of Anthony Kitchener’s Cash Engineering Research, prototyping methods discussed in the accompanying essay *make*, our design studio flowed directly into the fabrication workshop. Design decisions could be directly assessed against the presence of the emerging built work. David Poulton headed up the fabrication teams and we could all interact and review progress and ideas seamlessly. In the course of attempting to incorporate and understand these strategies to address the gaps that later emerged in the case study projects, the focus of this research project changed to the making and testing of communication techniques with project clients and stakeholders. The role of these communication techniques finally evolved from merely transferring the results of other testing regimes to actually become the making and testing strategies themselves, ways of prototyping narratives, scenarios and relationships involving a broad range of actors, all enmeshed in the project’s networks.

Pursuing this line of enquiry has suggested that developing the project brief and program through a process of detailed or ‘forensic’ research and conversation with the client can provide an unexpectedly rich and innovative platform from which to frame a design response. Designing the nature and context for this conversation has followed a path framed by the initial logic and dynamic of the physical prototyping. This process of engagement has, in the case studies constituting this project, generated an appreciation and acceptance of innovative design responses on the part of clients, in the way that physical prototyping also acts as a form of demonstration about how something actually works. At the beginning of the project the principal axis of exploration and
01] Hyperlounge project. Final assembly and finishing of the capsules was done at our design studio in the adjacent fabrication space. This allowed us an easy cross-reference between drawing and construction and to build up knowledge about our design decisions against the demands of production engineering. This folded back into better design and detailing as the project progressed. Design: Crowd Productions and studio dp. Melbourne. 2003.

02] The first production stealth fighter at the ‘Skunkworks’ assembly plant. Kelly Johnson insisted that to ensure optimal development of their programs, the design and production facilities be adjacent with an open door. Design: Lockheed. Burbank. 1980.

03] Peugeot car showroom on the Avenue des Champs Élysées. The showroom only displays prototype concept cars. Like the Motoramas staged by General Motors this showroom creates an event where users begin to engage with Peugeot’s vision of the future. As Stefano Marzano from the Domus Academy and Philips has observed, this starts to create ‘memories of the future’. This is also an effective example of mixed or trans-programming. Paris. 2005
development of new design opportunities was technological and excluded the client. In the manner of industrial design, the enabling of new processes and functions and the autonomy offered by the design intervention acted as the central narrative for the project outcome. Identifying innovative technological opportunities substantially defined the design process. This essentially ‘siteless’ or ‘context-independent’ and technologically mediated approach also favoured a modular, factory fabricated and necessarily flexible or reconfigurable design outcome. This flexibility in part accommodates for the potentially wide variation in the eventual location of the product’s use. The approach stresses the relationship of the user to the design intervention and the events generated, resulting from their interaction that then creates a specificity or ‘site of action’. This model presupposed that the design elements making up the architectural environment could also be addressed as active components or participants in the constitution of the events and processes that they eventually contain or enable. I had initially understood this process to be valuable in facilitating and testing technological change. It was only as new gaps emerged in undertaking the case study projects that it became clear that the prototyping process could also be used to explore or reinforce the idea of the personal agency of the user or the importance of the relationship between users and their objects, or their environments.\(^1\)

The change introduced by the unconventional use of technology in the case study projects necessitated the creation and communication of explanatory narratives that introduced the designs and suggested how they could be used and how they might connect to a wider, established cultural context. The narratives and framing of scenarios became a new territory for making and testing the proposed design outcomes. By the time of the final case study the client had become a significant participant in generating new design opportunities. The programmatic, communication and scripting components of the design process emerged to represent the most fertile territory for invoking opportunities for innovation, be it technological, organisational, formal or programmatic. Initially, by asking questions I hoped we could reveal and then challenge the conventions and assumptions shaping each project. I had been very drawn to the writing of the Robin Evans in relation to his questioning of assumptions and unpacking of conventions,\(^2\) which, as tools for us, acted to extend the design opportunities offered by each project. The prototyping and prototypes act as further catalytic processes. The outcomes emerging from this research project have highlighted the potential role and heterogeneous nature of the actors that constitute the architectural projects undertaken, beginning with the physical elements and extending to include the narrative content and human behaviour and interaction. This presents a model of the designed outcome and processes as an extended organism, where the ‘exchange boundaries’\(^3\) between the different actors in and around the project are porous and dynamic. The design process seeks to exert an adaptive control over the flows of information, energy, matter and people that cross the project. The role and presence of these actors have all been folded into the design remit of the case study projects, projects that began with briefs to only design the physical spaces. In this sense our design and prototyping has tended to move towards understanding relational processes and modelling the projects as systems and networks that inform or generate relationships. The pursuit of change, as a key component of the design program in each of the case studies, has exposed the important role of the narrative content within the completed design as a symbiotic grounding element. This narrative content, along with the actions and behaviour of the various user groups, completes the eventual operative gestalt of the final project. In the manner of the thinking of Gordon Pask and the design approach of Cedric Price, the logic of a conversation can be extended to model the relationship that the
01] Cardboard box ‘theatre set prototype’ for the RTA project. The cheap, easy to reconfigure spatial and process laboratory tool used by Crowd Productions to develop design ideas that engender change and potential risk for our clients. A conversational prototype to include the clients. Design: Crowd Productions, Blacktown, 2007.


03] Hoyts cinema project. Information kiosk prototype, designed to carry part of the digital layer of the design. Design: Crowd Productions and studio dp. Echuca. 2004

end-users can have with the built project outcome. Our interest in adding a layer of digital communications technology to our projects has focused our thinking on the performative and transformative potential of built environments and what exchanges might occur between them and what control users might exert on their environments. The built environment then becomes a stage or framework that users participate in transforming. This idea was also reinforced by Joseph Svoboda’s notion of a scenographic environment as being one required to act as a dramatic component, integrated into a greater framework of expressive components. The model of a heterogeneous composition for the design project outcomes also dovetails with Crowd Production’s transdisciplinary working approach. Crowd looks for ways to add design input from a wide spectrum of disciplines into our design projects.

The experimentation with and prototyping of design innovation, as a way of exploring and testing innovative or novel technology or design strategies, has transmogrified [shape shifted] into a research-focused conversational or dramaturgical process; one, however, that has maintained the character and intent of the original process. Just as the physical object-focused prototyping method is a designed or monitored process, reliant on feedback to proceed effectively, so the later conversational and dramaturgical processes have required careful designing in order to deliver results consistent with our original design intent.

Pursuing change in live design projects has revealed the potentially destabilising and risky nature of change. Change not only requires explanation, it also makes people uncomfortable. The ‘learning through doing’ or prototyping process has evolved to perform the function of a safety net for us as designers and our clients, allowing for the addressing of and preparation for change along with the opportunity to rehearse it and fine-tune or adjust it. The resulting set of prototyping design strategies operates to manage risk while soliciting ideas for an increased potential for change, drawn from a wide range of project stakeholders constituting the client.

The generation and monitoring of feedback loops is implicit within the culture of prototyping; that is to say, in the examples of prototyping culture that have formed the basis of the methodological research for this project. This culture of prototyping tends to promote opportunities for innovation, both through making and through communication, allowing a sense of temporarily fluid but manageable instability. The importance of communication in the operation of design outcomes was reinforced by Victor Hugo’s observations in his novel *Notre Dame of Paris*, about the role of the printed book in relation to the public role of architecture and my own experiences of teaching in tertiary education design programs at RMIT, Melbourne and Monash universities. This has created for me the idea of a conversationally developed, programmatically-driven or scripted, experientially focused model of design and architecture. The wider the conversational invitation is cast, the greater the possibilities for change and innovation as stakeholders not only take some ownership of the emerging design platform but also bring to it their own unique experience and insights. The design of this conversational platform is critical. It informs the dynamic of that conversation and what the conversation is directed to deliver.

The design processes here are all still informed by the initial notion of engagement with change. These ‘data-mining’ or ‘forensic’ conversational processes, designed to draw out and develop tacit knowledge, were re-purposed from the teaching and learning models I had encountered in the academy environment at RMIT University. The conversational strategies developed in the case study projects are all framed to identify and manage that potential within the projects. The conversational processes have also delivered additional results, however, such as the generation and consequences of ‘intra-party’ communication within our client stakeholder cohorts, and these results have brought real and unforeseen advantages.
Hylperlounge. Client meeting with stakeholders from ACMI to discuss and evaluate the ‘scissor arm’ control screen support system prototype. The project opportunities were greatly extended through conversation with our clients. Melbourne. June 2003.

Kukunftsmusik. ‘Project trajectory’ diagram developed for interim PhD presentation at RMIT. The diagram was intended to suggest the non-linear, unstable and unpredictable pathway of our projects’ evolution. The process did not follow our original script. Design: Crowd Productions. Melbourne. 2007.
The extending of the program development phase of the design process, to include exploration of the tacit knowledge of the client while also providing a measure of risk management by prototyping potential outcomes, has become a central concern of this project. The initiation and management of conversations has developed as a principal concern in order to also facilitate these outcomes. This is particularly important in projects where conventional design solutions do not appear to adequately address the recognised problem framing a project’s requirements, and careful development of the project program or script is vital to create a new platform for the design and the operation of the outcome.

This more socially focused approach to developing the program for a project also reflects an emerging wider social expectation for greater individual freedom and user control. This trend is discussed by Anna Klingmann in her book *Brandscapes* and more broadly by the advertising community with the recently coined term ‘consume-actor’ to describe the contemporary proactive consumer who demands more personal control of their products, services and environments. The prototyping strategies developed through the case study projects have become a way to manage the process of client engagement through the stages of ‘forensic’ research, communication and feedback to them. This, I believe, represents the value of the project; in effect a way of reflecting on how a project can become.

The process of using design as a way of thinking about a problem has become an important outcome of the project. Prototyping helps actualise ideas through making them manifest and allows a much better appraisal of them. It assists in the transformative potential of the design process and design outcomes. In this sense the influences on this research project from aircraft prototyping, Punk music, concept car design, industrial design, theatre and education all sit comfortably together. They all represent ways of learning through improvisation, conversation and making. Prototyping turns the design process into a reflective learning process. The prototyping acts as an evocative intellectual campfire, set to focus conversation around a collective problem. As designers, this gives us some ability to more meaningfully take control of what might become.

We have continued to test and develop the design tools created during the projects described in the essay *contrive*. We have sought to better communicate the proposed relationships between space, technology, processes and users in our architectural projects with more graphic and simpler communication techniques with our clients. These have included mapping the experience paths of different user groups onto diagrammatic building plans and creating ‘jigsaw puzzle’ plans where individual functions and process spaces can be addressed and re-arranged to show the consequences of different design decisions. We have combined our cardboard box building mock-up theatre set prototypes with live 3-D Rhinoceros models of the as yet unbuilt spaces, projected up onto a large screen as a way to further simulate the experience of these spaces as built outcomes for our clients. This technique of projecting a rendered space borrows from an installation we undertook at the *Museum of Contemporary Art* in Sydney in 1998, where we simulated the experience of being inside the *Hyperhouse* project using large photo-real projections in a small space. The *Hyperhouse* project, begun as my Masters project in architecture at RMIT in 1990, has been a conceptual prototype driving the initial design approach to many of the case study projects undertaken in this research project.

The *Hyperhouse* project sought to explore and identify key areas of technological innovation that might be useful for improving the performance of architecture. Subsequent projects have been approached as opportunities to prototype and build fragments of
01] BeWell project. A diagram to map the projected experience paths of users through the building. This mapping was a good conversation starter. Design: Crowd Productions. Melbourne. 2007.
this conceptual model in order to develop it. These have included the mobile nature and rationalised service infrastructure of the Hyperkitchen, the Integrated Service Loom and Mechanical Vapour Recompression Bathroom, the automotive-technology-based construction techniques used in the ACMI Hyperlounge project and the idea of a programmable building envelope in the computer-controlled LED light walls in the Hoyts cinema projects. The Hyperhouse project was conceived as a technologically performative enabling tool for users, intended to be reconfigurable to allow for continuous changes to the conditions experienced within the built environment and for creative expression. The Hyperhouse project was, however, conceived without a client. The significance of that gap was not evident to me at the time and it is only through the process of trying to build fragments of it that it has become clear to me as to the terrible significance and value of the client in realising design projects. In his book Serious Play, Michael Schrage observed that ‘you can’t invent the future without prototyping it’. What this project has revealed is that the process of building prototypes itself cannot only profoundly influence the way the design ideas are received, but also the very ideas themselves. The conversational dynamic set-up through a prototyping process can inform the possibilities of the design process in very rich ways, acting as a catalyst and a ‘strange attractor’ for new ideas and directions. This process is not collaborative design but it does recognise and pursue the diversity and complexity of the networks that constitute the contexts and drivers of design problems and that shape their success or failure. At the beginning of this research project my sense of the rich potential for change and innovation in design projects lay in researching and prototyping complex technological systems. In the process of trying to realise this potential through the case study projects I have come to see that much of the potential for change and innovation can exist in the research-focused conversations one has with the clients and users. This project has sought to suggest how the design of that process can bring real value to the design outcomes. The process in effect focuses all of the actors in imagining what their collective future might be as part of the project. What is initially designed through the process is a way of thinking and through it a way to realise or contrive the potential of that future.
references


footnotes

F1. The importance of these ideas to industrial design thinking was affirmed in a conversation I had with Soumitri Varadaragan, Then Program Leader of Industrial Design at RMIT in September 2006 at RMIT.
F2. I acknowledge here that Ranulph Glanville has observed on many occasions that I have a preoccupation with tidying up projects and the outcomes of the research processes and social interaction that results from our engagement with our clients. My notion of fluidity or manageable instability is a rather subjective one.
F3. I refer to this passage of Victor Hugo’s in part of the literature survey, in the essay text.
F5. See ‘MCA Hyperhouse installation’ in the essay risk. Case study documentation.
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