Four-in-One: A Democratic Approach to Diversifying First-Year Design

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Introduction

Tiny white paper models of houses resting on stacks of wooden boxes; mutated cubes of bold colour jumping out from square bases; trussed bridges, towers and arcs made of straws; dreamy montages and collages seemingly defying reality. In June 2012, these four components made one exhibition at The University of Auckland. It was the best of the work produced in Design 1 – first year, first semester studio. Among the first year students, the pride in their collective effort was palpable; among students from other years, there was real interest in the work and the recurrent comment, ‘I wish we’d done that when I was in first year.’ For us as teachers, the work produced and the responses to it elevated this studio to one worth writing about.

Studio teaching underscores the entire architecture programme at The University of Auckland and is premised on a belief that design is only learnt by doing, by experience. Studio courses comprise one third of the credit points in first year (nine hours contact time per week), rising to half the points in second and third year (twelve contact hours per week), and half the points in the first year of the Master of Architecture (Professional). The second year of the MArch(Prof) is then filled with a two semester design thesis.

First year design differs from subsequent studio courses in that each cohort of up to 120 students is taught together, led by one staff member supported by tutors, all working to the same brief. Different staff members lead these big studios from year to year, rather than either semester being the preserve of a first year specialist.

In 2012, we experimented with something new: four senior staff, with diverse approaches to design, teaching Design 1 in groups of 30. Each staff member would develop a short project, with the four groups of students rotating through the various projects during the twelve week semester.

The use of senior staff demonstrates to first year students that they and their education are highly valued within the school. The emphasis on the divergent approaches of the four staff members recognises that different students have different learning styles and work differently in generating and developing architectural designs.1 By exposing the students to a range of approaches from the outset, we hoped to demonstrate that their different ways of working are all valid: there is no such thing as a 'right' way of designing.

The four staff were our then Head of School, Assoc Prof Sarah Treadwell; Deputy Head, Assoc Prof Uwe Rieger (who was also course coordinator); Dr Andrew Barrie, Professor of Design; and Dr Julia Gatley, senior lecturer. We also experimented with using senior architecture students – second year MArch(Prof) students – as tutors, two working with each staff member.

This paper presents the experimental teaching structure and a summary of the four design streams. It analyses each in terms of the syntax/semantics duality proposed by Peggy Deamer in a 2005 article on first year studio teaching in Perspecta. Deamer posits that some first year studio programmes privilege the telling of a story (syntax/grammar/the teaching of a language), while others emphasise plot (semantics/meaning/the use to which language is put). In architecture, she linked the former to function and/or concept, and the latter to form and poetic license. She concluded that the strongest design programmes avoid allegiance to one or other approach and, rather, expose students to both.2

The paper shows that rotation through four very different teaching staff in first semester, first year studio facilitates, to paraphrase Deamer, striking the right balance between conceptual thinking and formal dexterity; between material manipulation and cultural critique; between precedent and innovation; between sensitivity to site and interrogation of the functional program; between abstraction and reality; and between large-scale and small-scale. Thus the paper presents the four-in-one approach as a valuable model for future Design 1 teaching.
Small

This stream, taught by Andrew Barrie with Melanie Pau and Anya Bell, emphasised the development of skills and work habits. More specifically, it emphasised working at small scale and at high speed to develop a design through multiple iterations.

The set of exercises involved a specific model-making technique: a “net” (a developed surface drawing) for a design idea was digitally drawn, laser printed onto heavy paper, and then cut and folded to create a three-dimensional form. This technique can be used to create models that range from bare volumes to detailed depictions of site, materials, texture and spatial composition, all at low cost (each model uses materials costing only a few cents) and a relatively high speed (even a beginner can produce a detailed 1:200 model from scratch in an hour or two). Further, the technique allows design options or refinements to be created quickly by altering the drawing, re-printing and folding up a new model.

The stream comprised seven three-hour sessions. In the first session, students undertook a series of rapid-fire skill-building exercises – a cutting exercise to familiarise themselves with hand tools; a folding and gluing exercise to get used to handling paper; and a drawing tutorial to introduce the software (Rhino) and learn the printing process. In the second session, students produced a model for a house based on a supplied rectangular plan, the third session being similar but working with a more complex plan. Students then began their design exercise, producing two models for a simple hiking hut, the design being based on two distinct planning strategies. In the fifth session, each student selected one of the options from the previous session and produced models of two distinct design refinements. Students designed and modelled two more refinement options in the sixth session, and one further refinement in their own time. The final session included a group presentation, photography of the final models, and the creation of individual boxes in which students could store their models.

An explicit theme of these exercises was speed. Students completed each exercise within the allocated three-hour session. This was very demanding for first year, first semester students, but they were responsive and rose well to the challenge.

Staff emphasised that students need not continue to employ the specific technique beyond this stream, but that they should seek to develop a way of working that allowed them to develop and explore their ideas quickly – to learn how to work fast. In the stream, each model presented in the final session was the seventh produced during the development of the design. The design process was not the linear or layered development of a single scheme but the systematic exploration and refinement of options.

In terms of Deamer’s syntax/semantics duality, this approach is one that avoids separating out aspects of the design or dealing with them in sequence – the stream modelled an approach in which dualities of concept and poetry, function and form, must be addressed simultaneously. The emphasis on speed and multiple iterations prevented students from stalling in conceptual exploration before addressing form, function or aesthetics; it forced them to produce a complete design. Similarly, the collapsing of drawing and modelling was advantageous in preventing fixation with planning: all drawings were folded up to become volumes and the complexities of three-dimensional form were necessarily dealt with.

Deamer also argues that the specifics of the programme or the brief are less important than the network of teachers, peers and outputs to which students are exposed, and that the key role of the design teacher is to act “as model for how [students] should engage with the outside world”. According to this view, the role of the teacher might be as much in letting students see how they think and act – that is, in being a role model – as it is to be delivering education. The approach being role modelled in this stream is that of a designer who can generate multiple ideas and quickly explore their potential.

Medium

This stream, titled ‘Permutations of Cube’, is premised as ‘Medium’ on the basis of scale: follies with maximum dimension of 9 metres in any one direction were modelled at 1:50. The stream was taught by Julia Gatley with Rebecca Green and Paul Lelieveld. Gatley is an historian of twentieth-century architecture. Emerging out of her expertise in history, the topic had three main aims: to develop student awareness of the use of precedent in architectural design; to expose students to the
reality of working within tight constraints; and, at a more pragmatic level, to develop skills in model-making.

This stream was tightly programmed across the seven sessions: (i) to analyse an existing building; (ii) to make a 1:50 scale model of a white cubic building on a sloping site; (iii) to learn about Bernard Tschumi’s Parc de le Villette, Paris (1983-89) and analyse its follies in terms of actions such as addition, subtraction, rotation, repetition, cantilever, etc.; (iv-v) to design a folly within a series of tight constraints; (v-vi) to model the folly at 1:50 and produce three photographs of it; and (vii) to present the model and photographs for review.

Each student was asked to use a 5.4 x 5.4 x 5.4 metre cube as a starting point for their own design. This is half Tschumi’s starting dimension, to keep the project manageable. The starting cubes were imagined as tripartite in base, width and height. Students then pursued possibilities for the mutation and rupture of their cube, with the requirement that something of the original 5.4 x 5.4 x 5.4 metre form and its tripartition must remain legible. Additional height, width and depth were all limited to 1.8 metres beyond the envelope of the original cube, including below ground. Steel was the presumed building material (mostly modelled in card). The follies were to be largely monochrome, and embedded into a base of set dimensions which was to be comparatively neutral in colour. The intention was not to replicate Tschumi’s follies, but to push the ideas of mutation and rupture further and in more radical ways.

In terms of Deamer’s duality, the actions produced in the analysis of Tschumi’s follies can all be considered as forms of syntax: they are tools (like grammatical devices) available for both analysing existing precedents and, in studio, manipulating architectural form. They form the substance of Francis Ching’s classic book, *Architecture: Form, Space and Order.* They can be used individually or layered together.

In seeking something beyond Tschumi, the project aimed to push students beyond syntax and into semantics. Students were to put their newly learned tools to new uses; they were encouraged to take poetic license; they were free to imagine possibilities beyond the built environment with which they were familiar. The only structural consideration was that the models be strong enough to survive the duration of the semester; the only functional consideration was that the follies generate a spatial experience (to keep them in the architectural rather than sculptural realm). Recurrent new themes emerged, a kind-of updating of Ching: floating, exploding, collapsing, colliding, fragmenting, pointing, pulsating, flowing, slipping, sliding, slicing. Colour research helped to make the follies more meaningful and also demonstrated the multiple meanings that abound in our postmodern world. In the best follies, one or more meanings associated with the colour of choice was also embedded in the architectural form.

Because the dimensions of the models were limited to specified maximums and those of the bases were fixed, groups of models could be laid out in grid formation. When this happened, the regularity of Tschumi’s red constructivist frames was replaced by new forms, spaces and surprises. Jittering orange frames popped off a grey hillside; a sombre charcoal building with subtle kinks demonstrated attention to detail; a glistening yellow platform hovered five or six metres above the ground; multiple coloured cubes appeared out of cave-like openings. The follies together showed that tight constraints do not limit creativity; to the contrary, they produce extraordinary diversity.

**Large**

With a focus on wide-span structures, the stream ‘Large’ pushed structure to its limits by testing, analysing and refining architectural models. The stream was taught by Uwe Rieger with Esther Mecredy and Howie Kang. Rieger’s research is in design technology and performance-based architectural design. He has introduced 1:1 fabrication studios into our school, working with groups of students, teaching them to work collaboratively, to develop ideas through discussion with each other and to realise large-scale projects by allocating smaller tasks amongst the team members.

This stream had three main aims: (i) to give students an understanding of how technical thinking can be used as a driving motivation for architectural design; (ii) to demonstrate that through a process of optimisation, an initial architectural concept can be strengthened; and (iii) to introduce students to working collaboratively in a team.
In the stream, teams developed wide-span structures using only plastic straws, a light tube profile material that is both inexpensive and easily accessible in large numbers, important in encouraging experimentation and allowing for failure.

The stream was taught in three stages. First, students developed an architectural concept for a linear element spanning 3 metres. They presented their structures as a self-supportive 1:1 model, with drawings explaining the underlying architectural idea. In most cases, this first outcome barely achieved the required span, unless the choice was a variation on a triangulated beam structure, carefully fabricated but without architectural content.

In the second stage, students refined their designs, distilling their architectural concepts to a few key aspects and optimising the overall structural system and profile. Attention was now directed to the joints between the individual straws, often weak in the first models. Students started to use the medium of drawing to identify precise measurements for the components. The second models were much improved in terms of structural integrity and overall elegance, stimulating confidence and excitement in the students.

In the third stage, the aspects of scale and spatial quality were introduced. Students now extended their point-to-point constructions in a third dimension, moving to a structure that offered a spatial experience. By introducing small model figures, the structural model shifted towards a scaled representational architectural model. The third dimension also meant an increased number of structural members were required. Efficiency in fabrication became an important factor, as did a well functioning team.

Structure and technology are often far from the minds of beginning first year students, who might come to architecture with visions of plans and elevations rather than interests in loadbearing, spanning and detailing. To teach structure and technology in studio is to emphasise their potential to inform and influence architectural design, and to do so in first year is to emphasise them from the outset.

It is a recognised approach. In her article on first year studio teaching, Deamer identifies this kind of project – in her language, using “sticks” – as one that teaches students “to attack a problem with a certain set of contrivances foregrounding not the solution, but the poetic tropes applied to the solution, contrivances that are essential … to telling a persuasive story.” In this stream, the persuasive story was in the form and aesthetics of the three-dimensional models: it was not just the getting from A to B across the 3 metre span that mattered, but rather “the words, the sounds, the punctuation and pauses” (the length and positioning of each piece of material in relation to all others and the spaces between), the connections (the system for joining consecutive pieces) and the crafting (the care taken with making).

Deamer’s reflections on defamiliarisation – discussed in more detail in the next section – are also relevant here, in the change of scale between the second and third stages, which made the linear structure “unfamiliar via authorial manipulation.” Such manipulations encourage students to learn to see things in a range of different ways.

Media

The media stream, ‘Space and Measure’, taught by Sarah Treadwell with PhD candidate Sara Lee and senior student Frances Cooper, focused on media and making, with an understanding that drawing (of all types) is an active component of design, not merely a representational tool. The group worked with the assumption that images participate in the formation of the field of architecture in particular ways with precise effects.

In the media stream, students were initially presented with an array of six images that had been cropped away from accessible meaning. Conventional assumptions about the subject of the images were suppressed and instead their formal nature, at a variety of scales, was discussed. The relationships between the media, the mark making and spatial qualities presented in the images were considered and each student made their own version of selected sections of the array of images. The focus from a teaching perspective was on close reading of the images. Students were asked to use only material that came from the array; changes could occur but only in terms of the source; shifts in scale, in emphasis, in dimensionality were manipulated to produce individual ‘design documents’, which in turn became the formal
prescription for the subsequent design. The teachers’ role was to tip the readings into architecture and no reading was ‘wrong’ even though it was, at times, clear that some readings were more architecturally productive.

Underpinning the teaching was a deliberate strategy of defamiliarisation, the aim of which was to make the everyday world both strange and visible. Deamer points out that for the Russian formalists, estrangement was “to bring language to life, waking it from the slumber of overuse and habit.” Such formalism “was not equated with the composition of the object or our perception, but ...[on] the devices used by the author to ‘defamiliarize’ the material; to make the viewer simultaneously aware of the author’s manipulation of the object/story ... and its visibility.” The initial construction of the image array by the teachers involved cropping, multiplying, reversing, re-colouring etc.; visible techniques that were redeployed by the students in their own design document.

In the media stream, defamiliarisation was practised consciously with two mechanisms: the literal and expansive reading of images; and, secondly, the introduction of the aesthetics of the plan. For literary theorist Meir Sternberg defamiliarisation involved temporal deformation and with the introduction of a functional programme temporal conditions became prominent in the studio. Students were asked to select one of four rudimentary programmes – a weigh station, a pigeon house, a moon watching platform, or an instrument maker’s live/work studio – a plan as a site for an imaginative occupation was made. The brief was minimal and was to be formally articulated at a selected scale with an accompanying text.

Temporal issues also informed production in that the design document had required slow, careful making and so, prior to the introduction of the programme, an accelerated component was introduced, with six small spatial models to be extracted from the document. Translation from 2D to 3D was required to retain the formal properties previously identified. The drawings and models were seen as Donald Kunze’s “thinking machines whose surpluses and gaps create openings for ingenium, metaphoric constructs that involve not just witty ideas but structural duets between subjects and objects, heres and theres, now and thens.”

The media group felt that students need to be conscious participators in their own education. As Paulo Freire argues, they have the option to either follow prescriptions or to have choices, acting or having the illusion of acting, between speaking out or being silent. In pursuit of students engaged in their own education, we encouraged dissent, rotated roles of critic between students and staff and allowed for personal histories and skills to shape the design strategies.

The interpretation of images and text was seen in terms of aesthetics as a discursive practice, respecting differing alignments of theory and practice, image and text. W. J. T. Mitchell has noted that “A verbal representation cannot represent – that is, make present – its object in the same way a visual representation can. ... Words can ‘cite’ but never sight their objects.”

The media stream emphasised the ‘laying bare’ of the formal devices activated by close reading and the students’ previous art training. It attempted to open up the architectural potential of the formal world by including programme as a formal and temporal condition. Pushing the visibility of form through defamiliarisation, the media stream was aware of the problems of arid, formulaic formalism and worked consciously with the formal conditions of the students’ own material and social practices. Following Deamer, the team discouraged separation between the telling of a story and the plot. Working with an open account of the representational nature of their work, the students were encouraged to value the collective production across the studio and to allow themselves to find both a closeness to and a distance from their own work.

Five and Six

In the final teaching week of the semester, the students were asked to bring the best of their work together on twelve 300 x 300 mm sheets. This was a new design task, a graphic design task in which students could present all four of the earlier projects equally or focus on two or three of them. Some were pragmatic, showing each project as per its original design intentions; others transformed the earlier work in surprising new ways, particularly those who amalgamated the twelve sheets into one giant composition and treated it like a poster.
Then, instigated by course coordinator Uwe Rieger, came the exhibition, perhaps an unusual move for Design 1, but one which Rieger, the MArch(Prof) tutors and volunteers from the first year class pursued with enthusiasm. It showed, as outlined in the introduction to this paper, the high standard of the work produced during the semester.

This paper has presented the experimental structure within which the work was produced, and has reflected on it with reference to the syntax/semantics duality proposed by Peggy Deamer in 2005. In that paper, Deamer states that “the possibility of the right program is a myth, and the belief that the program is the essence of the method … is a fiction”. It nonetheless our conclusion that the four-in-one approach – quartering the class and rotating the students through four very different approaches to design – is a valuable way to strike a balance between syntax and semantics; between learning a language and learning to make use of it; between using tools and generating meaning; between learning rules and taking poetic license. Consistent with Deamer’s assertions, we agree that the detail of the four projects matters less than the diversity generated across them. We also acknowledge the important input of our eight tutors, whose youth, skills, energy and generosity were all appreciated by staff and students alike. Thus, the four-in-one approach is being used again in the first semester of 2013, but with different staff teaching four new projects. It is in the diversity of these approaches and the conviction with which they are taught that the majority of the students in the class are likely to find an approach that works for them.


2 At the ends of the respective sessions, the plans were revealed to belong to significant New Zealand houses: the Group’s Rotherham House, Auckland (1951) and Warren & Mahoney’s M.B. Warren House, Christchurch (1960) respectively. The students were also shown images of each house to compare with their designs.

3 Some students made additional models to further refine their design.

4 Deamer, “First Year”, p. 10.

5 Deamer, “First Year”, p. 16.


7 Deamer, “First Year”, p. 11.

8 Deamer, “First Year”, p. 13.


11 Deamer, “First Year”, p. 11.


17 Deamer, “First Year”, p. 10.