The Future Generations University

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(On behalf of Room 4.1.3 Pty Ltd)

The paper was first published in *Landscape Review* 1998: 4(1). Unfortunately only the text was printed: technical problems resulted in the illustrations being omitted. In this issue of *Landscape Review* we are reproducing the same paper inclusive of its illustations (ed). We apologise to Richard Weller, the author, for the unfortunate earlier omission.

> *I consider sustainable development to be a contradiction. What we need is sustainable life. In the 20th century the glory of the human has become the desolation of the earth. The desolation of the earth is becoming the destiny of the human. All human institutions, activities and programs must be judged primarily by the extent to which they inhibit, ignore or foster a mutually enhancing human-earth relationship. There are enormous creative possibilities if only we would take them.*
>
> Thomas Berry in discussion with Paul Collins. *Encounters,* ABC Tapes, 1995.

THIS PAPER DESCRIBES a recent design project for the Future Generations University, by the interdisciplinary design company Room 4.1.3. The Future Generations University is to be a new university specifically devoted to issues of sustainability, sited north of Sydney on Australia's east coast.

The paper describes the idea of such a new educational institution, the design process by which such a place expects to be formed, the theoretical position of Room 4.1.3's submission and the forms and concepts of the design itself. These aspects of the project are then placed within the context of contemporary environmental design theory.

The project itself, and the means by which the work was both solicited and done, presents a case study in interdisciplinary design, wherein landscape architectural sensibilities provide a platform for emergent design paradigms.

IN 1996 AN INTERNATIONAL DESIGN COMPETITION for a 'Future Generations University' (FGU) was commissioned by private investors in association with the Future Generations Alliance Foundation.[1] The Future Generations Alliance Foundation is an international organisation established in 1992 by Mr Katsuhiko Yazaki in Kyoto. The Foundation was created to promote the ideals of a sustainable future, and believes that such a future is predicated upon cultural evolution (and revolution), to which new modes of education are considered essential.[2]

The idea of forming a new, private university for postgraduate studies, which is dedicated to the theory and praxis of sustainability, came about after the Rio de Janeiro Earth Summit in 1992. Australia, and ultimately Wyong to the north of Sydney, was chosen as an appropriate Australasian intersection for such a project. The EcoDesign Foundation in Sydney was commissioned by the Future Generations Alliance Foundation to draft the brief and manage its design competition.[3]

The brief

By way of introduction to the question of why we might need such an institution, the brief began the dialogue which entrants were expected to extend.

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KEY WORDS
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REFLECTIONS

Figure 1: The Site.

Figure 2: The Site context – showing the university designed to meet 4,500 students (shaded area is wetland).

The modern university has been founded on and as the institution of reason. Its current problems are not merely its growing irrelevance, ineffectiveness or compliant anachronism but, more destructively, its inability to overcome liberal pluralism and focus on reversing the degradation of the world that has been caused by instrumental reason. The failure of all current universities to generate responsibility for what is known, how it becomes known and what happens to that knowledge calls for the reinvention of the idea of the university. The idea that the university preserves society's freedoms through pluralism has been revealed to be illusory—the inability to preserve the future for future generations is the most active removal of freedom.[4]

The brief stressed that teams should be specifically constructed for the task of designing the concept for a Future Generations University, and that they would best be international, multicultural and interdisciplinary. Consequently, Room 4.1.3 was established. Room 4.1.3 was formed from the University of Western Australia's landscape architecture course within the School of Architecture and Fine Arts. It included 23 people from eight cultures, speaking 10 different languages, representing 14 different skills, and ranging from 21 to 72 years of age.[5]

The brief stated that the competition was, 'to encourage a different kind of design process, one that moves beyond a limited conceptualisation of design as "problem solving" '. The brief also urged entrants to, 'not shy away from developing critiques of the university as it is currently being formulated'.

The brief stipulated that the university:

- is a private institution
- will function both locally and globally
- will be an institution with an ability to change and recreate itself
- will foster the creation of new communities of learning
- will focus on new ways of learning

- will seek to produce students who can transform existing professions and create new ones
- will develop practices of co-creation as opposed to egocentric production
- will form and promote an intercultural ethos which does not destroy cultural difference
- will ensure that educating processes and modes of organisation are innovative, critically reflexive and modifiable, whilst nonetheless being coherent and directive
- will have an architecture which is educational – not architecture for education – and one whose uses and informational means are conceptualised by the participants, so that the whole site's ecological sustainability instructs and is instructed by all its uses.

For stage one, teams were required to submit their credentials and a polemic which responded to the idea of the new university and sustainability in general. The following points cover our initial submission and, in theory, extend to our final design propositions.

- We agree with Jencks when he says, 'Form follows world view'.[6]
- The project is flawed because local Aboriginal groups were not consulted.[7]
- We might expand upon or contradict the chosen site as we are uncomfortable with its *a priori* selection.
- Both virtual and 'real' spaces are understood as environments.
- The land should be understood as an existing living architecture.
- The site is both local and global, theoretical and material.
- We will preserve the tradition of the university as a critical institution, and therefore might well ask questions which make environmentalists uncomfortable. It is essential that the notions of sustainability as part of a popular culture of environmentalism be academically retrieved, just as it is necessary to academic operations that a popular culture surround its more indulgent ramblings and end games.
- We remain dubious about 'cheque-book education'. We believe international co-operation and scholarships can expand the student representation. We view the university as a centre for excellence, and believe students ought to be selected internationally for their outstanding abilities. However, through virtual systems, the university should be 'open'.
- The Bauhaus movement reminds us of an integrated educational model which responded to conditions of crisis, and one which re-designed design processes. We view this university as an extension and reinterpretation of the idea of the Bauhaus; that is, its central concern is with designing products. Unlike the Bauhaus, however, the sciences, landscape architecture and broader humanities components would be part of the programme.[8]
- The FGU is not a *tabula rasa* project in competition with existing educational facilities, rather, it is a conduit between institutions. However, it differs from these institutions in that it can focus on the philosophy and practice of sustainability, relatively free of the contingencies affecting the development of new programmes in existing institutions. In principle the FGU is akin to a United Nations which enhances a sense of global community, even when a global community can be said to already exist. To further illustrate the potential of the new university, we note that the Bauhaus could never have achieved what it did if it had been dispersed throughout the existing design programmes of Europe. For this reason we are *for* the project, despite its utopian, modernist undertones.

- The university must be able to continue to build and deconstruct itself as an idea.
- An aesthetic of sustainability does not exist as a generic type – it must be created in each specific environment by critical inquiry. We are not convinced that structures which *appear* to 'touch the earth lightly' have any more ecological merit than those which do not. A more realistic method of appraisal is that referred to as relationality. Accordingly, it is possible to perceive anything as only the final manifestation within networks of prior exchanges and transformations which, however, have socio-ecological effects far above and beyond their final appearance.
- Sustainability, for us, is not a new global narrative imposed by first world orders but, rather, it is something which is specific to sites and cultures.
- We are not interested in environmentalism which finds humanity repugnant, or which posits sustainability as 'the absolute truth' according to which culture must simply be corrected. We prefer to interpret the global movement toward sustainability as an evolutionary transition rich in paradox and hypocrisy, and we are interested in the contradictions and the *impossibility* of sustainability as points of departure for thinking on this project.
- It is not possible to consider sustainability seriously without recognising the hegemony of late-capitalism. We are aware that aspects of environmentalism are concerned with preserving existing economic, scientific and philosophical orders, which can be held largely responsible for the ecological crisis in the first place.
- The university might be concerned with retrieving the meaning of sustainability from bastardised contexts. We realise that 'sustainable growth' is an oxymoron.[9] Our view on sustainability owes much to the more rigorous political positions taken under the rubric of New Social Movements.[10]
- We are unqualified to participate in a dialogue about sustainability that is concerned primarily with neo-functionalism, rather, our initial efforts are concentrated within the realm of the poetic, the gestural.
- Sustainability calls the teleologies and theologies of settled culture into question: this is the theoretical power of the university.[11]
- We suffer no illusion that culture is to be redeemed by a pure nature, or vice versa. We are operating in the domain of the de-natured.[12]
- We interpret biocentrism as an enrichment of the traditions and tenets of western humanism, as opposed to its antithesis. We accept postmodern readings of Nature as a cultural construct, whilst also recognising that non-human life systems have intrinsic value beyond that which we can rationalise.[13]
- The earth does not need to be 'saved', and neither is it feminine nor magic as maintained by 'new age' thinkers.[14] Culture needs to be technologically refined; values need to be contested; political and social alternatives need to be explored and struggled for. We do not believe sustainability is about 'harmony', rather, it is about evolution as a dynamic, non-linear process, that is far from equilibrium, and not necessarily altruistic.[15]
- We reject both an outright re-deification of nature, and the reduction of nature to an inert resource. We are interested, however, in a generic environmental ethic which is necessarily aesthetic and scientific, and whether this would have limited application, as in the case of the rule of law and human rights, or be universally applied.
- We anticipate a future involving a more sophisticated and refined merging of nature and culture, as opposed to a nostalgia for the separation of the two. In this sense we are more interested in Haraway's appropriation of the Cyborg as a contemporary model, than we are in the traditions of romanticism.[16]

- In general the university would form part of the region's existing infrastructure; however, case by case analysis might determine that autonomous systems of energy and waste could be deployed at specific sites. The obvious contradictions at this level are part of the new institution's concerns and realities. For example, students do not produce their own food; however, the university would address issues of alternative agriculture and global agribusiness. The university might establish a local farm as a community project if it perceived the need to hinge its integrity on a withdrawal from the status quo, and therefore produce an alternative model. Over time the university could design and test systems which *lead the way*.
- Design patents might 'sustain' the university in the economy after its initial period of development.

Eleven teams were accepted into Stage Two wherein the entrants were to provide 13 A3 pages of presentation material expressing forms and concepts. From this group five finalists were chosen.[17]

The stage two design presentation

> *. . . the whole idea of nature as something separate from human experience is a lie. Humans and nature construct one another.*
>
> Alexander Wilson, *The Culture of Nature*, 1990.

The east-west ridge of the designated site is a reasonable location for the major services of the university. We have, however, transcended the limitations of the site by engaging with global and regional contexts. We proposed that students attending the Future Generations University would enter a three-semester study period. Each semester would be four months. The first four months would be spent *in situ* at the main campus, which is comprised of two principal structures: the Recycled Citadel and the Edge, accommodating 3,500 people. The second four months would be spent in the Darkinjung Cycle, which is a regional educational and architectural concept. The third semester would be spent in the global educational programme aboard a ship named the *Albatross*.

A SITE SPECIFIC BEGINNING
The Landing Party and the Carabario

Agreeing with the brief that the project required a critique of fast-tracked, orthodox design processes, Room 4.1.3 somewhat negated its own projection of a conclusive design. We considered the project to be in such an intellectual tangle, and of such potential importance, that the design process should in fact be enlarged before being contracted.

It was proposed that a larger team of expert consultants would be minimally accommodated in the site for one year to further develop the concepts of the university's form, function and curriculum, and that this group would draw on the material collected from all five finalist teams. This enlarged group would develop further the concepts of the FGU whilst allowing the natural attributes of the site to register deeply into the design process. This larger *in situ* design team was, for the purposes of the presentation, called the Landing Party, and their accommodation was the Carabario.

The Carabario would comprise 'state-of-the-art', cellular structures, based on a hybrid of the Japanese tea house and the caravan. The design and process of proofing the feasibility of the cells is expected to result in the first of the FGU's products which are sustainably designed.[18]
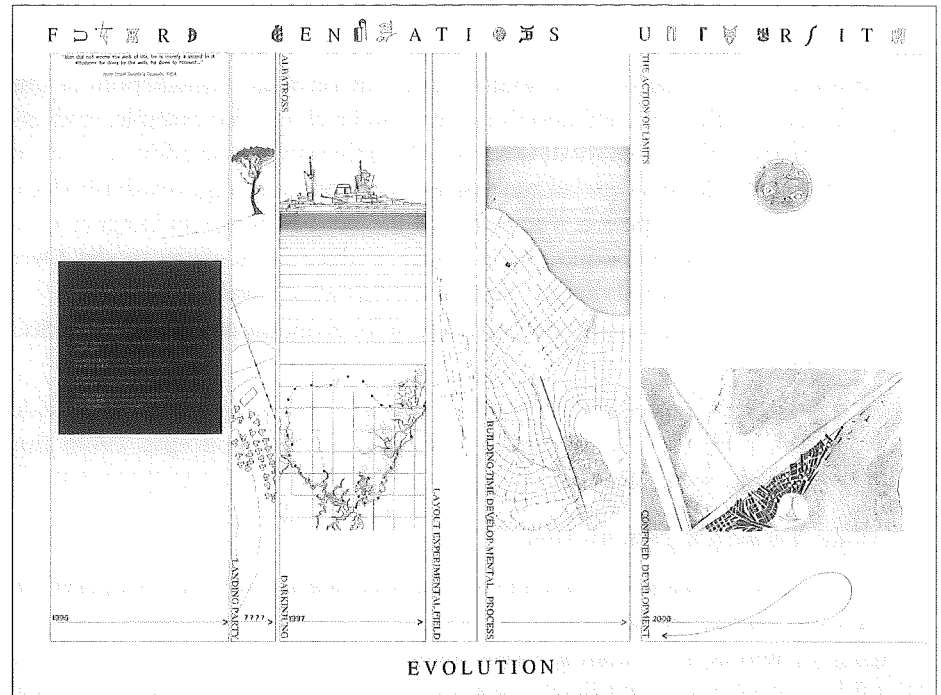
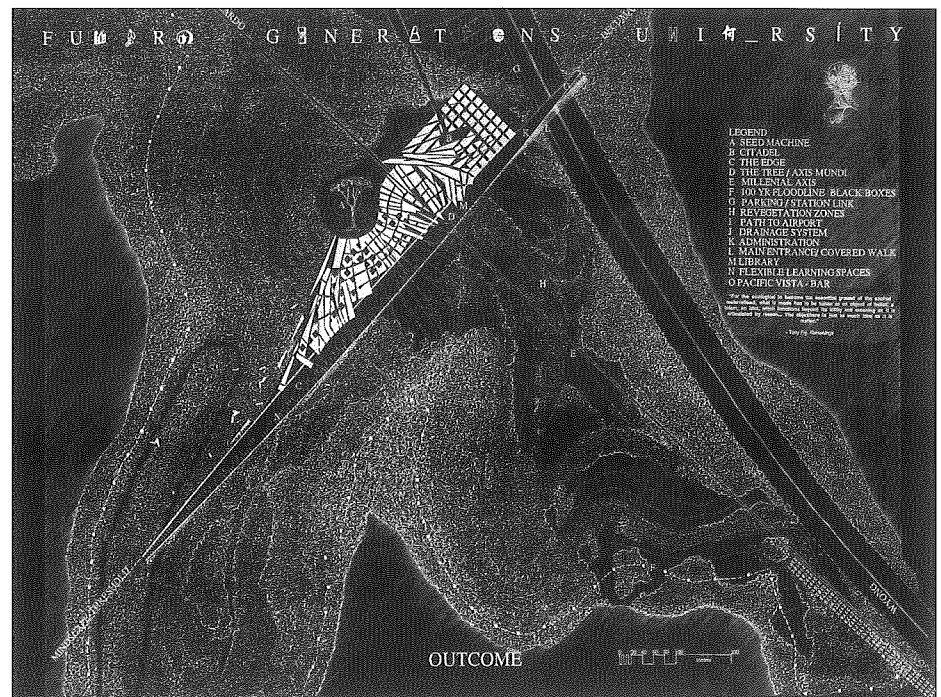*Figure 3: Concept Sheet — showing stages of development.*

Figure 4: Plan of the university campus.

Once the main campus is constructed, the cells might be kept in situ and used to accommodate short-term visitors. These structures would unfold to create platforms, and could be used as student accommodation for field trips around Australia. They have been designed to: fit into the dimensions of a standard railway carriage and be towed by vehicles; fit into shipping containers; exhibit

the sophistication of small scale elements common to boats and aeroplanes; and be constructed for under Aus $30,000 each.

Whilst the Landing Party expands the time-frame of the university's inception, the following Regional Concept was proposed as one of the key spatial and educational experiences of the Future Generations University. It is named the Darkinjung Cycle, as a mark of respect for the indigenous, traditional land owners.

A REGIONAL CONCEPT
The Darkinjung Cycle – A Feedback Loop

The boundary of the Darkinjung Cycle[19] is identified and marked by a bicycle trail. Punctuating this track are 30 houses and camps. The houses are approximately six kilometres apart from one another and each would be accessible by extensions to existing roads. Residing in each of the 30 houses for a specified period is a guest scholar of the FGU international programme. The cycle has 600 students in circulation at any given time. The idea is that groups of 20 students depart from the main FGU centre on bicycle or on foot, and journey from house to house. At any given time 20 students can reside and work *in situ* with the resident scholar.

It is possible that some of the sites could be occupied by members of the Darkinjung community, should they wish to participate directly. The students would meet with the resident scholar and become involved in a three-day programme. The entire journey would take approximately four months, with one-and-a-half days off between each workshop.

The 30 scholars in residence at the Darkinjung Cycle are in close communication with one another to determine the plots and sub-texts of the journey. It could be that much of the educational programme in the cycle is about *unlearning*, as opposed to the notion that learning is the constant
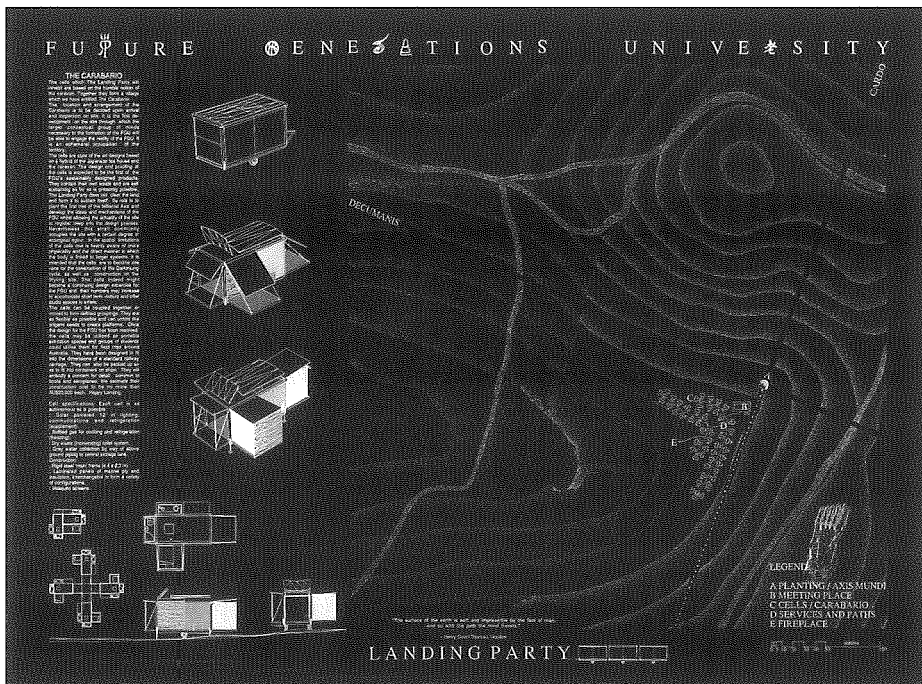

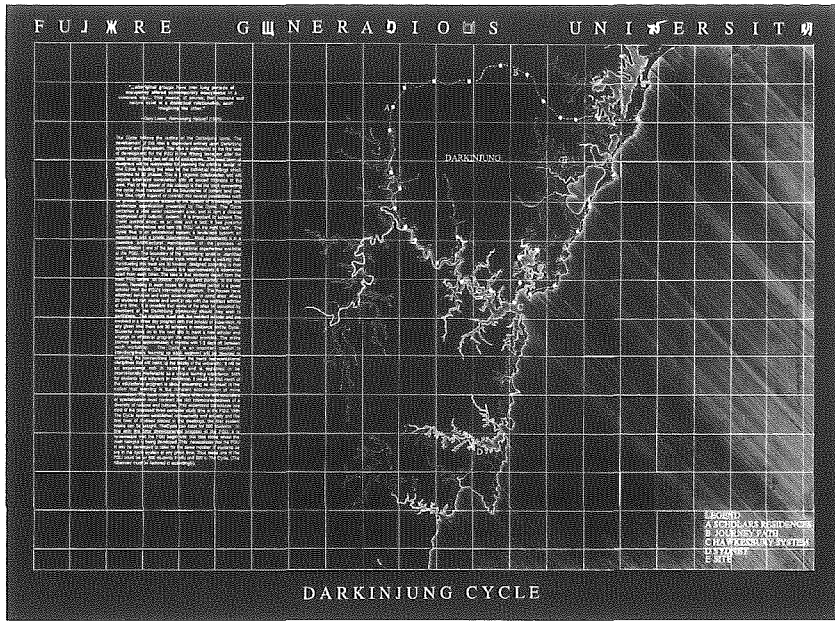*Figure 5: The Landing Party – site specific concept for year one of the university.*

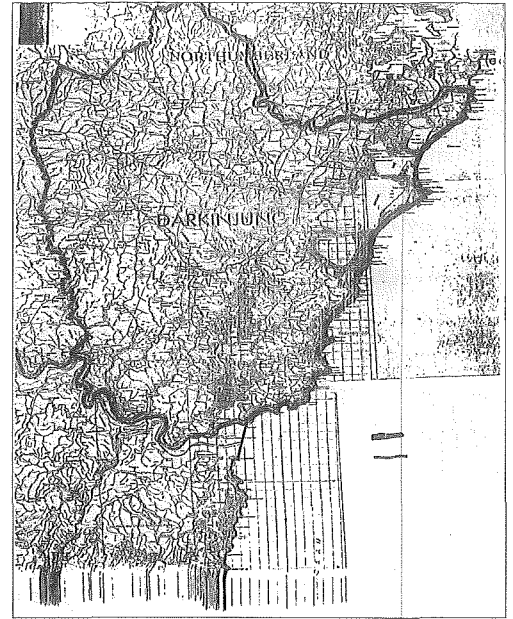Figure 7: Darkinjung Cycle – regional concept.

Figure 6: Darkinjung Lands.

accumulation of more information.[20] The Darkinjung Cycle can be related to Aristotle's peripatetic mode of education in the Lyceum and Plato's 'outdoor classroom', the sacred grove at Academos.

A GLOBAL CONCEPT
The Albatross – A Strategic Scholar – Ship

The *Albatross* would be a large military-style, ocean-going vessel and, whilst not being an environmental policing unit in the manner of the *Rainbow Warrior*, it would nevertheless act as an extension of this successful concept and practice. The vessel is best understood as a travelling classroom, specifically engaged in cross-cultural programmess at strategic ports, but also functioning as a mascot and travelling exhibition of projects undertaken by the FGU.

The vessel would have a rich turnover of students and scholars, depending on the global paths it took. In the manner of any large ship visiting a place, the boat would dock for some time and afford student and community interaction.

It could contain up to 700 students (probably half the number for which the vessel was designed), and as far as possible they should represent the world's bio regions rather than a wealthy first world elite indulging in an *intellectual cruise*. This means governments and corporations must award *Albatross* Scholarships for the concept to have any strength.

THE MAIN CAMPUS
The Citadel

The site for the main campus was expected by the brief to support 4,500 residents. Viewing this as excessive, the team devised the Darkinjung Cycle and the *Albatross*, in part, to reduce *in situ* numbers. Given that approximately 1,000 people would be conducting their studies at the Darkinjung Cycle and on the *Albatross*, it would be possible to reduce the on-campus population to 3,500.
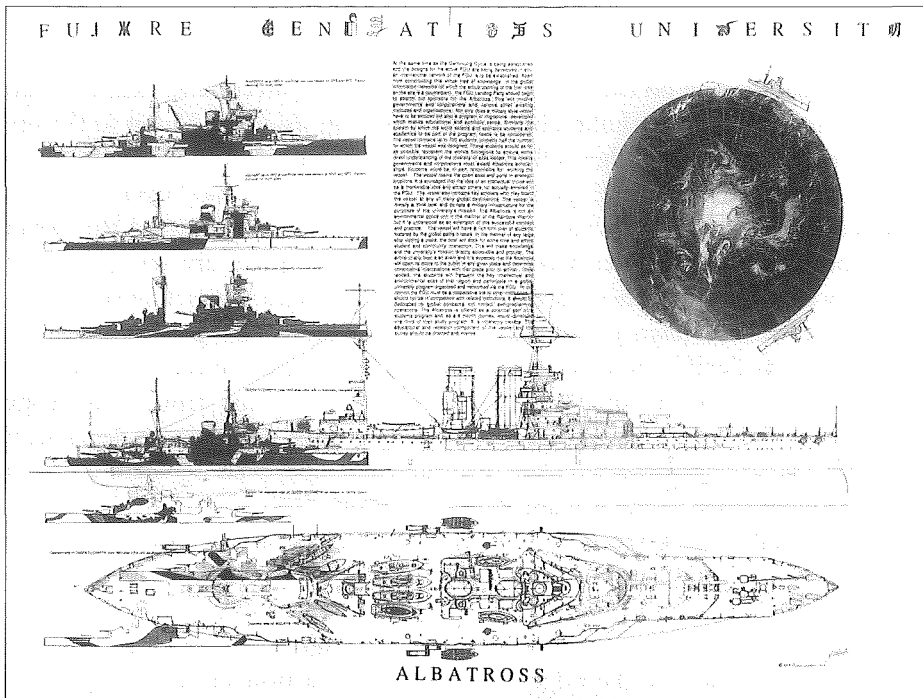
ALBATROSS

Figure 8: 'Albatross' Global Concept.

The form for the campus of 3,500 people is not a design: it is an enigmatic image – a point of departure. The main campus has two key components: the Recycled Citadel (the residential area) and the Edge (the main educational space).

The Citadel would be largely created from the waste and scrap products of the region. The FGU should set an example by researching and implementing a system of recycling which will provide compound materials for construction. The university must first create a depot for recycling materials. What building materials can be salvaged and recycled will be available to resident designers who will administer the construction.

The Citadel as described, claims to be the densest urban development in Australia, disregarding applications of Le Corbusier's *Unite*.[21] The eastern end of the Citadel begins as a grid formed by buildings up to three-levels high with roof gardens. Moving west along the ridge, the Citadel incorporates the site's drainage channels and the positions of existing trees.

Where the Citadel meets the Edge it comprises buildings more suited to educational activities, but in other areas it contains facilities common to a vibrant urban neighbourhood.

The Edge
(The left and right hemispheres of learning)
The Edge runs east-west along the ridge, separating the Citadel from the broader landscape. It is made of two massive walls which enframe the sky. The northern wall is solid, the southern is frosted glass. Inside, the FGU's collective educational operations are conducted. The building stretches one nautical mile (1,100 m) along the ridge, and is on average 40 metres wide. It is a not a picturesque building which pretends to nestle in the landscape; rather, it is unashamedly an

incision and intrusion, which acts as a filter to the rest of the site, marking a boundary, south of which regenerating bush leads down to a wetland system (marked with shading on the drawings). This use of architecture to delineate and define boundaries stresses limits; but whilst externally asserting a limit to the use of the site, internally the Edge is flexible.

The eastern part of the Edge becomes a bridge which 'flies' over the land, stretching out over the existing railway line, and projecting toward the ocean 12 kilometres away. Flexible, partitioned educational spaces are set within the massive walls. These partitions are derived from and signify punctuations in the time-lines of written history – a linear calendar of cultural change which the FGU reinterprets. Its flexible inner spaces provide relatively private tutorial spaces or larger areas depending on the university's needs at any time. The Edge dialectically faces suburban Wyong on the other side of the wetland. At night it glows as a massive horizontal element in the landscape, sending shadows from the trees down-slope to the wetland.

Conceptually, the Edge is about flexible, limitless 'inner' space, whilst its existence in the physicality of the site achieves the opposite. The essential allegorical meaning of the Edge is that time and history can be reworked, but that space has been exhausted. Whilst the Darkinjung Cycle offers relative isolation, the Citadel and the Edge offer intense interaction and crowding.

In conclusion

If settled agricultural practices mark the first major revolution in cultural history, and the scientific and industrial revolutions form a second, are we not at the beginning of the third or Ecozoic era – an age of ecological awareness and design which will affect all aspects of culture? The beginning of this third revolution is necessarily characterised by confusion, anxiety and questioning; for, whilst the history of human survival is arguably one of *sustainability*, never before have we
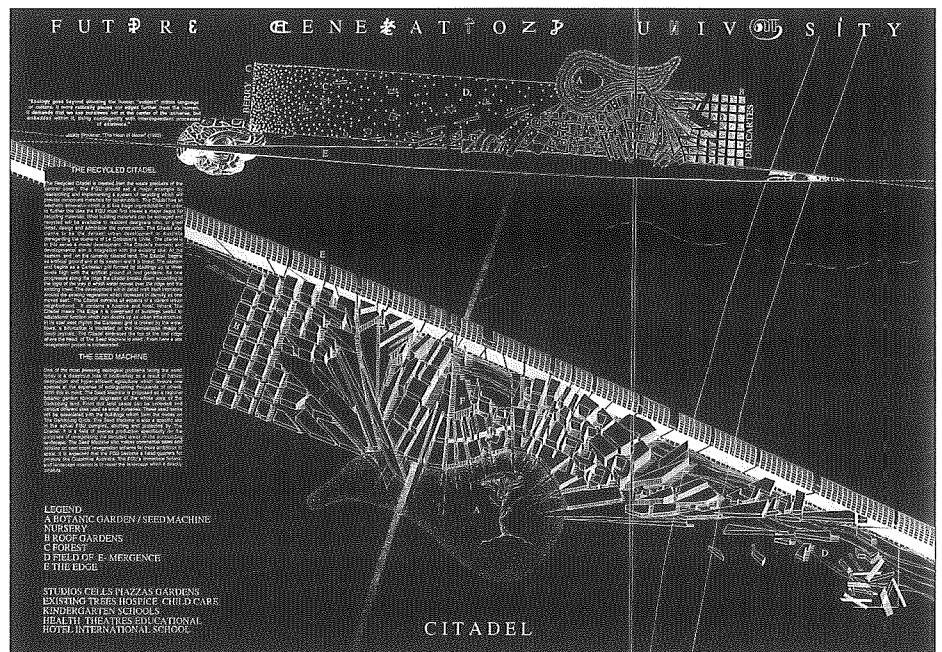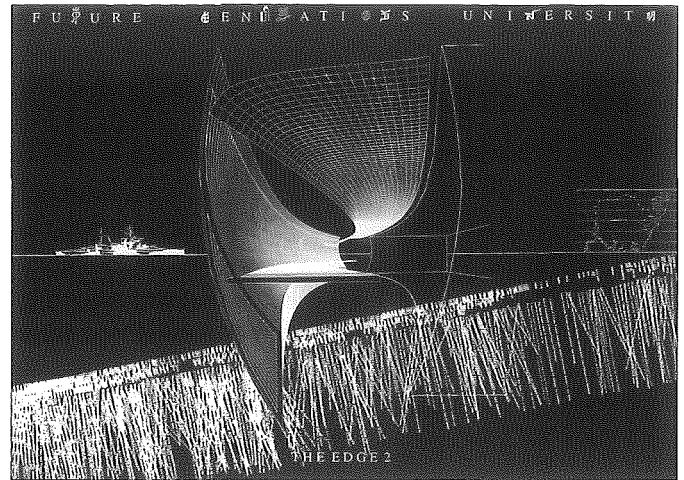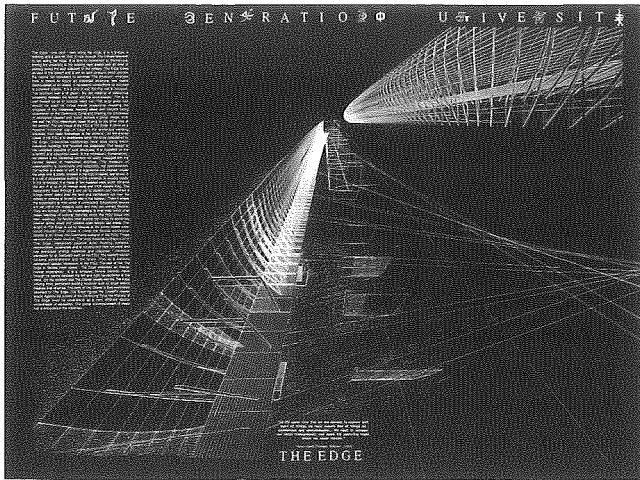

Figure 9: Axonometric of the Recycled Citadel bounded by 'the Edge'.

Figures 10 and 11: Suggestive sketch of 'The Edge' showing flexible teaching spaces.

encountered such a terminus, on such a scale, involving as it does all aspects of the very systems upon which our survival is dependent. Perhaps, never before have we encountered a situation which so profoundly destabilises the historically privileged position of the human subject within the community of living things.

Whilst for humanity the ecological crisis is deeply significant, it is problematic to project our values onto life systems in general. Ironically, the prime model of a sustainable system – the ecosphere – sustains its existence by routine death, destruction, revolution and evolution. Sustainability and change are thus necessarily connected, like diversity and oneness. The permanence of a system exists by virtue of its fluctuation and mutation. Life's evolutionary history indicates that the ecosphere is familiar with momentous change. Destruction and extinction preface and follow creation in loops of change which might know no teleology.

Appropriating 'Nature' and what is 'natural' to serve ideological ends, has a specious history.[22] Meanings extrapolated from natural science can be used to relativise and explain away the apparent disruptions within the ecosphere, just as they can be rendered to support the contrary. In the light of ecological concerns it can be (simplistically) concluded that late industrial culture is either an aberration needing fundamental correction toward balance and co-operation within the community of living things, or a triumphant dominant force with momentary technical difficulties, naturally basing its practices on exploitation. Now, whilst investing differently in its implications, an increasing array of ideologically divergent positions can gather under the rubric of sustainability and claim its flexible meanings. For example, romantics see it as the opportunity for a renewed earth-bound spirituality; neo-Marxists see it as forcing radical change – the moment of capitalism's ultimate bankruptcy; whilst rationalists see it as a prosaic issue of efficiency and technical virtuosity in which there is a new market.

Postmodernists find in the ecological crisis the global signature of the enlightenment's patriarchal demise, yet refrain from being baited by the grand narratives of ecology as meta-science, the purity of the natural, or the moral high-ground of the twenty-first century. In its defence, I note that the generic category of postmodern theory is concerned not for what can be recovered or resurrected in lieu of ecological crisis, but what emergent possibilities might exist for identity

and language within the dualism (culture and nature) which characterises the western intellectual tradition – a tradition postmodernism holds responsible for the current state-of-the-world. Postmodernism's problem is not its theoretical astuteness and textual criticalness, but its parasitical inability to act 'in the world' forthwith.

An understanding and evaluation of our current condition in regard to ecological crisis is dependent upon the particular temporal and spatial scale of reference. From a cosmological scale of reference the situation could be considered trivial (although not necessarily meaningless), whereas from the perspective of a local habitat that is dependent on the ozone layer, the situation is critical. But what interests us here, and lends support to the idea of a new university devoted to the problem of environmental crisis, is the fact that the values of contemporary culture and their historic roots are called into question. If there is any virtue in ecological crisis then it is that it heightens the pitch and fervour of cultural cross-examination. Indeed, it could be argued that the dimensions of the problem are so great, potentially so cathartic, that much of contemporary culture can be seen as repressing or anaesthetising the patient. Obviously vested interests are concerned to avoid costly change or discourse which threatens the foundations of modern economics, but a deeper question surrounds the epistemological grounds upon which we determine the value (or meaning) of living things – a frequent end-point for many conversations under the rubric of sustainability. Hence we increasingly witness texts predicated upon ecological crisis which venture into theological and philosophical issues.

Environmentalism thus arrives at the home of thought – the university, and it is at this juncture that the Future Generations University makes sense, marking environmentalism off from its recent history of representation in hard science, popular culture and bureaucracy. Yet, the Future Generations University places faith in the very institution it critiques, expecting a 'fresh start' to avoid the 'failure of all current universities to generate responsibility for what is known, how it becomes known and what happens to that knowledge'.[23]

More than a straightforward isolated technological impediment, the current globalised crisis is underpinned by a similar upheaval in the ideas and ideals of western humanism (modernity) which have colonised and addicted all cultures to varying degrees. Certainly one can sense *and* reason that 'Man as the measure of all things' is no longer to be entirely believed. Yet, as is the inherently contradictory nature of ecological awareness, interpretations of value which hope to expand beyond the anthropocentric remain just that; that is to say, despite attempts at replacing God with the ecosystem, one of humanism's fundamental tenets remains: we know of no higher authority than ourselves to determine if what we are doing is right or wrong. If we accept that the faculty of reason and its enlightened manifestations are largely responsible for the now obvious ecologically unsustainable narratives of 'progress', then perhaps it is right to recognise that 'the last act of reason is to realise its inadequacy'.[24] Perhaps Berry is right to say that we can no longer trust our cultural codings, and instead need to listen to our instincts, our feelings – which although triggered by mediated and often sensational imagery of environmental destruction, nevertheless resonate to the core of our doubts as to whether humanity rules the world by right or by violence.[25]

As a socio-political and philosophical shift, environmentalism is fraught with paradox – paradox which lends weight to the idea of a new university devoted specifically to such matters. First, the crisis comes with a sense of urgency unsuited to the ways in which late-capitalist, democratic cultures and their universities engage with major philosophical and socio-political issues. Yet, unless we are prepared to support eco-fascism at the close of the twentieth century, it is late-capitalist democratic culture which will inherit the sole rights to our collective fate.[26] Certainly, the market is a responsive, sensitive system, and one suited to invention and production which targets the environment as a market. Its fluctuations, however, are essentially superficial and opportunistic, concerned with maintaining a status quo of economic 'growth' within social structures and technologies of production which are causally related to the roots of ecological deterioration. Moreover, late-capitalist culture tends not to support sustained critique and re-imaginings of the political economy. If we accept the holistic or relational metaphor of ecological thought, it is no longer possible to separate the ideas upon which cultures are based from the technologies and economies with which they are intertwined, and the ecosystems they affect. Thus, we need to not only *invent*, but *conceptualise* our way out of crisis.

Secondly, in relation to the paradoxical shift to environmentalism, global environmental problems require collective responses based upon shared values – a condition rendered problematic by postmodern theory. Because philosophical discourse on environmentalism holds the future of so much at stake, and assigns value to much that is intangible, it would seem to require a degree of epistemological certainty upon which to ground the directives and ethics of the change it advocates. Much writing on sustainability speaks grandly of our fate, assuming its authority to do so is self-evident and inherently virtuous – an approach which does not endure Socratic response. Following contemporary philosophical trends, epistemological certitude is considered untenable and universal values in which to ground postmodernity are, if not unthinkable, unworkable. Postmodernity's critique of history (a rubric under which environmentalism is finding political and theoretical alliances), is very much the critique of such typically modern ideals as universal values, and yet environmentalism's slogan is 'think global, act local'.

Thirdly, and perhaps fundamentally, we have not yet arrived at ways of conceptualising our current ecological circumstance. Tony Fry suggests this in 'the brief' when he says that 'we live in an unnamed synthesis of the natural and the artificial which fuse to make new ecologies'. Ulrich Breck exaggerates yet makes the point that environmentalism 'has fallen prey to a fallacious, naturalistic conception of itself. It reacts to a global fusion, rife with contradictions of nature and society. This fusion has sublated the two concepts into a blend of reciprocal interconnections and injuries of which we have as yet not the faintest idea, let alone a concept'.[27]

The development of discourse which repositions and reconceptualises the relationship between humanity and the environment within the context of the paradoxes described, finally finds expression in the language of design. The project was not concerned with achieving this expression but, rather, it is a sketch of a place where the intellectual challenges of ecological awareness, and the role of design, could be focused with an intensity and concentration in proportion to the magnitude of the ecological crisis.

NOTES

1 My involvement with this project was as a co-leader, in association with my colleague Des Smith, of a design team which participated in the competition. Whilst I am writing this article on behalf of the team and referring to 'we', I cannot claim that all members of the group agree with all aspects of this paper, and neither do they necessarily agree with all aspects of the design proposal. In regards to the group, we experienced significant difficulty in breaking free of our particular disciplines and, after much discussion, a smaller group familiar with design representation produced a scheme which tried to do justice to everyone's input.

2 The Institute for the Integrated Study of Future Generations was also established in Kyoto in 1992. Their position statement is seemingly at odds with the orthodox notion of sustainability. 'We must employ our utmost creativity to generate the maximum number of diverse alternatives for our future generations.' The polemic produced by this group tends toward the messianic – see Kim, T and Dator, J (eds) (1994) *Creating A New History for Future Generations*, The Institute for the Integrated Study of Future Generations, Kyoto.

3 The EcoDesign Foundation describes itself as existing 'in order to support the process of transformation to an ecologically sustainable culture and to form communities of change towards this end . . . by providing the means to think, create and mobilise new knowledges and practices of design that can engage the critical problems of the biological, technological and social environment'. The EcoDesign Foundation did more than simply administer the competition, drafting a brief which was itself a complex and provocative theoretical rumination on sustainability and design. The foundation directors', and the judges they commissioned, also responded critically to the work in progress – continually encouraging self-reflexive work which would 're-design design', and which rejected 'simplistic solutions that will only extend fundamental ecological problems'. Dr Tony Fry, a director of the foundation, has explored this in his book, *Remakings: Ecology, Design, Philosophy* (1994) Sydney: Enviro Books.

4 Fry, T, Cameron, T and the EcoDesign Foundation (unpub) (1996) *Future Generations University Competition Brief*, Sydney.

5 The members of Room 4.1.3 for this project were:
Des Smith (architect, lecturer: UWA)
Richard Weller (landscape architect, senior lecturer: UWA)
Simeon Glasson (student of architecture: UWA)
Ian Wier (student of architecture, industrial designer: UWA)
Oui Chantarachota (student of architecture: UWA)
Vladimir Sitta (landscape architect: Terragram)
Craig Burton (architect, landscape architect, senior lecturer: University of Sydney)
Peter England (landscape architect, set designer: NIDA)
Nigel Westbrook (architect, lecturer: UWA)
Shaun Tan (student of fine arts: UWA)
Dr Paul Collins (theologian, author, broadcaster: ABC)
Marni Shepherd (physicist, lecturer: UNSW)
Tatum Hands (lawyer)
Kevin Williams (Aboriginal activist, lawyer)
Anthony Rose (information systems designer)
Victor Bossell (engineer, anarchist)
Rosemary King (education consultant)
Dr Robert King (Professor of Biology: UNSW)
Andrew Marsh (architectural scientist)

Bob Sinclair (architect)
Elwyn Dennis (composer, artist)
Anne Davis (librarian)
Rosanna Blackett (architect)
Room 4.1.3 Pty Ltd is an interdisciplinary design company currently working on the National Museum of Australia in Canberra.

6 Jencks, C (1995) *The Architecture of the Jumping Universe. A Polemic: How Complexity Science is Changing Architecture and Culture*, London: Academy Editions.

7 We took it upon ourselves to rectify this. We were advised that not only should Aboriginality be included as a theme, but the project itself should also be considered hypothetical until the custodians of the area had fully understood and approved it in its entirety.

8 It would be hard to decide which aspects of the contemporary mainstream university could be deemed inessential to the generic discourse of sustainability. Sustainability necessarily affects, and is affected by, all aspects of academia; for example, a university devoted to sustainability would need to include economics. Whilst not replicating all aspects of the contemporary university (which allegedly suffers from pluralism) we believed the Future Generations University would be one which was staffed by scholars and experts in a broad range of disciplines. The brief for the scholars would be to bring together their specific areas of knowledge into a new interdisciplinary programme. As we were not qualified to draft the curriculum of a new university, our submission proposed a kind of design school – a concept with which we were familiar and yet which would also proactively respond to the ecological circumstance of contemporary culture.

9 Sustainable growth has for some time been a catch-cry for 'green' governments and corporations. Sustainable growth, in the light of ecology, is an oxymoron insofar as sustainability means we exist within limits. Growth, however, implies unlimited expansion. HE Daly, World Bank economist, advocates replacing this paradoxical notion with the more ecologically accurate idea of a 'stable state economy' in his book, *Valuing the Earth: Economics, Ecology, Ethics* (1993) Cambridge, Mass: MIT Press.

10 The New Social Movements is a working term for a loose amalgam of Post-Marxist activists and theorists, who have marked out a new political space that forges connections between socialism, feminism, post-colonial studies and environmentalism. The importance of this work is to expose the relative impotence of environmentalism as an aesthetic bourgeois sentiment, and place the sustainability debate firmly within the traditions of politics and sociology. For an excellent introduction to this, see Frankel, B (1987) *The Post-Industrial Utopians*, Cambridge: Polity Press. For an expansion of Frankel's overview of the New Social Movements which deals with figures such as Habermas and Gorz in more detail, see Goldblatt, SD (1996) *Social Theory and the Environment*, Cambridge: Polity Press.

11 For an inspired articulation of the scale of the ecological crisis, see Berry, T (1988) *The Dream of the Earth*, San Francisco: Sierra Club Books. Berry, in the tradition of Rene Dubos and Teilhard de Chardin, is concerned with spiritual transformations that are essential to what he terms the 'Ecozoic era'. Further, Paul Collins who originally drew our attention to Berry, has written an outstanding and accessible summary of the increasingly meaningful intersections between Christianity and environmentalism. See Collins, P (1995) *God's Earth: Religion as if Matter Really Mattered*, Victoria: Dove.

[12] For an extended debate concerning the de-natured, and the differences between a postmodernist position that Nature is a cultural construct, and an environmentalist position that Nature has intrinsic autonomous value, see Soper, K (1995) *What is Nature: Culture, Politics and the Non-human*, Cambridge: Blackwell.

[13] For further summary of why environmentalism needs humanism, and why humanism needs environmentalism, see Weller, R (1994) *HOPE: Art, Design, Ecology*, School of Architecture and Fine Arts, Perth: UWA.

[14] A feminine, magical earth in need of salvation, is in part a 'new age' revival of the medieval mind-scape. This idea was given considerable force when James Lovelock chose 'Gaia' as the title for his ecological explanation of the planet as a cybernetic organism. We recognise the importance of this popular spiritual reformation common to the latter half of the twentieth century, but we wish to distinguish between hocus-pocus and the rigours of enlightened thinking. Nonetheless, we agree with postmodern re-readings of the enlightenment which disproves it as a complete way to know the world.

[15] These comments are derived from contemporary populist scientific texts, such as Dawkins, R (1996) *Climbing Mount Improbable*, Great Britain: Viking, and Kauffman, S (1995) *At Home in the Universe: The Search for the Laws of Self Organisation Complexity*, London: Viking.

[16] Regarding Cyborgs, see Haraway, D (1990) A Manifesto for Cyborgs, *in* Nicholson, J (ed) *Feminism and Postmodernism*, New York: Routledge.

Whilst Haraway implores us to take responsibility for machines and cleverly moves the debate away from organic metaphor and romanticism, within her enthusiasm for the Cyborg identity there is the continual lure of technological positivism and the fetishism of the cybernetic.

[17] The five finalists were: Room 4.1.3, Hassells, Spowers with Norman Foster, Linda Gregoriou, and Ashton Raggatt McDougall. The judges of the entries were Shirley Alexander (multimedia educator), Peter Droege (urban design educator and theorist), Les Graham (co-chairperson – Warnervale Education), Mary Kalantzis (multicultural educator and theorist), John Merson (environment science and technology broadcaster and theorist), Deyan Sudjic (architectural critic), and Katsuhiko Yazaki (founder of the Future Generations Alliance). Subject to rumour, the project for the Future Generations University collapsed due to misunderstandings between stakeholders.

[18] I apologise for generalised expressions such as 'sustainably designed'. Our work could not hope to focus on more specific detail and we trust most people can imagine what it might mean to design a caravan as a small application of environmental technologies. We make no claims to know 'exactly' what this would mean, but put forward such propositions with a view to the university itself being immediately concerned with such an issue. Indeed, the prototype of the caravan park had some appeal with regard to accommodating people on the site. However, when one multiplies the caravans by the 4,500 people expected to be in residence, the vast tract of terraced land needed to support the vans seemed excessive.

[19] The boundaries of Aboriginal land are contentious. Generally one can refer to Horton's map of Aboriginal Australia (Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra), although it is broadly acknowledged as inaccurate. For the most recent study of mapping Aboriginal Australia, see Sutton, P (1995) *Country Aboriginal Boundaries and Land Ownership in Australia*, Canberra: Aboriginal History Inc, ANU.

[20] We have not developed precise suggestions for the curriculum of such a learning experience, as we believe this would be for the scholars in residence to devise. We are well aware that such an idea involves complex land negotiations in order to access local boundaries (which is the Darkinjung Cycle's meaning) and that the siting of houses would be determined by the availability of servicing. We also indicated that the houses and camps should be architecturally experimental and eclectic.

[21] The figure ground drawing of a pattern for the development of the Citadel can be understood as Le Corbusier's *Unite* exploded and spread over the ground plane.

[22] One only has to think of the myriad ways in which Darwinism has been appropriated to serve ideological interests and remember that Darwin's radicalism was that he refused to speculate on the *meaning* of evolution.

[24] Fry, T, Tonkin, C and the EcoDesign Foundation, *op cit*.

[24] A quip often attributed to Buddist philosophical traditions. See Capra, F (1975) *The Tao of Physics*, London: Wildwoood House. In noting that Reason is considered partially responsible for crisis, I am referring to seminal texts such as *The Dialect of Enlightenment* by Adorno, T and Horkheimer, M, and accepting this as a strain of thought central to postmodern critique.

[25] Berry, T, *op cit*.

[26] I am referring specifically to Francis Fukuyama's thesis that since the downfall of socialism we have reached the 'end of history'. I do not mean to imply that socialism was an ideology which more successfully negotiated or theorised ecological crisis than does late-capitalism and liberal democracy, rather, that sustainability will be determined under the hegemony of liberal democracy as a dominant global ideology and by its ability to engage in creative self criticism. For a critique of '. . . The End of History' see Kumar K (1993) The End of Socialism? The End of Utopia? The End of History?, *in* Bann, S (ed) *Utopias and the Millennium*, London: Reaktion Books

[27] Breck, U (1994) The Naturalistic Fallacy of the Ecological Movement, *in The Polity Reader in Social Theory*, Cambridge: Polity Press.