Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and, any editorial work, paid or unpaid, carried out by a third party is acknowledged.

Signed:

Name: Scott Adams
Date: October 2006
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Why a masters?

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Having practised as a landscape architect for just over ten years, I am undertaking this research to reconsider the discipline. This research leads me to consider aspects of design methods or processes that are new to my current practice.

The majority of projects I have been involved with have been constructed projects where the aim is to achieve an instant landscape effect. ‘Instant’ in that the built project at the end of the construction period looks complete. Although there are many other factors involved, such as ranges of scale, budget and typology of project, the factor of the ‘instant’ has been common in most projects.

I am interested in addressing the non-instant – how can I design when creating the instant landscape is not possible? What design approach is possible for a project where the outcome is potentially open-ended, or fluid?

In creating the instant landscape, the use of metaphor (or narrative) has been a strong design tool that offers many possibilities within the design process. The narratives, be they literal or abstract, inform the instant landscape’s formal outcome. While they add diversity and richness in meaning, the narratives still result in instant landscapes.

This research project does not attempt to enter into a discourse on the value of narrative; rather it aims to challenge the approach of a design process that is driven to achieve an instant and sometimes fixed result. I would like to shift from the focus of narrative, and consider how to develop design strategies that focus on the emergent effect of time on the landscape.

The research addresses how to take a project from master plan or design strategy level to a constructed landscape using a design process that consciously celebrates the changes and emergence of landscapes over time.

The subject of time and the non-instant is the result of critical reflection on past practice and a review of the use of metaphor/narrative and the relationship between this and the decisions that inform the built outcome of past projects. This has led to a focus on materials, which after testing in design studies and critical reflection, has prompted a shift to consider the idea of time and the non-instant.

For the purpose of this research, ‘time’ is considered the rate and effect of changes seen within a landscape over a defined period. This takes into account the rate of plant growth and the change in form of the plant material. Other key forces influencing these changes are soil, geology, water, wind, nutrients, solar orientation, plant species, and human interactions. These are also considered here.

The final research ideas are tested on a project that currently is in development: the Canberra International Arboretum and Gardens (CIAG). One hundred proposed forests of rare and endangered trees are to be established as individual forests across the 250-hectare site. This project is nominated as the testing ground for my research because it cannot be an instant landscape. The consideration of effects over time and the changing qualities of this landscape are critical to its ongoing visitor appeal. This is a unique opportunity to test and explore ideas on a landscape that is not built in a single moment.
Leon van Schiak writes extensively on the value of practitioners reflecting on their past work. It was Leon’s article ‘Tendencies in the mastery of practices’ that prompted me to examine the work I had been involved with. I wanted to look at the change in the type of projects I have worked on, what I have learnt from these and how it will influence my future practice.

My experience in practice, over the last ten years, can be described as having two distinct phases: working and living in Sydney and then in Melbourne. The difference was in part due to the culture of those cities, but mostly due to the culture of the offices that I was working in.

I moved to Sydney and started working as soon as I had completed the undergraduate Landscape Architecture degree at RMIT in 1995. As a graduate I was interested in landscape planning and environment-based projects, looking at the broader landscapes, rather than smaller design-based projects. With my background in science and interests in forestry, this is where I saw my professional future.

At that time in Sydney there was a building boom, leading up to the 2000 Olympics. There was a lot of construction, both private and public occurring in the city. The firm I worked in had very little environmental planning work on so I was shifted to the ‘design department’.

My first project was to design a planting plan for a power substation on the outskirts of Sydney. I designed, drafted, wrote the specifications, prepared the tenders and inspected the work as it was built. I had not anticipated the level of satisfaction of seeing design ideas getting built. I now realised that my interests in environmental planning could be fulfilled in the ‘design department’ by getting projects built.

After three years of working on built landscape projects for three different design firms in Sydney, I developed a well-rounded understanding of landscape construction and project management. My role became that of the project manager, coordinating consultants, overseeing the documentation of designs, managing fees and construction budgets. A great deal of the work was for developers and there was a strong emphasis on creating an instant landscape. One of the main design drivers was getting the best instant effect out of the available budget. The fact that the projects were dollar driven, rather than design focused, frustrated me. The built results no longer gave me the sense of satisfaction that my first built project had.

In 1999 the work in Sydney no longer interested me. I moved back to Melbourne and started working for Taylor Cullity Lethlean. TCL won the contract to work with the City of Melbourne in designing what would become known as Birrarung Marr, the largest park to be built in the Melbourne CBD for 100 years.

I have now been working for TCL for seven years. I am an associate with the practice and have managed some of the firm’s largest and higher profile projects. Reflecting on the work at TCL, there is a big difference between this work and my experiences in Sydney.

The projects with TCL in Melbourne have involved more discussion and thought in the early design stages. This emphasis creates strong design ideas and frameworks that support and define the built outcome. To me, they are more effective and satisfying than the less design-focused more dollar-driven projects that I worked on in Sydney.

The TCL office collaborates with other designers on some projects, a process that I did not experience in Sydney. I have learnt considerably through collaboration with others; often architects, sculptors, writers and historians. What you learn from a person on a project you often carry with you to the next. Project collaboration is a great way to stimulate new design thinking. In the past I relocated to another firm to get this invigoration, now I can stay in the one firm and get this stimulation through collaborative design processes.
Narrative has played an important role in the design projects that I have been involved with at TCL. The narratives have been drawn from many different sources and often are developed in collaboration with others. They have a strong influence on informing the physical outcome of the design, from the topographic form to the selection of materials. Narrative can be a useful tool in establishing a design logic that shapes and informs the design of a project at varying scales and stages throughout the design process.

The following are examples of how narrative has influenced the design of projects which I have been involved with:

Birrarung Marr

As the project manager, my role in this project was to take the design master plan from sketch design to construction documentation. I managed the internal design team as well as the external consultant group.

The design for Birrarung Marr was developed through a layering of narratives that informed the design process: the geographic history of the site, a cultural history of the site and the site’s physical contextual relationship to the city. This design logic resulted in a topography that comprised large earth terraces separated by linear swales. Notionally the terraces were created by the actions of a river as it altered its path across the flood plain. The swales represented the remnant billabongs left behind. This topography is a formal interpretation of the effects of the river across the site over a geological time scale.

The idea of the billabong then informed the selection of the materials for the swale: River Red Gums and crushed seashells create the experiential qualities of a dry billabong. The footprint of the swale is rectangle: 20m wide and 300m long. Its southern edge is a 1m high vertical wall. The design for the swale’s edge and alignment was informed by the location and proportions of the old railway platform; a reflection of the recent cultural history of the site: the Jolimont rail yards. While the form of the project is strong and the drainage swale is effective, I still felt unsatisfied about a narrative-led design process. Could an equally successful outcome be derived from another type of design process?

Birrarung Marr is an instant landscape in that the key elements – the landforms, bridge, paths, and edges – will not shift over time. The planting will grow and change in time, however, larger specimens and mature plants were installed in high densities to achieve an instant effect on the opening day.
Grattan Plaza - Prahran Concept Plan: Grattan Plaza - Prahran

My role in this project was project manager for design through to documentation. I was also co-designer with Robert Owen and Perry Lethlean.

Grattan Plaza was designed in collaboration with artist Robert Owen. The local council’s brief was to design a plaza as an entrance to Grattan Park on Greville Street, in Prahran. The council insisted that a water fountain was included as part of the plaza. The site currently was a plaza, but lacked visual connections to the park. It had become a popular spot for people (both Koori and Anglo-Saxon described by the client as ‘undesirables’) to hang out, deal drugs, get stoned and drink alcohol during the day.

When this project was designed, the subject of reconciliation was a key issue in Australian society. Robert was interested in how reconciliation could be considered in the design of the project. Prior to white settlement, the site was a series of waterholes where indigenous people used to fish.

Robert had an idea he called ‘the memory of a landscape’. He suggested that we create a flat paved surface and embed this with small lights, as if they were the reflection of the night sky on the surface of the billabong that had once existed. We designed a series of small fountains that bubbled up from the ground through round steel mesh structures – these structures symbolised lily pads and fishing baskets. The design of the plaza therefore would be about a memory of that particular landscape. This narrative then led the design process, the selection of materials, and the formal composition of the built work.

We selected dark granites for the pavement as they best emulated the visual effect of a reflective water surface at night. Small LED point lights were designed in stainless steel sheaths and installed to reflect the pattern of the southern stars. The steel meshes for the water fountains were detailed based on the skeletal structures of lily pad leaves and the structures of indigenous fishing baskets. The design unfolded around this narrative.

The design resulted in an instant landscape in its entirety. Unlike Birrarung Marr which was primarily soft landscape, the design was mainly hardscape and highly finished surfaces. Four years on, the only sign of change is minor wear of surfaces.

Grattan Plaza
I have specifically selected this project to discuss as it is one of the most successful projects I have been involved with. I believe this is because the built outcome was not compromised during the construction process. It was built exactly following the design concept. The project had an amazing presence on its opening day. It was an instant landscape. The experience of driving along this section of road was exactly as the design intended. The project was well received by the public and has received various design institute awards.

For these reasons, I wish to consider this project in greater depth and critically reflect upon the process of its inception. It is a starting point for my shift in thinking and design research. My role in this project included co-design of the competition scheme and subsequent project management of the project in its entirety.

**Project Description:**

The Australian Federal Government, as part of its commitment to delivering a new freeway connection to Northern Melbourne, undertook a competition for the design of a gateway element and noise attenuation features. Taylor Cullity Lethlean, Tonkin Zulaikha Greer and Robert Owen won this competition in 2003.

The freeway passes through two distinct landscapes: the ancient basalt plains and grasslands to the west, contrasting with the city's expanding urban fringe to the east. The design is borne out of expressing the relationship between the freeway and these two archetype landscape conditions. The winning design, comprised of walls, bridges and landscape was informed by a poetic reading of the site and a freeway environment largely experienced at speed. In particular, the design explores how otherwise static objects begin to exhibit dynamism or are activated by the travelling motorist.

Two wall types were developed, each distinctive and responding to their adjacent condition. The first is the ‘Curtain Wall’: a long sinuous steel ribbon, fluid in its form, dynamic and experiential. Used robustly, it transforms along its length from a lightweight screen to sculpted landforms and ultimately into a pedestrian bridge that frames the view to the City of Melbourne.

The ‘Scrim Wall’, by contrast, is located alongside a residential interface and is composed of patterned acrylic panels and repeated louvres. The material provides a translucency while the louvres are rotated slightly to create a constantly changing driving experience. At night the Scrim Wall is illuminated, transforming the intensity of traffic via electrical impulses to become an ephemeral lighting system. It is further inspired by the ‘northern lights’ of Melbourne (the twinkling lights of distant suburbia), which the wall is incidentally shielding.

The process of reviewing and writing about this project for *The Mesh Book* and *Topos* made me further consider the way in which we design and the emphasis we place on narrative. Material selection and the effect of speed (time) were the key aspects to the design of this project beyond the narrative.

Once again this project results in an instant landscape. All the structural elements are built as fixed entities; their form does not shift over time. And, while there are ephemeral effects through lighting, the overall effect is sculptural. Narrative-led designs are one way of designing landscapes. Reflecting on past projects I questioned:

**Do landscape projects need to be narrative based to be good designs? What would the design result be if other considerations within the design process were given greater importance?**

In the projects previously discussed, narrative led to the selection of materials and the relationships of elements within the landscapes. Re-moving narrative and allowing something else to be the guiding focus of a design process could change the built outcome.

**What are the potential results of design not based on a narrative-led process?**

In order to address the primary aim of my masters: to reconsider my practice, I considered what happens when the focus of design is shifted from narrative to choice of materials.
From my review of past practice, narrative had a driving role in the selection of materials. Although this statement is somewhat oversimplified and there are other considerations, it is fair to say that the narrative led the selection of materials, it was not the materials determining the narrative.

What would happen if the priority shifted and I let materials be the key design driver of a project over narrative?

TCL was shortlisted for a design competition at this time; the design of noise walls for the Geelong Bypass. The competition brief called for interesting designs for noise attenuation walls that could be achieved for a moderate construction budget. The brief stated the budget would not allow for the cost of patterned concrete walls as seen on the Eastern Freeway or the walls designed for Craigieburn, but the cost allowance was greater than that for the cheapest wall type; timber plywood as seen on the Hallam Bypass.

The initial focus was to find materials to build walls from that would achieve functional requirements such as durability, density for sound reflection and most importantly that would fit within the budget.

I played a very similar role in this project as I had in the Craigieburn project. I was co-designer and project manager.

We developed a shortlist of materials to suit the construction criteria of the walls. Corrugated steel stood out. It was appealing because it had not been used for noise walls previously and would make the Geelong project unique. The walls could be iconic to this road.

The TCL design team then researched in detail the properties of the material: sizes, thickness, costs, suppliers, production times, precedent uses in architecture, and finally the forms it could make. Using corrugated card, scale models were made to test a range of forms that the material could achieve as a wall. Each wall form varied in its height and amplitude, the form’s variance was informed by noise height requirements, setback requirements and structural tolerances. Working within these limits, forms were developed and informed by speed. Just as with the Craigieburn project, there was the opportunity to make a static object appear dynamic to the passing motorist.

The result of this design study was a series of wall types, each varying in form, constructed from galvanised corrugated steel. This kit of parts could then be arranged along the roadway as required to address the site conditions and the noise attenuation requirements.

A design therefore had been developed that was focused primarily on material rather than narrative. To present the project, however, the metaphor of choreography was adopted. It was utilised to explain the way in which the wall types developed, like a kit of parts, and would be arranged along the roadway. Choreography was ideal as it related to speed and movement and was playful and memorable. The idea that each wall part was akin to a step in a dance and that as the road environment changed, as the tempo of music might, then the step of the dance (or the wall in this case) responds accordingly. This relationship between wall elements and variation in road condition allowed the wall to always be informed by the road, much as a dance responds to the tune.

Thinking about this project, I consider it was successful in shifting the order of priority within a design process from narrative to choice of material, even if a narrative/metaphor was used to communicate the concept. Although we didn’t win, the project was successful in exploring a different design approach: a shift from narrative to selection of materials.

The initial absence of narrative allowed a freedom to explore design options that were then only limited by the material properties, the wall noise requirements and the budget.

The freedom from narrative also led to an acceptance of openness in the work. It allowed the development of a scheme that could be made from a range of predetermined parts. This relates to ideas later discussed from Eco’s ‘The open work’.

However, the project still relied on explanation through a metaphor. It was still an instant effect and it felt static. It was the beginning of my discovery about openness, but I felt I needed to pursue this idea much further.

The material shift; Geelong Bypass Competition
Eventually I wanted to consider how time as a material or a medium could be a component of the design process.

On initial consideration, time and its relationship to landscape is a vast subject. In my past projects, the focus on time was mostly related to movement in or through a landscape, the Craigieburn and Geelong Bypass projects are examples of this.

Less consideration had been given to the movement of the landscape itself – the effect and change of a landscape over time. It is a subject that we may address intuitively in that we are aware that the trees in the landscape grow larger and that plant material changes form as it develops, but we don’t necessarily put this consideration as the foremost design generator as we have narrative.

In this section various ideas relating to time are discussed and then tested through design studies.

The site for these studies is the Canberra International Arboretum and Gardens (CIAG). This project is the result of a winning design competition entry developed by TCL and TZG.

The Canberra International Arboretum project is located on a 250-hectare site on the western end of Lake Burley Griffin. The competition design brief was to design a new international arboretum for Canberra.

Our design team’s response was to question what a contemporary arboretum could be. Rather than designing a traditional arboretum, as a collection of individual trees, we proposed to establish 100 forests (monocultures) of the world’s most endangered trees, thus creating a global representation of forests within the Australian Capital Territory. This could offer potential seed banks for the future and an intense and unique immersive visitor experience.

The design emphasises the experience of being within a forest of single species rather than looking at an individual tree.

The design strategy/master plan allows for the location of future facilities to be set within the 100 forests. These forests are orientated in a 150m wide linear grid, parallel to the Burley Griffin Water Axis. This responds to the heritage planning of Canberra, and at the same time expresses the topography of the site while privileging view lines from within the site back to the city.
The project team developed a tree list to identify the 100 potential tree species that are best suited to this site and the project’s intent.

The location of the different forests is the result of the species’ habitat needs and the varying forest lots defined across the site. This takes into consideration:

- Topography – gradient, drainage, exposure to winds;
- Soil type – drainage rates, topsoil and subgrade depths;
- Solar orientation – frost, daylight hours, cultural aspect – proximity to site entry, visitor centre and view from the entry road; and
- Contrast between forests – emphasising contrast in form by separating forests of similar type.

We utilised the above ideas to determine the ideal location for each forest within the arboretum.

Further studies examined potential designs for these proposed forests. A number of sites and nominated forest types were selected from the current master plan/design strategy for me to test a range of ideas relating to time.

In brief, the initial studies were undertaken followed by a final more detailed, concluding study. My initial studies tested the following ideas:

- Visual perception – what is a ‘constructed nature’, versus a natural wilderness? This study considers the potential differences of how we experience a forest in relation to its design and our perceptions of nature.
- Forest gardens and ecology – the study relates to the way we describe ecological models and their relation to design processes and potential future outcomes.
- Spatial temporal scales – this study considers the relationship between the period of time in which our described changes occur and the physical scales in which we see those changes.

The final study is based on the findings of the initial studies as well as a review of ‘The open work’ by Eco. These studies are the concluding material for this research masters.
Time is inherently linked to what we perceive to be the origin of a landscape, the difference between that of a constructed nature and landscape wilderness. For the purpose of this masters research, I define constructed nature as a landscape constructed by people, whereas wilderness is a landscape that remains uncultivated.

The origin of what we see in a landscape is not always apparent and can be visually misleading. It is the emergence of landscape over time that creates this deception.

A constructed forest is typically planted in rows. The trees are consistently spaced and the widths of the rows are the typical dimension of a service vehicle. An overriding order is apparent, the forest is clearly constructed based on cultural ideas and production needs. The growth of the trees is a natural process, but the location of the forest and the trees are not. In this respect we can consider this type of forest a plantation or constructed nature.

A wild forest (forest wilderness) is a forest that has not been constructed by people; it is an uncultivated landscape. When looking at forest wilderness, we see something we consider to be the result of a natural evolution of a landscape, not a plantation, not a revegetation project, but something that has developed without direct human influences.

Although considered wilderness, the forest landscape of a national park is something that is maintained by rangers to ensure we have a safe and pleasant experience. The rangers build tracks, clear fallen trees from paths and undertake fire management works. There are parallels between a national park and a constructed garden, although one is ‘wilderness’ and the other is constructed nature, we maintain both of these landscapes to suit our cultural needs.

A constructed forest could be planted to appear as wilderness, by disordered tree plantings or naturalistic patterns rather than set rows of trees. Companion planting could be incorporated to replicate this type of forest in its wilderness state. These actions can replicate the species and arrangement of the wild forest, but it is the emergence of this constructed landscape over time that will visually take this from a constructed landscape to something that would appear as wilderness.

Time is the critical factor for a constructed forest to appear as wilderness. This perception of wilderness can lead to a false reading of the landscape and understanding of the history of a place. The effects of time can be misleading.

Visiting the Tiergarten, a 220-hectare forest in the middle of Berlin, I saw what appeared to be a wild forest that had been preserved as the city developed around it. As I walked through the forest, I wondered about its history. I knew that the Brandenburg gate, not far from the forest, had been the edge of the city – perhaps this forest had been a hunting reserve within the city bounds? A friend pointed out that there were no large trees in the forest, the trees varied in age but none would be over fifty years old.

During the early 1940s, the forested Tiergarten was heavily damaged by bombing raids and fires. What remained of the forest after the Second World War was mostly cut down for firewood during the winters of the post-war German recession. In the 1950s the Tiergarten was replanted, the former axes and forests of the park re-established.

What I had first thought was wilderness, was really a post-war reconstruction of a pre-war forest wilderness.

The layout of a forest will, in time, influence a visitor’s perception of it, or how that forest has come to be. That is to say an indigenous forest could appear constructed while an exotic forest could be made to appear as wilderness.

In this context, time is directly associated with our perception of nature, wilderness and constructed landscapes.

Visual perception
Design study: Constructed Nature versus natural wilderness.

Test lot: Camden White Gum Forest.

Although this species of eucalypt is not indigenous to the arboretum site, it is an interesting notion that the pattern the trees are planted in can determine the public’s perception of this forest. Is it a remnant forest of rare trees on the site or a planted collection of trees brought to the site?

The images show two approaches to setting out the forest. One is a traditional forestry planting on a 3m grid. The other is a visually random pattern to emulate the forest’s natural order.

As the forest develops, it is possible through maintenance and differences in tree set-outs to project a visual truth of a constructed nature versus the misleading image of a natural wilderness. This can be, for example, ordered rows of trees growing in a field of mown grass versus randomly located trees with a native understory.

This study indicates that consideration must be given both to the layout of the trees and the treatment of the understorey as they relate to the proposed design to bring about the desired perception of the forest in the visitor. Examining the effects of a planted understorey was the catalyst for the next topic: the forest garden.

I wanted to shift the focus of the design from the forest trees to the understorey planting. This was so I could look at how this relates to the emergent forest and to the visitor’s perception of the landscape in the initial years of its development.

I wanted to explore how a garden effect can be created through the establishment of understorey planting material that fosters the trees of the future forest. I was interested in how a forest can emerge from a garden.
The constructed forest planted from seedlings will take many years to emerge and be considered as a landscape of mature trees. It is unlike the flower garden at the opposite end of the landscape time scale where bulbs are planted in autumn, flowers appear in spring, and then the plants die back in winter. Different landscapes operate over different time scales. Typically we don’t describe a monoculture forest as a garden. Generally gardens consist of a range of plant species, forms and sizes. They are usually on a scale that fits within an urban context, and can range from a dwelling’s courtyard to a city’s central park.

The emergence of a constructed forest is a natural process over time, with certain cultural interventions through maintenance. A garden can be considered in the same way. We sow seeds, plant patterns and maintain this according to the design effect we aim to achieve. As a garden emerges and takes shape we are interacting with the natural processes of its emergence. We encourage, or suppress, and maintain various states of natural process to meet our design intents. To quote Michael Poli
cian, ‘gardening is not an act of imposing one’s will on the landscape, but interacting with the forces of nature’. With this understanding, we can design a landscape that is seen as a garden in its early years, but transitions into a forest over many years. I aim to design a forest garden with recognition of the different time scales that can exist within a landscape. Parallels can be drawn between this thinking and ecological models.

In certain Australian eucalypt forests, the process of regeneration after fire brings about a series of visual changes in the landscape. Grasses are the first plants to re-establish, next are acacias and finally the eucalypts grow up through the acacias and become the visually dominant species. This is a simplified description of a recovering landscape – a transition of states. One of the first descriptions of an ecological model was made by Frederick Clements, a botanist in the early twentieth century. He observed the changes in plant communities of the American Prairies over time. He described groupings of plants as communities, as if they were functioning as a collective. He thought of them as a higher-level organism. These communities of plants made way for another community to establish and in his view a series of ecologically static states would be experienced culminating in a climax community – the single best community most adapted to that climatic state.
Simulations of slime model population movements over time are a good visual example of the chaotic order that can unfold as a result of the changing forces within an environment. If we take the notion of the New Paradigm and apply this to the design of a forest garden, the result would be very different to that of Clements’ model. We would see the collective effects of slope, drainage, sun, and soil conditions that have influenced the garden’s footprint and form. It could be seen as a garden that appears to continually unfold, shift and change while a forest emerges from this state of flux. These conditions are the result of a constructed landscape, not a reconstruction of a former wilderness.

Louise Monzingo writes about ecological theory and its influence on Landscape Architecture. She discusses the idea of aesthetic value in ecologically based design projects. She believes it is important to cross the cultural design influences that exist in the discipline of Landscape Architecture with the scientific rigour of ecology. Although Monzingo proposes the idea, no examples are given of the potential result. These ideas on ecology and how they can be translated to a potential understorey garden treatment are coupled with the ideas of spatial–temporal scales in design study two.

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Elizabeth Meyer in her essay ‘The Expanded Field of Landscape Architecture’ discusses landscape architecture as a spatial language.13 We represent landscapes in the spatial language of plans, elevations and models. Robert Cook puts forward the notion that if the language of landscape architecture is spatial, then the language of ecology is mathematics, in particular the use of calculus to describe the changes in a population over time.14

How do we simultaneously represent and, in turn, design with an interest in ecology? According to Cook, we need to work both spatially and temporally. If so, then what are the different relationships between varying spatial and temporal scales? Can 1:20 equate to one year, and 1:2000 equate to 100 years?25

O’Neil describes this idea in relation to forestry and ecology:

‘Depending on the spatio-temporal scale or window through which one is viewing the world, a forest stand may appear (1) as a dynamic entity in its own right, (2) as a constant, i.e. non-dynamic background within which an organism operates, or (3) as inconsequential noise in major geomorphological processes. Thus, it becomes impossible to designate the components of the ecosystem. The designations will change as the spatio-temporal scale changes.’26

The physical scale and temporal scale are not necessarily married, a shorter-term temporal scale of one year is very important when designing at a large spatial scale. The arboretum can be seen clearly from Commonwealth Avenue crossing Lake Burley Griffin, three kilometres away. An important aspect of the project to test is how this view changes over the seasons and differs each year.
Design study: Ecological Shifts

Test lot: Camden White Gum Forest.

The ecological shifts design study has been conducted at two scales. It follows the idea that changes over a longer time period would be represented at a larger scale. The plans in series one represent the possible shifts of the vegetation on the site over a 50-year period. The plans in series two deal with a 15-year period.

Series one is a speculation that over fifty years both the Acacias and the Lomandras will establish themselves in the areas that best suit them. In this case the speculation is the Acacias will prefer the dry ridge lines whereas the Lomandras will be dominant in the drainage lines.

Series two shows us the speculative finer grain of the shifts: the mixing of the two clovers and the slow shift of the mass planting. At this finer scale we can see smaller shifts over a shorter period of time than that represented in series one. These two series illustrate that spatial and temporal scales can be related.

From this study I conclude that creating designs that allow for ecological shifts is highly speculative and could be seen as a risk for clients. No promises can be made about the built outcome. Although this can be seen as a risk, it can also be considered advantageous. To build in an allowance of uncertainty and potential for change in a design generates better chances of a successful outcome to be established than trying to impose a fixed planting design and guaranteeing its success. Landscape architects need a mechanism to be able to address changes that occur within the landscape. We are not working with a medium that is fixed or guaranteed.

In regard to the spatial and temporal scales – there is a relationship between time events and the spatial scale that depicts them. Smaller changes in time can be seen in greater detail at a finer scale. This raises the question of what happens when we design at a very large scale for a seasonal change. This question is addressed as part of study four.

Design study: Ecological Shifts

Test lot: Camden White Gum Forest.

The ecological shifts design study has been conducted at two scales. It follows the idea that changes over a longer time period would be represented at a larger scale. The plans in series one represent the possible shifts of the vegetation on the site over a 50-year period. The plans in series two deal with a 15-year period.

Series one: The design proposition is a series of steps that involve the planting of different species at different times. The series represent the possible shifts of the vegetation on the site over a 50-year period.

Step 1. Grass the site with a clover species to improve soil condition and reduce erosion.
Step 2. Separate mass plantings of a Lomandra species and an Acacia species across the site in bands that are determined by the contour.
Step 3. When the understorey planting is established, plant the Camden White Gum. The established understorey will provide protection for the emerging trees.
Step 4. Over the next fifty years, carry out routine maintenance on the site to ensure the planting densities and species remain as planned.
Step 5. The understorey finds its own order.

Series two: The design proposition is the same for series one but represented at a finer scale. This scale reveals the potential shifts in the vegetation in finer detail.

Step 1. Grass the site in bands that are 10m wide with contrasting colours of clover species.
Step 2. Establish the mass planting and install trees as per series one.
Step 3. Over the next fifteen years, carry out routine maintenance on the site to ensure the planting densities and species remain as planned.
Step 4. When the understorey planting is established, plant the Camden White Gum. The established understorey will provide protection for the emerging trees.
Step 5. The understorey finds its own order.

Series two shows us the speculative finer grain of the shifts: the mixing of the two clovers and the slow shift of the mass planting. At this finer scale we can see smaller shifts over a shorter period of time than that represented in series one. These two series illustrate that a spatial scale and a temporal scale can be related.

From this study I conclude that creating designs that allow for ecological shifts is highly speculative and could be seen as a risk for clients. No promises can be made about the built outcome. Although this can be seen as a risk, it can also be considered advantageous. To build in an allowance of uncertainty and potential for change in a design generates better chances of a successful outcome to be established than trying to impose a fixed planting design and guaranteeing its success. Landscape architects need a mechanism to be able to address changes that occur within the landscape. We are not working with a medium that is fixed or guaranteed.

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Design study: Forest as garden

Test lot: Gingko Forest

The forest as garden design study considers how to change the site conditions to suit the establishment of a future forest and how to address the issue of budget. Cost is a fundamental reason why a landscape project cannot appear instant on inception.

The construction budget for the CIAG forests is two dollars per square metre. Compared to the other projects mentioned earlier, it is a relatively low rate.

- Craigieburn Bypass Walls at $900 per square metre
- Grattan Plaza at $200 per square metre
- Birrarung Marr at $55 per square metre
- CAIG Forests at $2 per square metre

The small budget means that, compared to previous projects, the design must be considered in a different way. The budget is more reflective of an agricultural project rather than a traditional landscape project. It has led to an investigation into forestry and agricultural implementation methods and techniques.

This design study has adapted agricultural methods and applied them to create a low cost landscape. The created landscape will be visually engaging for the visitor in the early years of the project while creating suitable conditions for the future forest.

The proposal is to create patterns on the landscape by directly sowing seed from a tractor. The patterns are designed so the tractor can plough them in continuous runs. Legumes are sown as this family of plants are nitrogen fixers and are a wide-ranging species.

Once the legumes are established, the trees can be planted in a pattern that relates to that of the legumes. The legumes act as companion plants to the Gingko trees in that they fix nitrogen into the soil and provide a windbreak to the establishing trees.

Gradually a shift becomes apparent across the site as the pattern of the legumes is dwarfed and overshadowed by the emergent forest. One pattern arises from another. Eventually the trees will dominate and either the legumes will survive as an understorey or be out-competed by the growing trees.

There are interesting comparisons between this design study and study two. Both establish a garden-type condition that fosters a future forest. This design outcome is more formal and prescribed, in this respect it may be more appealing to a client who needs a greater sense of certainty. It is also an approach that allows for design expression through pattern making on the landscape. The effect of this pattern making would have an impact on the distant view of the site as well as the experience of walking within it.

It is a consideration of the distant view that is tested in the next design study.
Design study: Shift in the spatial-temporal scale relationship

Test lot: The entire arboretum site

This design study tests if a spatial scale and a temporal scale are married. Do we only see 100-year changes at the 1:2000 scale, while the annual shifts in the landscape are seen at a finer scale of 1:20?

Here we draw on the idea of using tractors to directly sow legumes in patterns as companion plants for the future forests. The study explores techniques for creating large-scale visual effects on the site within a short period of time. The study focuses on the visual changes that can be seen over one year but at a scale of 1:5000. The view of the site is from the centre of Canberra, which is 5km away. A photograph of this elevational view is used as a basis on which to overlay the potential design.

Each forest lot is sown with a species of legume that is commensurate to the needs of the forest tree species planted with it and the conditions of the individual sites. The selection of legumes would also be based on the colour of flower and the season of flowering. The intent is to highlight the location of the future forest lots through the seasonal changes of colour in the companion planting.

This shows that the spatial and temporal scales are not fixed to each other; a spatial scale of 1:5000 can be married to a temporal scale of one year.

Key subjects relating to time and the non-instant landscape were examined through design studies in the previous section of this document. These studies focused on subjects such as the visual perception of wilderness, ecological shifts, and spatial-temporal scales. Although all of these studies focused on a different aspect of an emergent landscape, one thing they all have in common is that they are addressing a landscape that is changing, "a work in progress." 16

While the studies allowed me to explore other ways of designing, they only tested ideas singularly. Although these studies considered the non-instant landscape, they addressed this only on the surface. I wanted to examine one design strategy in greater depth, and test how it could be more site specific.

After reading Eco’s work, I felt his open work views offered a greater conceptual framework and modus operandi for my final studies.
In ‘The Poetics of the Open Work’, Eco discusses his ideas of the open work in relation to different fields of art – music, the visual arts, sculpture and literature. Of the arts he discusses, music relates best to my research into landscape architecture and the non-instant. Eco discusses how painting and sculpture can be an open work. Viewers will have a different experience of the artwork based on their cultural background and personal history. Similarly, a landscape can be considered an open work. This interpretation of the open work revolves purely around the experience of the observer. It is not about the process of creating the work or about the artist, it is about the observer.

In his discussion on music, Eco describes several pieces by different composers and how they are open works. In each case it is the musician who is determining the final outcome of the piece, and in fact completing the work in their delivery of it to the audience. The musical compositions Eco comments on are as follows: Klavierstück XI, by Karlheinz Stockhausen, a piece written on a single sheet with groupings of notes, the musician then decides the order to play the groupings. Sequence for Solo Flute, by Luciano Berio is a piece where the sequence and pitch of the notes are prescribed by the composer but it is left open for the musician to determine the duration of the notes. Scambi, by Henri Pousseur is described by the composer as a field of possibilities. It is sixteen tracks of recorded sounds that the musician can arrange within the rules set by the composer. The rules define what tracks can follow and/or precede each other. The Third Piano Sonata by Pierre Boulez is a piece with two movements, one a random ordering followed by a circular ordering. The first movement has ten pages of script, the musician can arrange and play the ten pages in any order. The second movement has four pages – the musician can start at any page, but must then play the pages in order until returning to the first page played.

Landscape architects and composers (the first party) both translate an idea via symbols on paper for a second party to carry out for a third party, the audience, to experience. Where an artist and or sculptor is the individual whose hand creates the work there is no second party involved in determining the work for the audience, unlike the composer and the landscape architect who are further removed from their audience. We rely on a second party to deliver our ideas. For the composer it is the musician and for the landscape architect it is the contractor who builds and maintains the landscape.
Design study: Tipping points and the open work

Test lot: The Wollemi Pine Forest

The site chosen for this design study is the lot for the Wollemi Pines within the Canberra Arboretum Project. The Wollemi Pine was first discovered in 1998 in a remote valley within the Wollemi National Park in New South Wales, Australia.

Among the hundreds of endangered tree species from around the world, the Wollemi is unique in that there has been very little human contact with this species. As a result its depth of ethno botany is limited to the events of the last eight years. (This contrasts with a tree such as Dracaena draco, the legendary Dragon Tree of the Canary Islands, which has links to many cultures dating back to Greek mythological times where it was associated with Hercules and the slaying of the multi-headed dragon, Laco.) For this reason the Wollemi is an ideal design candidate in moving away from narrative to explore aspects of the open work. There is little narrative to build on and the limited knowledge of the species makes the prediction of its form as individual tree and forest more uncertain.

In relation to Eco’s text we can consider a landscape project, such as the proposed Wollemi forest, as an open work in two modes with varying forms to each. The two modes are first through the observer: the individual who will experience the landscape, and second the operator: the people who construct and maintain the landscape.

The first mode relates to the observer and this has two forms associated with it. The first form relates to Eco’s discussion on the open work and the visual arts. Eco describes how a painting can be an open work via the different experience of the observer. The same form of open work can be considered in relation to the Wollemi forest.

When standing in the visitor centre and looking out of the window each observer will perceive the Wollemi forest differently based on their own cultural background, personal history, past experience and understanding of landscapes. The proposed Wollemi forest is strategically located within a valley below the visitor centre and the event terrace. This forest lot is one of the highest value locations across the site. Its location offers a framed view of the rare forest and a classic postcard view with the city of Canberra in the background.

When the observer moves from the building to walk around the edge, or enter the forest, the form of the landscape changes. It is no longer akin to viewing a painting. It takes on the openness that Eco attributes to sculpture. The observer is able to view the forest from different vantage points and can choose different paths to move through the forest. By these actions the observer is changing the way they visually and physically experience the forest. In doing so they are creating an openness to the work.

The second mode relates to the operator of the landscape – the person(s) who constructs and maintains the forest. This can be related to Eco’s ideas on the open work in music. Just as the composer gives the musician choices to make to complete the work, so too the landscape architect can give options to the operator.

For the Wollemi forest design study, the set-out of the trees is determined for the operator. If a range of tactics is provided on how the forest is maintained then the forest becomes an open work to be influenced by the choices and actions of the operator. So we can consider the operator to be like the musician playing Scambi; free to make the choices that will influence what the observer experiences.

Unlike the musician and the composer, what is unique to the medium of landscape is that the operator and landscape architect must engage with the varying conditions that the landscape site itself generates.
Let’s consider this in relation to the proposed Wollemi forest. It’s a classic case of light the fuse and step back. We can only speculate with the body of knowledge available as to how well and in what form the Wollemi Pines will grow on the site in Canberra. Based on our speculation we define maintenance tactics on a speculative future. The tactics we create for the operator to choose are determined by how the tree performs in the varying conditions of the site. The operator does not have the freedom of the musician to play the tracks of Scambi in any order. The operator must respond to the effects of the landscape.

**Tipping points**

The maintenance tactics designed for the Wollemi study are aimed at exaggerating what will be referred to as tipping points in the landscape. A tipping point is when the condition or state of an element within the landscape is altered in relation to another element. This design study focuses on what will be referred to as two types of tipping points: horticultural tipping points and experiential tipping points. The horticultural tipping point pertains to a distinctive change in form, habit or condition of a plant species within an area of the forest. The experiential tipping point pertains to a distinctive change in the observer’s experience of the forest.

The design proposition for the Wollemi Pine is to plant Lilly Pillys via a direct seeding technique in rows along the 1m contour intervals of the site. When the Lilly Pillys reach a height of 0.5m, then the Wollemi Pines will be planted in lines parallel to the developing hedge of Lilly Pillys. The Lilly Pillys provide the required shading and windbreak for the juvenile Wollemis. The Lilly Pillys will also create a visual impact in the first year that the Wollemis planted at 5m spaces would not have.

The first tipping point is when both the Wollemis and the Lilly Pillys are equal heights. It is anticipated that this will occur within one year of planting the Wollemis. At this point the main maintenance operation is to trim the Lilly Pillys to form a hedge. This allows the now hardened-off Wollemis to grow taller than the Lilly Pillys. This tipping point is both horticultural and experiential in that it is a turning point for the growing condition of the Wollemis as well as a change to the observer’s perception of the forest.

An experiential tipping point is reached when the Wollemi Pines reach a height of 2m. The trees are now above head height for most observers within the forest. The open views that previously existed across the areas of poor Lilly Pilly growth. The view line is determined by the areas of good growth.

Speculation about the species growth is based on the literature available on the species chosen and an analysis of conditions at the site. Conditions such as solar aspect, soil types, topography and drainage lines all inform the speculation of where and when the tipping points may occur. The tipping points mentioned above are just examples of a wide range of possible tactics that could be documented for this site based on the open work logic.
Conclusion to Wollemi Design Study

The Wollemi study is just one iteration of a number of different types of forest designs. It draws on ideas explored in the earlier design studies. The relationship between the Wollemi study and these past studies is described below.

The perception of the Wollemi forest as either a constructed environment or wilderness is discussed in study one. The Wollemi trees are set out from the central drainage line of the site at equal spacing along 1m contour intervals. To a visitor this results in a visually obvious structured layout of trees close to the creek line that becomes a less structured, more informal arrangement towards the edge of the forest.

The maintenance tactics for the horticultural tipping points relate to ecological shifts explored in study number two. These tactics are used to exaggerate the changing visual and spatial effects on the plants that we can see in the greater landscape in instances where plants are either being removed or encouraged to multiply. It is an acceleration of the naturally occurring shifts that were explored in study two.

The establishment of hedgerows for visual effect and as companion planting to the Wollemi forest directly relates to the ideas explored in study three. I am working with a limited budget on a large scale, creating a visually strong effect that assists in the development of the future forest. The hedge planting is a pattern on the landscape that can be seen from kilometres away – this relates to study four. It is an approach that could be considered for the other forest lots in order to create an effect across the entire arboretum.

I have used different representational techniques in this study. The sections are useful in explaining the relationship between soil types, topography, and scale but fail to communicate what the visitor experience would be like. While the perspective drawings lack the technical information that the sections show, they are able to suggest the spatial qualities of the forest. The disadvantage of the perspective is the amount of labour required to produce them. My preference for clarity and design purposes was to use computer representations of the forest. This is because those computer model images are generated from what could best be described as a visualisation of geographic data. Both the hand-drawn perspectives and the computer images started as points and lines in AutoCad. The difference is my perspective drawings are drawn from hand replacing each point with a sketch of a tree. The computer drawing replaces each point with a photo of the tree that is influenced by a speculation from me.
In the tipping points described in the design study, the mature forest can be considered as another tipping point in the evolution of the landscape design. This study has been successful in rethinking the way I approach a forest design by working with the uncertainty that the landscape conditions generate. The weakness in this study has been the aesthetic quality of the design outcome; this would be improved by testing more maintenance tactics. The uncertainty of the design outcome is an issue for client expectations and the guarantees my client is asked to provide to both community and the political leaders who support the project.

This is very different from my earlier projects where the design outcome is defined by the construction documentation. Although the application of maintenance tactics alone would not determine the final outcome of the Craigieburn Bypass project, the notion of an open work is thought provoking in its context. How could such a project be redesigned with greater openness?

I prefer this form of representation as it quickly generates a range of forest growth types that can be visually experienced from any point both spatially and temporally around the site. Given the potentially endless number of variable outcomes that can result from multiple maintenance tactics, this is a preferable method for visually testing them. The development of different maintenance tactics for the forest and emergent ecology could result in a wide range of physical outcomes.

The process in this design study has successfully shifted from the use of narrative to the use of tactics that engage with the changing qualities of the landscape. This study recognises that the landscape and associated ecologies are in a continuum and state of flux. Initially the forest was seen as the design outcome for the project. Now I consider the forest as one point of the future continuum of this landscape. Like the tipping points described in the design study, the mature forest can be considered as another tipping point in the evolution of the landscape design. This study has been successful in rethinking the way I approach a forest design by working with the uncertainty that the landscape conditions generate.

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The importance of time as the subject of my research.

Initially my research identified and explored the use of narrative in my past work. This exploration revealed the use of narrative in design processes and the influence this had on the built work. A common thread to all the projects was that they were predominantly instant on their completion. In fact, along with narrative, the instant quality of these projects was a major consideration in the design process. In reviewing these aspects of my work I wanted to make a shift to explore other avenues of design. The design focus I chose to shift from was initially narrative but, after further exploration, I realised that it was the instant landscape I wanted to move away from. In order to shift from the instant landscape I had to consider how to engage with the subject of time, as this is the fundamental differing factor between something that is instant versus something that emerges slowly (non-instant).

A key part of my design exploration prompting my new thinking was reviewing competition schemes by other designers. In particular were both strong schemes but not what would be considered master plans but rather design strategies that outline how to deliver the project. I asked myself: Could it really be that easy? What is the next stage in the development of these schemes? How do they design for this emergent quality they set up? The schemes paint an interesting picture of the outcome but there could be thousands of alternate futures to the scenarios they initially put in motion. Reviewing these schemes confirmed my interest in engaging with the subject of time in relation to the non-instant landscape. But I wanted to take my ideas further. I wanted to investigate how I might build upon the schemes rather than produce a master plan.

The changing role of narrative from my past projects to the last design study of this research.

The use of narrative in the design processes for some of my past projects directly informed the project’s designed outcome. In some cases this was a literal representation of the narrative as seen in the Grafton Plaza project; the LED lights reflecting the stars of the sky above. In other projects, the influence of narrative was an abstraction – as in Birrarung Marr where the lights reflecting the stars of the sky above. In the Grattan Plaza project; the LED lights reflecting the stars of the sky above. In some cases this was a literal representation of the narrative as seen in the Grafton Plaza project; the LED lights reflecting the stars of the sky above. In the Grattan Plaza project; the LED lights reflecting the stars of the sky above. In the Geelong Bypass competition design was a deliberate shift away from the use of narrative in my design process. Although the design was developed with a focus on material, corrugated steel, a narrative was developed for the project after the design was completed to explain the concept in simple and memorable terms for the competition jury. The narrative gave another way of viewing and understanding the project. It could be described as a post rational narrative.

In the final design study of my research I have recognised that narrative is still present. In this study the design is an expression of landscape conditions. The influence of soil types, topography, drainage, solar aspects, as well as the plant species, all come into play and are the properties that the design reacts with and combines with maintenance tactics that determine the shifting and emerging outcomes. It is the aesthetic qualities of landscape that is the narrative for this project.

It is unlike my past projects, such as the Craigieburn Bypass project, where a narrative had been imposed on the site as a formal order. What the ‘open work’ suggests is that the narrative is embedded within the landscape itself. So instead of narrative about, it is narrative within. The role of narrative has shifted from being an imposition on the site to becoming the generative forces that shape the design from within the landscape over time.

The project is never complete, as the effects of the landscape conditions are ongoing. Even when the forest has developed, which is the focus of the initial client brief, the process of its changing form will continue – hence the connection to ‘The open work’ by Eco.

What I have discovered by using time as a key idea in generating landscape form is that, as Eco has described, all projects can be considered open works. My past projects are open in varying ways. The trees in past projects will grow bigger, the palma of the Craigieburn walls may shift from a rusty red to a deep purple. I was conscious of these facts at the time of designing but these open qualities were not deliberated in the design. The open or shifting qualities in the project are present as subtle effects that are overpowered by the instant and somewhat static resonance these projects have on their initial opening. At the point when the project is built we refer to it as the project’s completion, but in light of this study I now think of as the project’s beginning.

Although this is the conclusion to my research, based on what I have found through this process I feel as if I am at another beginning. As the primary aim of this research has been to reconsider the way I practise, the sense of a new beginning is very satisfying.
Acknowledgments

I would like to acknowledge the following people for their assistance in this research;
Sue Anne Ware – supervisor,
Rosalea Monacella – advisor,
Ben Akerman – layout & design,
Garry Keltie – Computer programming and visual representations,
Lisa DeJong – graphics,
Anne Findlay – editor,
Chris Johnstone, Jessica Blood, Craig Douglas,
Jason MacNamee, Charles Anderson, Perry Lethlean – for all their comments and support.