

## **Notes from Newcastle. Teaching Architectural Design in the context of Research and Practice**

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*The mission of an architecture school is to graduate students who have a rich bundle of abilities, with a critical insight and orientation towards the world, along with a desire to engage that world in a creative practice. What the specifics of that creative practice are, we leave up to the students.*

Detlef Mertens, 2006

### **Learning the Principles of Design Process and the Production of Space**

It is not easy to clearly frame what the principles of teaching and learning of architectural design might be. Do architecture students today need new design tools and techniques, or are the established ones still sufficient?

There have been all kinds of definitions on offer, from the formal French model of Jean-Nicolas Durand to the interdisciplinary model of the Bauhaus by Gropius, and Tschumi's 'paperless studio' at Columbia. According to the National Architectural Accrediting Board (NAAB) of the US, architectural education is at its best when it demonstrates 'a positive and respectful learning environment, structured around the values of optimism, respect, sharing, engagement, and innovation'. In Australia, all architecture students are expected to understand, engage with and apply a certain body of professional core knowledge as defined by the RAIA Education Policy and the AACA competency standards.

In the School of Architecture and Built Environment at The University of Newcastle we strongly believe in the potential of the studio model. We regard design as the central activity of architectural education, and the students' experience of the design studio is essential. The studio is a 24/7 educational community, an 'intellectual hot house', with an atmosphere of dialogue, mutual critique, events, inspiration, charrettes, self-directed peer learning, creative energy, coffee drinking, and much more.

Our studios are intended as the point of integration and synthesis for all other coursework and educational experiences – a concept called integrated problem-based learning – with the students themselves participating in the creation of studio culture. It is therefore crucial to the model that we offer a clear theoretical framework which encourages critical thinking and reasoning, rewards visionary concepts, and enables creative discovery and exploration of ideas. In this context, the model of the open critique as a form of public design review plays a particularly important role in our studios.

### **An Interdisciplinary and Inclusive Approach**

Conventional learning models are increasingly under challenge and are evolving at a rapid pace. I have found that an interdisciplinary and inclusive approach to teaching has helped in developing solid design research that has benefited students from various backgrounds and with a great diversity of abilities, skills and expectations. The outcome of the design process is frequently uncertain, surprising and even a little inexplicable. This open-ended, unpredictable nature of the design process needs to be understood and constantly protected and, in this regard, the architectural design studio holds probably a unique position within the university. Too many architecture schools, in Australia and elsewhere, suffer from procedure-driven bureaucratic processes that inhibit exciting creative notions, and lack any kind of nurturing atmosphere. After having co-ordinated studios over the last 15 years, in six different countries, I have learnt that there is no out-of-the-shelf formula for running design studios; there are as many varieties of ways to conduct a studio as there are solutions for individual design problems. However, ideally, the design studio should provide the student with the opportunity to experiment with the design process itself.

The process of design consists of many decisions taken by the architecture student, none of which are independent of each other; they are constantly interacting. Of course, the scale, depth and speed of those decisions vary depending on the experience of the student. What is important is that the student learns the ability to move from a particular detail to envisaging the wider context, and then is able to return to the original problem with new knowledge. According to Zeisel, the design process is based on a characteristic sequence of

activities: 'imagining; representing; testing'. (Zeisel, 1981) Thus, the principles of teaching the process of ideas development might be defined using four phases:

- (i) Starting phase: data gathering, problem and site analysis, precedent study
- (ii) Ideas generation phase: variations of concept and design speculation  
(imagining) - trying out alternatives
- (iii) Ideas evaluation phase: correction and elimination (representing)
- (iv) Project presentation phase: public review of design and discourse (testing)

Paul Rudolph can be quoted for explaining his strategy of teaching architectural design: *Seeing what the student is trying to do more clearly than the student sees it himself or herself, and helping to order the ideas. There is no one right solution.* (Rudolph, 1969)

### **Developing a coherent Design Philosophy**

At the outset, I would like to suggest that sound environmental strategies are consistent with good architectural design, and that by incorporating ecologically sustainable principles into the design and construction of buildings, living and working conditions can be improved. Thus the architect is afforded an opportunity to make a real contribution to society. Other good architectural design principles, such as spatial quality and improved liveability due to working in natural light, better air quality and greater connectivity with the outdoors, are equally as important. Buildings using such design principles are often notable for their good performance and fitness for purpose. So, for instance, for the 4<sup>th</sup> Year studio, for one could say that the key is a commitment to, and particular concern with, the following themes:

- the development of new building strategies for public buildings, multi-storey mixed-use complexes and future workplaces;
- the improvement of linkages to public open spaces, with a special attention to urban transformation and the city's urban renewal;
- the potential of adaptive reuse and the integration of existing buildings.

This requires the student to propose robust design strategies and ideas-based architectural processes – concepts which allow for flexibility and contingency, to enable

responsiveness in the design as new understanding or conditions arise. Sustainability and ecological approaches to design are hereby not seen as isolated but integrated on all levels into the architectural curriculum.

### **Synthesis and Integration of Knowledge**

At Newcastle we are committed to studio-based projects with integrated coursework, where the design studio offers the student a shared learning experience. The architectural design studio encompasses other subject areas through integrated exercises, seminars and lectures. As such, the studio integrates the subject areas of:

- theories and methods of architectural and urban design studies;
- cultural and social studies, incl. histories and theories of architecture;
- ecologically sustainable design – improving the performance of the building;
- urban design and buildings within the urban context;
- research methods, incl. building analysis (building typologies);
- technical and environmental studies, incl. site studies, construction technology, material science, structures, and technical services;
- communication and documentation, incl. graphical presentation techniques, CAD-studies, digital design, model making, collaboration skills;
- professional studies, incl. architectural management, practice and business, professional responsibilities.

We must recognise that there is simply a huge body of essential knowledge and key concepts that students need to learn. The reality is that it needs a combination of both: process-driven learning (for skill development) as well as outcomes-based learning (involving content of systematic core knowledge). While generic skills exist independently of established subjects, it's also true that certain other important skills are still best taught within the context of those established subjects.

A new teaching initiative includes the introduction of 'Collaborative Studios' across schools and faculties, for instance collaborating with artists, urban designers and engineers,

based on our desire to better understand the transfer of techniques and ideas between architecture and other related disciplines.



**Fig. 01:** Model photo of final year design project: Tourist Information Centre (student: S. Christie, 2006)

### **Emerging Challenges to Design Teaching**

It appears that the resources a contemporary architect can draw upon today are no longer a closed body of knowledge. What must be taught and learnt is a continuing, open research process. Over the last decade or so, a series of relevant challenges has emerged that have had a significant impact on the way we conduct architectural design studios. I would suggest that the main challenges the architectural profession and university researchers are facing at present include:

#### **1. Architectural and Urban Design including Public Space Research:**

This consists of issues in urban transformation, regeneration of city centres, and urban renewal. It also includes issues dealing with brownfield sites, post-industrial waterfronts and derelict urban areas. It includes analysis of public space and building types, with an emphasis on the urban situation and the forces shaping contemporary cities today, and is concerned with questions such as how to stop the increasing commercialisation of public space and how to deal with increasing density and public space networks.

#### **2. Architectural Histories and Theories with a focus on Regionalism and Identity Research:**

This includes social transformation processes affected by migration, loss of identity and the impact of globalisation; research that focuses on identity creation, regionalism and modern architecture in the post-colonial context and in emerging economies; architecture after Modernism; the question of the 'own' and the 'foreign', i.e. the making of architectural identity; the urban poor; informal habitat; cultural-political questions about contemporary cities and sustainable living in a globalising world; how architectural identity has emerged and been fabricated over the last eighty or so years, and the gradual loss of cultural identity in the context of globalisation.

### **3. Ecologically Sustainable Design Research:**

This topic includes a focus on the impact of emergent technologies; ESD principles in architecture and urban design; the impact of technological innovation and digital design on infrastructure, architecture and building performance; sustainable building design and designing with the climate; green urbanism, large-scale systems and technological innovation in the design of buildings and landscapes; the redefinition of the architect-engineer relationship; an ongoing search for innovative applications of technology for more energy-efficient buildings and compact communities to counter sprawl.



**Fig. 02:** Wedding Pavilion at Roma Street Park, Brisbane. Outcome of Steffen's design+build studio, 2004-2006, financed by Queensland Government (student design: C. Slatter)

## **Enabling Diversity in Architectural Design**

When running design studios and seminars, we aim at provoking and inspiring a passion for architecture, introducing a methodical approach to design, and for respecting and supporting a diversity of design attitudes. There is no single pedagogical approach. The School offers the infrastructure that enables the students (and academics) to pursue their own design agendas. Over the coming years we are keen to introduce a number of innovations into the teaching and learning of architectural design, which we hope will maintain the existing diversity and enhance the student's learning experience. Building on the teaching tradition of the Newcastle School, these include the following ideas:

- to further raise the quality of design throughout all years by engaging the students in creative learning and research activities that are intellectually challenging and which embrace analytical rigour;
- to engage the students in assignments that are relevant to the City of Newcastle and the Hunter Region. By using the city as the field of design exploration, it reconnects architecture with the social issues of the city;
- to achieve new, or to refine existing, partnerships with the city, government, industry and the profession, with a focus on 'real world' studio projects – that is, to be an 'outward-looking School';
- to remain committed to exhibiting and publishing the work of students as a valuable addition to the discourse on design, and to increase the visibility of the School;
- to develop and intensify cross-disciplinary teaching – for example, with the School of Fine Arts – and foster interdisciplinary collaboration with joint studios;
- to continue the internationalisation of the School and to develop new international linkages, as well as marketing the uniqueness of our program in Newcastle to attract the best students.

## **Design Studios with Research Relevance, and Research to inform Studio Practice**

The linkage between research and teaching, which we now accept as fundamental to the mission of universities, has first emerged in the early 1800s, in Prussia, by Alexander von

Humboldt ('The Unity of Teaching and Research', 1827), where, at the University of Berlin, teachers were expected to conduct scholarly research and communicate it to various audiences. The *Wissenschaft* model became the university's empirical approach to knowledge and, from 1900, academic research at most European universities has been acknowledged as the device by which the success of faculty members is measured.

Architectural research has probably never been healthier than it is today. Universities are widely regarded as the engines of the knowledge economy and are now recognised as a valuable resource of expertise. Consequently, architecture can be understood as an exciting field of open research rather than as a field with orthodox or fixed solutions. The constant changes in the field, with new relationships between work and leisure, public and private space, heritage values, the demands of tourism, establishment of roots and the lure of mobility mean that there is no longer a limited set of rules that defines what architecture is or can be. (Lehmann, 2003)

I see my role of Professor as facilitating new cross-disciplinary research and learning processes. Foremost among these processes is the studio model, which is designed to foster symbiotic relationships between teaching and research.

We can ensure the studio's relevance to our individual research areas, as well as integrating our research findings into the design teaching, and focussing written assignments on the design studio. This integration of academic staff's research into the design teaching helps establish new design networks, which have transformed all forms of architectural design and research into increasingly multi-disciplinary fields of collaboration. In this condition, research is best undertaken by strong interdisciplinary teams in which the architectural discipline can make unique contributions.



**Fig. 03:** Final Year exhibition at The University of Newcastle, Nov. 2006 (photo: J. Drake)

### **Partnerships: Involving the Community and Local Profession in the Design Teaching**

As our students move through the years of study, we will ensure that they are exposed to a wide range of design typologies, different site conditions and structural principles, with increasing complexity and scale. Design studios are frequently, but are not limited to being, conducted around the themes of:

- buildings for rural (non-urban) communities;
- permanent and temporary structures in timber and steel;
- residential projects (housing);
- designing future workplaces;
- public buildings;
- mixed-use buildings in an urban context;
- adaptive re-use and extensions;
- multi-storey, high rise buildings.

Such healthy diversity in the assignments is particularly important, and the Newcastle School has in this regard all the characteristics of a slowly evolved, well-balanced and carefully shaped curriculum. The story of a school in Queensland is frequently told, where students were asked four times to design an art gallery during their undergraduate studies. When I was offered the position at Newcastle, I didn't hesitate to take on the challenge to be

part of one of Australia's finest and most recognised School of Architecture & Built Environment.

The school has a particular interest in involving the local profession in the design teaching program, including engineers and landscape architects, as this builds strong links to good collaborative practices. We will frequently invite leading practitioners to participate in the design studio, for instance as guest critics or to give lectures.

Various partnerships with community and government bodies are already established. This will enable the school to carry out projects of public relevance and meaning to the contemporary city. A strong interest in the 'reality of making', as the great practitioner and educator Alvaro Siza calls it, has led to various collaborative initiatives with Newcastle City Council, e.g., in regard to the future 'Downtown Campus', with Newcastle Port Corporation for the 'PortCity' vision, and a collaboration with The Newcastle Alliance and Honeysuckle Development Corporation for the 'Back to the City' project (a design+build studio). All these are valid examples of involving students in real world projects. They represent examples of applied design research that illustrate what is known as the 'Scholarship of Integration' – the Boyer Principle: the three key areas of teaching (learning), research (discovery) and application (practice) – all intersecting to deliver essential integration. (Boyer, 1996)

### **Looking ahead: Students designing the future City Campus**

The university's role in the urban renewal of Newcastle city centre is of particular importance. The idea is to move the School of Architecture and Built Environment, the School of Fine Art, together with the School of Drama and Music, to an inner-city precinct, in about five to eight years time. The intent is to make student involvement in this planning task an important contribution to the design of an inner-city precinct around Civic Square, encouraging direct interaction between the Schools and the community, nurturing cultural life and fostering a knowledge economy for the city. It is also envisaged that this will lead to the translation of arts/science research into applied innovations that will benefit local industry and attract innovative people to move to Newcastle (the emergence of a 'creative city' a la Richard Florida). In this context, it's important for us to develop partnerships with industry and to have

external engagement through collaborative studios. The two visions, the 'City Campus' and the 'PortCity', present the city with two most significant regeneration opportunities. They have the potential to make Newcastle's urban renewal a reality by delivering a series of real benefits to the city.

### **Teaching Global Studios – expanding Architectural Education**

The *Global Studio* initiative involves taking students overseas to participate in an advanced, interdisciplinary design studio, where students from Australia will have the opportunity to collaborate with students from other countries. A Global Studio for Barcelona (in June/July 2008) is currently in preparation, where we will have the opportunity to study in depth the amazing Catalan architecture. This will be similar to the Global Studios I have conducted in the last three years at Tongji University in Shanghai and at TU Berlin.

### **Concluding Remarks**

As Morgan points out, 'there is little doubt that teaching is one of the most rewarding and fulfilling professions' (Morgan, 2006). Designing and teaching architecture has always interacted in a special way, where the personal development of an architecture student – learning about the act of making appropriate designs – requires (as the famous saying suggests) 'the simultaneous use of the eye, the mind, and the hand'.

The special character of our school is probably manifested in its location as a regional city, its strong community spirit, a critical interest in regional architecture and its pragmatic, practice-oriented concerns. I believe architecture is both a profession and a form of knowledge for which teaching is an essential vehicle. The design studio defines this philosophy by nurturing a culture where students are optimistic about the skills they are learning, are optimistic that architecture can make a difference to society, and are confident that they will succeed within the profession. As architects, we have probably no other choice but to be optimistic!

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