

# *Architect-as-builder*

## *A case study in non-traditional practice models*

Neph Wake and Clinton Cole  
CplusC Architectural Workshop  
Sydney, Australia

**Abstract**— *The traditional tripartite architect-builder-client relationship in residential construction is so prevalent and embedded within architectural registration that alternatives are very rarely considered. A case study of an architect-as-builder is presented. The benefits for architects both financially and architecturally of this innovative business model are outlined. It is suggested that projects where the tripartite relationship is disrupted (either by the architect-as-builder or by architect-as-client) are disproportionately represented in architectural awards and iconic dwellings in Australia. The regulatory risks to this unconventional business model are touched upon. Finally, the challenges this model faces from regulatory agencies and the equity and educational implications of widespread adoption of this model are explored.*

**I. Keywords**—*architect as builder; innovation; business; regulatory risk, architecture.*

### I. INTRODUCTION

The traditional tripartite architect-builder-client relationship in residential construction is so prevalent and embedded within architectural registration that alternatives are very rarely considered. A case study of an architect-as-builder firm is presented. The benefits for architects both financially and architecturally of this innovative business model are outlined. It is suggested that projects where the tripartite relationship is disrupted (either by the architect-as-builder or by architect-as-client) are disproportionately represented in architectural awards and iconic dwellings in Australia. The regulatory risks to this unconventional business model are touched upon. Finally, the challenges this model faces from regulatory agencies and the equity and educational implications of widespread adoption of this model are explored.

### II. CASE STUDY – CPLUSC ARCHITECTURAL WORKSHOP

The authors' home company is a privately held company based in Sydney, NSW. The firm offers both architectural and construction services, in a model known internationally as "architect led design-build", but referred to within this paper as "architect-as-builder". As a registered architectural firm and a licensed builder, the firm employs a number of registered architects, architectural graduates and experienced tradespersons. At present the Nominated Architect and the Nominated Qualified Supervisor are a single individual (sole Director Clinton Cole), who holds qualifications in both fields. The firm holds a Home Builder's Compensation Fund Certificate of Eligibility (formerly known as Home Warranty

Insurance Eligibility) for up to \$10 million in open work, a status held by less than 3 % of all licensed builders in NSW.

The firm primarily works on single, high end residential dwellings in the Sydney area, undertaking a combination of new builds and alterations and additions work. The firm's projects have won awards from both architectural and building industry bodies.

As a single entity responsible for both design and construction, the firm uses 5D Building Information Modelling (BIM) extensively. The visualisation offered by BIM programs are regarded as secondary to the cost and scheduling benefits offered by the software. We believe that our relatively early and enthusiastic adoption of BIM for a practice of our size is a direct consequence of our business model. One of the key benefits of 5D BIM is the early detection of construction clashes which can reduce on site delays as well as significantly improved cost projections. Architect-builders directly benefit from the cost savings identified during design.

Conceptually, the architect-as-builder model is suitable for a range of firm sizes - arguably some large firms such as LendLease already use a variation of this model on commercial scale work. Within NSW, the Home Warranty Insurance Eligibility will have an impact on the growth rates of firms adopting this model within the residential sector.

### III. BENEFITS

Within architecture, success is frequently framed in terms of peer recognition or awards. Financial stability and commercial success are mischaracterized as a consequence of 'doing good work,' rather than a separate, independent goal. We assert that the architect-as-builder model offers great scope for success in financial terms.

The benefits that the architect-as-builder business model offers include improved cash flow and increased research and development (R&D) opportunities.

#### A. Financial Benefits

Conventional residential architectural practices are known for long hours and unpaid overtime, meaning staff effectively subsidise architectural projects. In contrast, well run and mature construction businesses are cash-flow positive, and there is a strong industry norm of paid overtime. Given the value of architectural services are significantly smaller than construction values, the architect-as-builder model has positive implications

for the cashflow and staff remuneration for small firms, while delivering comparable or superior architectural outcomes to conventional firms.

As an added benefit, architectural services can be used to identify delinquent clients before construction begins, allowing for construction contract risk mitigation strategies to be created on a client specific basis.

In addition to the day to day improved cashflow, research and development tax incentives typically require that firms show a degree of risk and financial investment and liability – ‘skin in the game’ in colloquial language. It is much easier to demonstrate this evidence as an architect-builder for unconventional details and concepts. This enables the architect to take more cost effective design risks than would otherwise be possible, as the requirement to find a builder willing to tender as on the basis of unconventional detailing for a cost effective price is removed.

### B. Architectural Benefits

In addition to the financial benefits, the architect-as-builder model offers a range of benefits at both an individual project level and at strategic practice level.

On an individual practice level, the architect-as-builder model gives architectural project managers a comparatively greater degree of quality control than a conventional architect is able to offer. As both the architect and builder, our architectural staff are contractually able to engage and negotiate directly with suppliers and sub-contractors, increasing the ability to produce cost effective, high quality projects while increasing their knowledge base by learning directly from these relationships in the process.

Project delivery is necessarily more flexible than in a tri-partite relationship. Conventional contracting relationships are established with a ‘win-lose’ mentality with respect to the builder’s financial interests and the architect’s project vision. The architect-as-builder model enables architectural decisions to be prioritised and design integrity maintained throughout the projects design and construction.

The authors believe the benefits of disrupting the tri-partite relationship between architect, builder and client are self-evident, and that the architect-as-builder model is the most accessible of the options for disrupting this relationship. The disproportionate number of award winning projects in which the architect is either client or builder supports this conjecture. A small sample of well-known projects built under unconventional contractual arrangements are presented below.

Project	Roles and Awards		
	Architect	Client or Builder	Award
Tír na nÓg	Drew Heath	Client and Builder	2013 Wilkinson Award
The Barn	Alex Nielson and Liz Walsh, Workbyliza ndalex	Client, some works by architect. [1]	2015 National Architecture Awards: Nicholas Murcutt Award for Small Project Architecture
Courtyard House	Aileen Sage	Client, architect’s husband’s	Shortlisted for 2015 Wilkinson award. Winner, 2015 Dulux

Project	Roles and Awards		
	Architect	Client or Builder	Award
		firm built the project [2]	Colour Award, single residential interior.
Planchonella House	Jesse Bennett	Client and builder	2015 House of the year, Houses Awards. Robin Dods Award for Residential Architecture 201
Sawmill House	Archier Studio	Architect’s brother was client, architect and client built	2015 New House under 200m2 Houses Awards
Law Street House	Muir Mendes	Client and builders [3]	
Buhrich’s House	Hugh Buhrich	Client, builder[4]	
Brandling Street Home	Elaine Richardson	Client. Builder Dean Brown Construction [5]	

In addition to the benefits for individual projects, the architect-as-builder business model generates recursive knowledge. Access to in house tradespersons allows for direct and frank feedback to be given to project architects who are not personally skilled in building arts from an early stage without financial penalty. Details which are expensive or inefficient to build can be phased out during the design process or optimized without compromising architectural outcomes. This thorough understanding of conventional building techniques enables the practice to use ‘tried and tested’ construction methods in innovative and ways.

### IV. REGULATORY ENVIRONMENT AND RISKS

The regulatory risks and compliance challenges for the architect-as-builder business model are not insubstantial. The most significant regulatory impacts are summarized in this section, although this is not an exhaustive list.

Perhaps the most significant implication of the architect-as-builder business model is the conflict of interest that would arise in which the claiming and approving party are one and the same under a conventional architect administered building contract. While CplusC is able to administer traditional building contracts, where a client wishes to proceed from architectural services to construction services with CplusC using a cost plus contract, a third party quantity surveyor may be engaged.

The cost-plus contract also allows time, cost, quality and scope to be monitored and modified during construction to accommodate client variations with reduced budget impacts compared to traditional lump sum procurement. The cost-plus approach also enables compressed construction timelines to be delivered on some projects, as construction is able to begin prior to documentation being finalised. We are aware that some jurisdictions have limited the use of cost plus contracts for residential work. [6] The possibility of an introduction of such a restriction in NSW represents a significant regulatory risk to the architect-as-builder business model, and would be strongly resisted.

Employment matters are also affected by the business model. Many regulations and statutory bodies assume a single service entity and are not structured to accommodate variations to this model. This has required CplusC to pioneer relationships with government regulators to meet our statutory obligations.

Despite holding both contract works and professional indemnity (PI) insurance, the company has experienced instances in which claims for defective work have been denied as the respective insurer has attributed the fault to the other half of the business. Despite the limited protection PI insurance has offered the business, the firm has been forced to maintain it as a condition of architectural registration.

The Home Building Act places an obligation on the Builder to rectify defective works for 6 years after Practical Completion. In our opinion, this requirement provides a strong financial incentive for architect-builders to ensure both design and construction are in fact sound in addition to the ordinary requirements of professional competence. In comparison, the obligations of a traditional architect with respect to defects arguably ends at handover, with little or no obligation on the architect to seek information regarding the post-occupancy outcomes under the Architect's Act or its Code of Conduct.

The regulatory and insurance systems of NSW are primarily geared towards volume builders and do not cope well with higher end builders or single entity architect-builders in the residential sector. For instance, as the benefits of Home Building Compensation Fund insurance are capped, this mandatory insurance provides very limited protection for high end architectural projects, in which the value of the work may exceed the benefit cap by a factor of 10 or more. HBCF open work limits are also geared towards builders which operate on relatively short duration builds. Recent changes by the HBCF to move from a rolling turnover calculation to an annual turnover calculation has severely penalised builders that take on projects which have building programs longer than 12 months.

Registration as both an architect and builder requires ongoing Continuing Professional Development (CPD). There is limited commonality between the CPD systems in NSW at present: giving a seminar presentation will count for architectural CPD, but will not necessarily count for builders CPD (although attendance at the same event would in some circumstances)[7]. It is of interest to note that holding a builders license with HBCF eligibility that only a few hundred builders in NSW have access to is of no validity to architectural CPD i.e. holding a NSW builders license offers no architectural CPD points whatsoever.

## V. IMPLICATIONS OF WIDESPREAD ADOPTION

### A. *Equity and Diversity*

The gender diversity of registered architects in Australia has been well explored in recent years. [8] However, the gender diversity of registered builders in NSW is not currently clearly reported. Nevertheless, given that the construction industry as a whole is understood to comprise less than 15% women [9], it is evident that any model which incorporates both registered architects and licensed builders (either as a dual licensed individual or as two separate individuals) is likely to result in an

increase in male dominated firms. While the model has been highly successful and attractive to both male and female staff, the widespread adoption of this model may have negative consequences for gender diversity in the architectural profession in the short term.

### B. *Educational impacts*

Conventional architectural education may well equip students for immediate employment in conventional architectural firms. However, in our experience, it does not equip graduates to document or administer construction phases of architectural projects. In an architect-as-builder business model, these roles may form a substantially larger proportion of daily work than a conventional architectural firm.

'Fresh' architectural graduates are frequently very at home in virtual models and computer based manufacturing techniques such as CNC routing, 3D printing and laser cutting, often at the cost of detailed understanding of conventional construction techniques. In our experience, recent graduates are often intrigued by the presentation and visualisation opportunities offered by virtual models and digital manufacturing but lack 'on tool' experience with a perception of the future of construction that verges on the delusional. For instance, graduates may be equipped with a thorough understanding of digital cut path kerfs, but fail to understand clearances required for the safe and practical operations of handheld power tools. Students, the wider industry and the public do not benefit when graduates have a warped understanding of the realities and priorities of construction.

In our experience of real world construction, architects' digital manufacturing skills are superfluous to most residential projects. The skills to prepare shop drawings for use by digital fabricators are largely irrelevant as most dedicated fabricators and tool operators will continue to prepare their own shop drawings for construction for software to machining compatibility and liability reasons. In addition to this, the proportion of work which is available for digital fabrication techniques is nearly always minor in residential work. As an example, in a recent \$3 million project completed by the firm, patterned concrete formwork was proposed for an off form concrete wall. The cost of this to be CNC routed was quoted at \$10 000 – a tiny fraction of the overall build cost. The quote was more than twice the rate of conventional formwork and more expensive than preparing the patterned formwork using traditional carpentry methods on site. As a result, this aspect of the job did not proceed.

The authors speculate that graduate's enthusiasm for digital fabrication is a direct consequence of the educational options available to students. Digital fabrication workshops and electives appear to be widely available in many universities as part of a digital fabrication 'marketing arms race'. In an informal survey of practice staff, the opportunities to learn one to one scale conventional building skills at most universities were limited to international studios or one-day skill sessions offered collaboratively through TAFE. There was one notable exception: three of the seven office based staff (including one author) are graduates of the University of Tasmania architecture

school, which is well known for its learning by making program which incorporates digital and physical construction. [10]

The authors suspect that the reason for the emphasis on digital making is partially financial: presumably investments in manufacturing machinery reduce over time on a 'per user' basis, whereas the cost, liability and safety concerns that practical subjects require represent ongoing costs which scale directly with the number of students involved. As a secondary issue, it is possible that universities have lost the skills required to teach construction and architecture in a meaningful manner.

To address the gaps identified, we suggest that architectural educational teaching should increase the emphasis placed on mastering or understanding conventional construction techniques.

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