

Freespace: Campus hopping: Serial Teaching in Sydney

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ABSTRACT

This paper explores the role of the design studio tutor in three first year architectural design studio courses that currently exist in the inner suburbs of Sydney, Australia. This is based on the experience of a casual academic who has taught concurrently in all 3 courses in these institutions for over 10 years. It investigates the curriculum structures which drive each of the three studio settings and questions the role of the transient teacher in the maintenance of each university's respective reputation and the studio outcomes. It also reveals unspoken rules and expectations, which casual academics take on with each contract, and how these affect learning outcomes in the studio. By examining the curricula of each course, this paper questions whether transient teaching can positively enhance the education of architecture students who are physically so close, yet apparently distant in terms of methodology.

KEYWORDS casual academic, pedagogy, curriculum, design studio.

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Introduction

This paper documents three experiences of teaching first year architectural design studio as a sessional academic (tutor) in Sydney, Australia. This is drawn from observations and experience of someone who has taught concurrently in the three tertiary institutions over a period of 10 years and provides a broad perspective of the evolution of these courses and how they operate. A gap in research currently exists in the knowledge of what impact sessional academics have on courses they teach in architectural design studios and in turn the impact of the varying university expectations on the role of the tutor. How transient teaching affects pedagogical outcomes becomes possible when the discussion compares what seems to be an identical job description – teaching first year architectural design in three architecture schools within a 10 km radius in Sydney, Australia.

The three institutions in question have been classed as "sandstone", "redbrick" and "technical" in order to differentiate their pedagogical frameworks. The sandstone university has a reputation based on art-based practices. The curriculum is predominantly conceptual in nature, utopian in outcome and based firmly in the Bauhaus-aspired. workshop-based tradition of teaching. The redbrick university privileges sciences and environmental technologies and establishes a clear relationship to site, function and material through practical, buildable briefs which seek to create balanced, integrated spaces. The technical university has an entrepreneurial. digitally literate curriculum, runs a strongly procedural design approach within a series of complex and challenging briefs while doubling as a "practice-ready" course.

These pedagogical differences can be mapped against sociological and demographic ones. Students enrolled in the first university tend to be financially secure and privately educated, the second an equal mix of middle class local and international students and the third, a diverse set of students inclined towards vocational pedagogical models. Drawing on comparisons of the methodology of design studios and negotiating 3 very different intellectual frameworks, the following comparison will highlight the different cohorts of students, compare curricula and the manner

in which subjects are taught. The comparison will also address issues of access, power and privilege that steer teaching outcomes in radically different ways. These differences are necessary between the schools of architecture since the students' backgrounds seem to require this choice and diversity in education, particularly there is the tendency to migrate between schools as they progress through their degree.

Each university has a distinct brand to project to the public. This comparison focuses on the particular legacies that each institution forges through student work. The sessional academic plays an instrumental part in this.

Documenting these differences has involved investigating school curricula, universities' mottos and anecdotal evidence from my teaching experience. Discussions with educators, coordinators and students have created a broad cache of observations, which present a valuable bank of data for this research.

Sessional gang culture in Sydney

Each year, approximately 500 students enrol in first year architectural courses across the three Sydney-based universities. The sandstone and redbrick campuses each attract slightly fewer students than the technical university. In Australia today, a studio group has 16-20 students per studio leader per session. This has been a stable figure for many years. What has changed is the time spent teaching in studio, which ranges between 3 to 6 hours per week.

A gang of sessional tutors service these students. In Australia, the term is *casual* academic, which is interesting, given that the working environment of a casual academic is often anything but *casual*. Issues to do with job security, increasingly complex project briefs and larger class sizes with less studio time are examples of the daily struggle to exist in this role. According to the Workplace Gender Equality Agency, between 23% and 40% of total academic staff is casual in these particular universities² and this figure is rapidly increasing. As casual academics, "we are teaching the majority of classes in universities [in Australia]." ³

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These teachers are a broad mix of sole practitioners, employees in firms and students working on doctorates. There is a small group of serial tutors⁴ who are valued at all 3 schools for their teaching expertise and particular skill sets. Differences between each school make their experience of transient teaching a shape shifting exercise. Being a multi-player in the game requires specific understanding of each school's pedagogical objectives, an ability to teach different students as well as an ability to independently teach a skill set. The distance between the full-time staff – who are subject coordinators - and tutors, who are in the field, delivering content and giving feedback is a space which is gradually becoming narrower, with the push for tutors to be more independent and involved in curriculum development.

Tutors in each institution have their stereotypes. (These observations are anecdotal and from the point of someone who has taught in all 3 arenas). Those at the sandstone campus are known for their part-time artistic careers and are proficient in workshop methodology – usually running a workshop of their own. They are likely to be part-time architect-artists, establishing a career or PhD students. They are well versed in theoretical ideas and aesthetics. Those at the redbrick school are often architects who have established practices. They are quietly spoken, practical by nature, calmly attired, and likely to have strong opinions on site, structure and materials which come through in their students' work. Those at the technical school are most likely to be young, technically savvy and researching hybrid or robotic elements. In each school, tutors are often alumni and familiar with the teaching framework. These characters have a strong commitment to teaching and practice as a lifestyle.

Tutors with teaching experience and familiarity with course outlines are valued by coordinators. However, the evolution of courses and constant shifting of coordinators means the working life of the tutor is never secure. Despite university policies which give hope of continued employment⁵ and talk of future fixed-term employment for tutors, this has not greatly changed teaching practices or security. However, this is not a discussion of labour issues.

Student cohorts

Teaching first year architecture courses is a demanding choice given the perception that this level of teaching is like nursery school. Students require guidance, demonstration and disciplinary measures: more rigorous teaching. But this is not to say that discussion, debate and higher-level thinking is only possible in the advanced years. Often, the first year of architecture is the most radically challenging for students.

As with sessional staff, student cohorts vary at each university. This diversity is a result of factors: student expectations, perceived reputations of the school and objectives of the marketing department. Decisions are complex - relying on student's academic performance for access primarily. However, if a choice is possible, many students admit their decision is based on reputation, which is often wide of the mark. For example, irrespective of the strong theoretical frameworks of each course, common public perception is that only one of the three courses provides students with a capacity to develop critical thinking. This perception also suggests that the other courses are focused on procedural practices and site based concerns. My experience of teaching in all three courses suggests this is simply not the case.

The Sandstone School promotes its age and beauty as factors⁶ which create prestige and high-quality education. It emphasizes world class teachers and research staff. Until recently, this school had dedicated studio spaces for each year group – but now provides a common teaching space and a series of open working studios, like the other two universities. The workshop facilities really are state-of-the-art, not least due to the maintenance of a dedicated and talented team of fabrication staff.⁷

The Redbrick School attracts students specifically interested in practical fields of materiality and sustainable practices. This campus attracts large numbers of international students, mainly from South-East Asia, through rigorous marketing⁸. This campus has created its own community, with on-campus accommodation and entertainment for students living away from home. Career-based skills and timeless craftsmanship are promoted here.⁹

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The Technical School attracts the most diverse range of students in terms of age, race, experience and aspiration. This school has a reputation for producing practice-ready students with digital capabilities and well-honed representational skills¹⁰. This school provides access to the largest number of vocationally trained students, providing an alternative pathway for students who might not have successfully completed secondary school.¹¹ Its origins as a technical college still have resonance, with students stating that employment security is something which attracts them to this school.

In the last 5 years, there has been a change in allegiance of students to universities. The division of courses into graduate and postgraduate degrees makes it possible for students to complete the undergraduate component in one school and then shift to another school or overseas to complete their degree.

Public perception – reputations at stake

During the universities' Open Days, faculty staff answers questions from students and their parents about what their school offers. To broadly paint the picture from the perspective of a prospective student: The sandstone school is focused on theory and provides the most scholarly education and state-of-the-art workshop. This is a place of tradition and prestige. The redbrick school produces buildable, sustainable and materially astute architecture with a clear understanding of site. The technical school provides a futuristic, digital and challenging education involving digital fabrication. All of these assumptions are partly correct.

Each of these schools provides a basis for critical thinking, theoretical research and experience in digital programs. They also provide education in practice-based skills. It is the approach to these skills which is different. For example, the theory component of the first year curriculum is most visible in the sandstone school. Weekly readings are debated, discussions documented in journals which are graded. This approach is firmly based in phenomenology. In the redbrick and technical schools, the approach to theory is more integrated in precedent studies and the methodology of working in the studio. This

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makes theoretical content less of an add-on and more of an instrument.

When students at the sandstone school are asked "Why did you choose to come here?" they invariably answer, "It's the *best* school". When asked why it is considered the *best*, the answer is usually, "Because it's the *oldest*." Marketing material reiterates this extensively. Sandstone equals quality in education.

A clearer understanding of each school can be gained from their mottos.

The Sandstone University motto: *Sidere mens eadem mutate*: Though the constellations are changed, the mind is the same. ¹²

The Redbrick University motto: *Scientia Manu et Mente*: Knowledge by Hand and Mind. ¹³ The Technical University motto: *Think*. *Change. Do.* ¹⁴

The first school enlists tradition and looks towards the past to strengthen the future. The second school promotes the idea of being relevant, progressive and engaged. The third school looks to the future with the imperative of change. Three mottos, which are simple in terms of public consumption, produce spatial and graphic outcomes in an architecture studio, and this is intentional.

Studio practices – course outlines

This section outlines architecture studio courses taught in each university. First year is currently divided into two 12 to 14 week semesters at all three universities. There are three assessable items delivered by the students per semester. This is common to the three institutions. (Note: Quotes for each Case Study are taken from the curriculum reading list)

University Case Study 1 – Sandstone School

A dérive, "drift" is an unplanned journey through a landscape, usually urban, on which the subtle aesthetic contours of the surrounding architecture and geography subconsciously direct the travellers, with the ultimate goal of encountering an entirely new and authentic experience.

Guy Debord, Theory of the Derive¹⁵

This course delivers architectural design and art-practice in simultaneous pedagogical

streams. This means students study architectural design and art-practice in the same studio. Each studio group has two leaders – one architect, one artist. It tests a different model of student to staff ratio by combining two standard groups for most studio exercises.

The course is divided into three sections — conceptual thinking and making, mapping a site and designing and constructing a site instrument. To start, there is an intensive series of workshop tasks — soldering, plaster casting, bamboo modelling — producing conceptual models exploring movement, sequence and body space. Students emerge having constructed a wearable "mapping machine" which reinterprets the site and is worn while presenting the final scheme. Emphasis is placed on the making of the concept, the crafting of the instrument and drawing of a detailed section connected to the site.

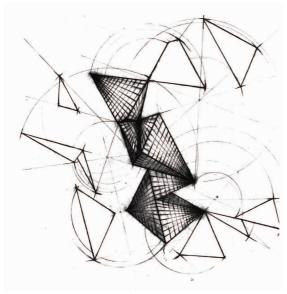


Figure 1: Xavier Junhua Lian Conceptual drawing from plaster model First Year Architectural Design 2014 University of Sydney

The site mapping takes the students to a decommissioned ship-building facility on an inner city island where they track and map for an entire day, documenting spatial aspects, formal qualities and historical layering. More abstract observations - flight paths of seagulls or cigarette butt deposits - are also considered mappable data. This task develops a range of observation and tracking skills using photographic, drawn and recorded evidence.

With two teachers, students access two intellectual processes, two ways of making and *Charrette* 3(2) Autumn 2016

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two opinions. This works well for students able to make independent decisions about their work, but is hard for students who have emerged from secondary school where their experience of education is more hand-fed, not survival-based. It means a moderated mark, which causes contention with previously high achieving high school students. There is also tension in terms of feedback based on architectural/ spatial outcomes versus the art-practice/ object-centred ones. The idea that art and architecture are interchangeable, or that aesthetics prevails over function is a much posed question.

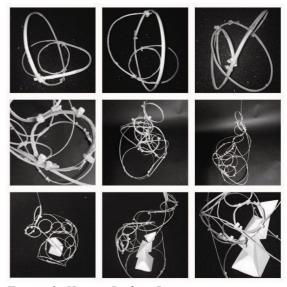


Figure 2: Xavier Junhua Lian Conceptual models with bamboo – site mapping instrument First Year Architectural Design 2014 University of Sydney

The five hour long studio permits for more supported productivity during the session. With 40 students per studio, both teachers negotiate each student's developing project, while directing exercises in conceptual and spatial development for the whole group. Deliverables require rigorous conceptual output and attention to crafting art objects, which gradually become spatial. The construction subject is run later in the undergraduate curriculum so students can focus on the translation of object to space in the art workshops. Each student produces six site maps, a bamboo site-mapping instrument and a section drawing of the instrument in action. This work is supplemented by a plaster model, a soldered model and a journal showing ideas, responses to theoretical readings and conceptual sketches.

The outcome of this studio is a body of work which is sculptural, formally refined, individually driven by the student and conceptually loaded. Teaching at this school requires focus on the transition between conceptual ideas and spatial solutions as well as an ability to overlay art-based theoretical concepts in a practical way.

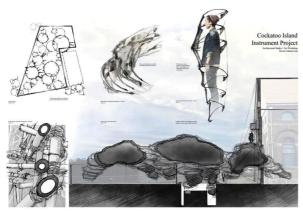


Figure 3: Xavier Junhua Lian Final Panel presentation -First Year Architectural Design 2014 University of Sydney

University Case Study 2 - Redbrick School

I prefer drawing to talking. Drawing is faster, and leaves less room for lies. Le Corbusier¹⁶

This course sets up relationships between site, enclosure and material. The project is located on a defined site which is extensively researched by students in the first weeks of the semester. There are three phases – three architectural proposals which are developed with separate themes and programs. The outcome is a suite of three projects, spatially integrated to create an interface between private and public spaces. Each of these is explored through the lens of canonical architectural precedents (Mies, le Corbusier and Siza). These extend students' understanding of each phase by encouraging students to make models of the precedents using plans and sections only. The projects become increasingly ambitious, along with students' design capabilities and confidence. There is a set of rules which defines spatial development: only balsa models, no circular geometries, defined relationships to site edges and adjacent programs. Rather than encourage

free expression and random exploration of individual stylistic notions, this curriculum encourages students to test limits of regulations. Due to strictness of the rules, experimentation in structural layering and material understanding prevails.

There is an emphasis on craftsmanship and methodical working of site and space in this course. Schemes are presented using models at different scales as a basis for discussion to explore the material and spatial connections which are logical, structural and responsive to site. The ambition of drawings in this course is closely related to the precedent studies, focusing on clarity of structure and material, as opposed to hardcore graphic skills promoted by the other two schools.



Figure 4: Kevin Kuah Bike Workshop and Exhibition Space Balsawood model First Year Architectural Design 2014 University of New South Wales

Four hour long studios, with groups of 16 students provide an ability to work with the group as a whole as well as individually. Fragmentation of the project into three parts means that students become more fluent and independent towards the end of the semester, allowing for more intense discussions about design and construction. Both this school and the sandstone school have a high proportion of engineering students pursuing a double-degree which brings an opportunity to work structure and design simultaneously.

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Figure 5: Kevin Kuah Perspective view – Kiosk, Public space First Year Architectural Design 2014 University of New South Wales

In this course, students produce a balsa site model into which the whole scheme is built, three fragment models, drawn plans, sections and details for each of the projects. Each project is presented and given formal feedback and then represented as a portfolio at the end of semester.

Teaching here requires translation of site and programmatic concepts within a given set of rules. This creates an interesting framework for comparison between studio teachers without diminishing creative input. It produces more conservative, spatially and structurally defined focused projects compared to previous school. Theoretical rigour from the modernist precedent studies is clearly evidenced in the outcome of this studio.

A point of difference in teaching here is the manner critique is delivered. The vulnerability of a first year student working out how to survive an architectural course is more extreme for international students who must negotiate difficult concepts in another language. There is emphasis on constructive critique and teaching by demonstration in this course, which is necessary given the larger proportion of international students.

University Case Study 3 – Technical School

Theory acts to provoke doubt, but once that doubt has been registered, the challenge of the present is to make do with this corrupt and imperfect material.

Stan Allen, Diana Agrest¹⁷

This course builds a basis of critical and analytical thinking through precedent study.

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There is emphasis on relationships between spaces and objects rather than formal concerns. The outcome of this course is a mutant – a hybrid scheme - developed through constraint-based processes of iterative combinations, site mapping and modelling. This course develops skills in diagramming and iterative thinking as a basis for spatial design. Although site is a concern, it is not predominant.

The course is fragmented into three sections – analysis of precedents, development of the mutant and its programmatic insertion into the site. Instead of producing three architectural interventions, it develops one spatial response which incorporates three internal zones.

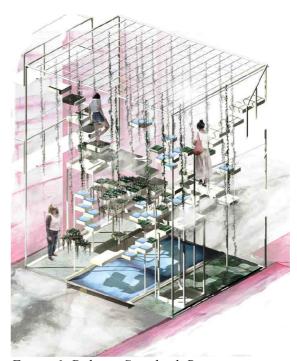


Figure 6: Delayne Sternbeck-Rutter University of Technology Sydney Mutant 1 Collage First Year Architectural Design 2015

Analysis of precedents forms a kit of performative parts to be reworked as new combinations. Structure, skin and circulation are reinterpreted as each other, or mediated to create new hybrid versions. These parts are developed iteratively using conceptual modelling to create a form which contains trace elements from the precedent. Exploration of digital programming and manipulation is encouraged and makes iterations quick to produce and easy to duplicate. Models are a combination of analogue, laser cut and 3d printed. A matrix of these iterations is produced, creating a taxonomy of ideas for students to develop towards spatial resolution.

The final stage is inhabitation of the mutant. Students apply a program, developing a brief for the mutant that is often subversive or futuristic in nature. Some examples include spaces for laundering money, for organizing student demonstrations, for manufacturing new identities from stolen ones. Modelled spaces which emerge from this curriculum are complex and machine like in nature.

This course, like the previous one, work closely with the Construction subject, which runs simultaneously. In the redbrick school, the structure of the design project itself is detailed. At this school, the construction project develops a detailed section drawing of the site buildings into which the mutant is situated in the design course. Students can then extend this knowledge to how their own structure and skin operate in terms of the strategies they have learned between the precedent studies and the site based construction details.

This course is assisted by a peer tutoring system, part of an initiative developed with the Interactive Media and Learning Faculty. Selected students from second and third years are allocated studio groups which they attend each week to assist working through fundamental issues of how to make models, produce drawings and ways of negotiating workload. This supports the transition into first year for students. In this school, studio time is short, at only three hours per week and studios are run in two shifts, morning and afternoon. These sessions are intense with a large amount of work from each student to review every week.

Students produce a series of presentation panels incorporating diagrams, site mapping exercises, hybrid drawings of systems and programs, visual catalogues, a graphic manifesto, photomontages of the mutant in the site as well as a series of iterative models, an overall presentation model and a large laser cut sectional model. A portfolio is presented after the final presentation.

Teaching in this course requires efficiency and digital literacy. The translation of the course outline at this school demands careful understanding of the precedents and ways in which iterations lead to resolved projects.



Figure 7: Delayne Sternbeck-Rutter University of Technology Sydney Perspective: Women Bathing First Year Architectural Design 2015

Shifting Allegiance

For years, it was considered that teaching at more than one institution was an act of disloyalty. (This was evidenced by me being called a prosti-tutor, after admitting to teaching at three institutions simultaneously). More recently, there has been transient movement between universities by tutors, particularly in times of deflated property markets. During the GFC, leading firms flooded schools with their employees in the hope that they could keep them temporarily employed. The universities understandably leapt at the opportunity to have star-chitects on their payroll. This situation was short lived. Migration back to the office was as rapid as the exodus.

Recently, there has been a push by universities wanting to protect their brand and course outlines by urging allegiance and providing more positions for graduates or PhD students of that particular school. Several of the universities opt to employ recent graduates instead of practitioners, believing they have a clearer view of the curriculum, student mentality and that their youth brings a fresh way of thinking spatially as well as new skill sets.

Power plays

There are unspoken rules and expectations that tutors adopt with each contract. These can affect or infect learning outcomes in studio as well as in the teaching life of the academic. These are surprisingly generic to all three

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schools. Tutors are kept in line from above by the subject coordinator and ultimately by the image that the university portrays. The increasing importance of student satisfaction means that students have a degree of control the ability of the tutor to maintain employment.

The tutor ultimately plays role of gatekeeper in determining the success of each student, despite assurance that this is a regulated and mediated threshold. Following final presentation of work by students and before grading is submitted; there is a parity session between tutors and coordinator to establish the upper and lower bars of each year group. In these sessions, the tutor often has to fight to have their student's work recognized as commendable, which curiously shifts the role of presentation from student to tutor. It is a shame that students are not present during this exchange process, to see their tutor defend the schemes that they themselves defended.

There has been a shift towards teaching as a service and, given the cost of a tertiary education, this is understandable. Students are keen observers of other tutors and make clear comparisons. Tutors are required to provide service above and beyond the studio sessions. Online support has become a secondary teaching mechanism. Tutors broadcast information online, or answer questions outside the studio. Another situation that is discouraged but occurs nonetheless, is the frequent necessity to teach beyond studio time. Tutors are caught in a bind, with the ratio of students to studio time often becoming misaligned due to the quantity of work to review. Much of the criticism of a tutor's worth is based on their ability to work the room, rather than the quality of their teaching ability.

In terms of remuneration for tutors in Australia, reduction of funding to universities has meant a gradual decrease in hourly rates over the last 10 years. Hours available to teach have also decreased, but the expectations placed on the students, and therefore the teachers, to compete has increased markedly in recent years. It is generally understood that for each hour of paid teaching, there are two extra hours of preparation. This means that for a five-hour studio, ten hours per week should be accounted for. This comment does focus on issues of labour, but questions the impact these

upper level decisions have on studio teaching for tutors.

Privileging popularity over tough education

Studio presents an arena where the number of likes achieved is vital – not only for the student's project, but for the tutor, course coordinator and ultimately for the school itself. At studio level, when students present their work to their studio leaders and invited guests, students hope for their work to be commended, not scrutinized by the panel. For a student in first year, this critique session is intimidating and difficult to process. It is hard for an exhausted, overwrought student to understand that heated discussion from a jury is something that heralds an exciting project. It is vital that the tutor translates this experience for students, or steers the conversation in a direction they can understand.

The final presentation studio is an event largely choreographed by the tutor – from order of appearance and manner of presenting the work, to invited jury. The tutor's job is to invite colleagues to give students feedback, which is often a dicey situation in terms of whether the guest is favourable to the group and whether the group's work is favourable to the guest.

Teaching and Learning Strategies have developed a system of feedback that evaluates course content and tutors' performance at the end of each semester. Students are urged to complete a voluntary online survey at the completion of the semester, before grades are released. As a concept, these surveys provide valuable feedback regarding courses overall and an opportunity to comment on how successful they considered their learning experience. However, being a voluntary reporting system with an approximate of 40-50% response rate, these surveys are often skewed by one or two disgruntled students who use the survey to vent, while good students simply go on holiday. Both the reputations of the tutor and the course are hinged on these surveys. Administration uses this data to calibrate teaching funds and promotions where due. A bad run in a feedback survey can instantly damage a successful employment trajectory within an institution. Subject coordinators take into account tutors' ratings, often as concrete

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evidence of their value. This is problematic given the reasons just cited.

Students appreciate toughness – this is clear in feedback surveys and comments made during studio. The cost of tertiary education means that students expect value for money in terms of a rigorous and well-delivered education. It seems at times tutors must push students to breaking point and then congratulate them on surviving the course, rather than congratulate them on good learning and independent thinking. As courses become more ambitious, there is less time for careful, slow thinking which is critical for the development of a young architect's skill set.

Conclusion

This essay documents first-hand experience of teaching into three first year architectural design courses as a sessional academic in Sydney, Australia. It asks how differing pedagogical frameworks affect and control the work of the casual tutor in the studio. This is important, because up until now, the voice of the casual academic has been largely absent in dialogues about teaching and learning issues in architectural studios (based on a survey of research in architectural studio based pedagogy in the last 10 years). Only recently has the status of sessional academics come into question, mostly regarding labour issues, but also to do with the future of tertiary institutions and assurance of quality in education.

The ability to compare experiences of teaching the same year level at three locations within the same city is indeed a rare possibility but one that needs to be valued for the comparison in itself, rather than as a ranking mechanism. The intention of this essay was never to judge which university provides a better educational experience for the tutor, nor for the students. Rather than a comparison that sets up the schools' courses against each other, it is hoped that agendas and curricula discussed here can be appreciated for their drives to achieve very different outcomes.

The differences in each school of architecture are not always apparent outside academies and assumptions and baseless hearsay of what each school is like provides little in terms of a productive discussion for prospective students.

This essay explains course curriculum and outcomes of three architecture schools within the city of Sydney. It acknowledges that each school has its reputation at stake in a discussion that compares it to its closest rivals. This essay proposes that the casual tutor plays a part in reinforcing the differences between schools, while shape shifting between curricula and working to service very different cohorts of students in each school. This essay starts to investigate how the casual tutor can bring the influence between schools into the studio settings without being deemed a traitor.

Finally, rather than paint a picture of the life of a tutor as one of chaos, uncertainty and unappreciated labour, this paper is call out for tutors to take on the outlines and own the agendas, because their humanity, their practice knowledge, their intellectual experience and teaching skills are indispensable tools in the (mad) world of the architecture studio.

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⁷ The online course introduction states:

"Your personal and professional interests in architecture are matched by our staff's discipline-leading research exposing you to contemporary issues throughout your degree. Exciting opportunities are available for you to expand your studio experience, participate in design and build projects and leverage the expertise of our world-class researchers."

http://sydney.edu.au/architecture/programs_of_study/undergraduate/Design_in_Arch/index.shtml [accessed 25 November 2015].

⁸ Webpage for International Students states: "We attract high-achieving students for our links to esteemed university networks and industry partners, our pioneering research and our global reputation as one of the best universities for international students."

 $<\!\!\!\text{http://www.international.unsw.edu.au/study/world-class-reputation/}\!\!>$

[accessed 25 November 2015].

9 The online course introduction states: Join many of our sought after graduates who find work in leading practices and are valued for the range and depth of their skill and knowledge... In addition to obtaining cutting edge computational skills, you will also develop timeless craftsmanship giving you a distinct advantage regarding your career in architecture.

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¹⁷ Allen, Stan, Agrest, Diana, 'Mapping the Unmappable on Notation', *Practice: Architecture, Technique and Representation*, New York: Routledge, 2000, pp.31-45.

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