

# ARCHITECTURAL PRESENTATION FOR PRECEDENT-BASED LEARNING

*Identifying opportunities and implications*

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**Abstract.** This paper primarily deals with architectural information presentation intended to facilitate an understanding of an existing architectural work.

The paper highlights issues of concern through an analysis of current architectural publications and identifies opportunities that require addressing. It also demonstrates visualization options through an illustrative digital prototype of The Arthur and Yvonne Boyd Education Centre, a building by Glenn Murcutt, Wendy Lewin and Reg Lark located in New South Wales, Australia, outlining the concept or approach of this prototype, and briefly reporting on a general assessment of its use.

The outcomes refresh the perspective of current publications of notable buildings and question the implications that may result with the improvement of architectural information presentation. Could we possibly be missing opportunities afforded by the available technologies more than we realise? Could better integration of media help improve the quality of precedent-based learning? What is at stake and what should we be prepared for?

## 1. Introduction

The success of publications of existing architectural works is usually measured by their popularity. However, these publications' performance in their contribution to architectural learning and practice has not been considered sufficiently while their substance has not been closely examined.

Perhaps contributing to this situation, the academic circle does not seem to recognise their presence, their impacts or how their forms might be improved. Consider for example, *Educating Architects* (Pearce and Toy 1995) and *Changing Architectural Education*, two compilations of articles with rich outlines of how architectural design education should be and has been carried out. These compilations appear to shy away from mentioning architectural publications as one of the sources of knowledge even though the significance of precedent-based learning is acknowledged in a few instances. This seemingly innocent oversight is also echoed by Lindsay Johnston who emphasises much discussion on the role of classroom teachings and tutorials feeding into design studio sessions (Johnston 1995). The argument focuses heavily on Schön's approval for studio-based approach in design teaching. It is understandable, therefore, that with so much power bestowed to the design teaching profession, assessment is only done for such 'responsible' party to the extent that much negative criticisms have been placed mostly on this single source whenever weaknesses in the profession and students are identified. Normally, under scrutiny are architectural academia and also under attack as highlighted in *Revisiting the Discipline of Architecture* (Fisher 2001) are the architectural profession for not partaking enough in the education sector. Meanwhile, architectural publications escape 'un-credited'.

"Masters of architecture, who in the past, served in the design studios of notable schools have been replaced by academics who do not and cannot sustain exceptional design practices. Thus, the student's learning in the design studio is based to a large extent on the understanding of important historical precedents or designs generated by those outside of academia." (Akin et al. 1996, p.123)

In a design discipline like architecture, it would be unrealistic to limit students' exposure to a single source – even if that source was the master him/her-self. It is clear that we should also shift our focus on other sources generated outside of academia. Understandably, there have been numerous criticism about representations of built forms and hence, their presentations. They have been accused of having a negative effect on our understanding of the subjects: 'They are static where it is dynamic, contained where it is open, two-dimensional where it is three-dimensional' (Venturi, Scott Brown, and Izenour 1977, p.15). Nevertheless, to the public in general and many students in particular, publications of architectural representations are not only serving as facilitators for the understanding of existing structures; they have become 'substitutes' for the objects they claim to explain. With a stronger reliance on secondary resources for design knowledge and the realisation of their crucial role, more attention has to be paid to their quality and performance in delivering architectural information.

In their paper, Akin et al. observe that the use of computers has not improved design quality as much as it has succeeded in augmenting the quality of architectural presentation and visualisation. Could better digital presentations of architectural precedents be instrumental towards the improvement of design quality? Has computer presentation been imitating too much of their print predecessors in its structure and delivery thus largely inheriting similar strengths and hindrances attributed to the process of understanding an architectural design and its quality? Could architectural presentations be done differently to capitalise on digital opportunities, shifting powers from the more traditional approaches?

## 2. Current Situation

Presently, architectural monographs (of Alvar Aalto, Frank Lloyd Wright, etc) mostly appear to be author-driven. They are often written with unrealistic expectations that readers not only should have prior knowledge about the subject matter but also a specialist disciplinary background in order to fully understand the author's message. In the case of classroom/design studio teaching, Donald A. Schön states, 'Some studio masters feel a need to protect their special artistry. Fearing that students may misunderstand, misuse, or misappropriate it, these instructors tend, sometimes unconsciously, under the guise of teaching, to withhold what they know.... Under the guise of learning, [students] actually protect themselves against learning anything new' (Schön 1987, p.119). It is not difficult to see the parallel between such classroom mentoring and the current situation related to architectural publications. The authors of architectural publications often appear to protect their 'special' knowledge by shifting the responsibility of contents (mis-)interpretations to their audiences.

### 2.1. CRITIQUE 1

As illustrations, the following section highlights two typical examples of printed publications.

#### 2.1.1 *Global Architecture*

The *Global Architecture* monograph series of world-renowned architecture is an illustration of a common printed publication presentation approach. How this publication series imparts comprehension to its readers is an important issue that we should analyse here.

In its 14th volume, for instance, relatively detailed textual explanations about the roof and construction methods of Mies' New National Gallery in Berlin are presented without clear, definitive reference to the visual

supporting material. These visual supports are included in middle segment of the monograph (Mies van der Rohe, Futagawa, and Glaeser 1972, pp.2-7). By this segmentation, the texts appear to be detached from the visual elements that themselves could further be seen to describe the building in totally different aspects.

This pattern of explaining a building with clearly demarcated sections of texts, photographs and drawings, is repeated in other monographs of this series. Furthermore, particularly in the Crown Hall/National Gallery edition, except for the titles of drawings, there is no textual explanation on the plans, sections and elevations. While these drawings can be appreciated in such abstract form, as an educational material, they do not appear to be informative or presented with adequate explanation.

Overall, although it provides much freedom for readers to study in detail, this lack of information link to the visuals could also easily lead to misinterpretation and misunderstanding of the subject.

For example: "...Independent of the rigid frames, the floor structure consists of a reinforced concrete slab resting on a 20 by 30 foot ... grid of concrete columns. This separate system, which receive all the forces that act on the main floor has been criticised as inconsistent with the building's exterior appearance, which gives the impression that the main floor, as well as the roof, is suspended from the rigid frames. Nevertheless, one can interpret the internal floor structure as a rudimentary podium that permitted Mies to elevate, and thus emphasize, the main level. In addition, it enabled him to accentuate the entrances, the main access receiving a travertine-clad platform and two sets of steps" (ibid, p.3).

With texts like the above excerpt coupled with the Japanese translations, readers are left to explore those components and their locations in its 38 pages of photographs and drawings of two different buildings of Mies' showcased in this volume. It seems unlikely that a reader without sound architectural background or prior knowledge of the building would be able to relate the elements in the texts to their visual counterparts in order to effectively share the author's impressions.

There is no clear reason why most publications seem to be author-centered when they are meant primarily to educate readers rather than to assert the author's comprehension about the subject matter. Issues, such as cultural and disciplinary differences would indeed affect an audience understanding.

### *2.1.2 The Phaidon Atlas of Contemporary World Architecture*

A more concise example, the Phaidon Atlas of Contemporary World Architecture in its page that showcases The Arthur and Yvonne Boyd Education Centre, includes four photographs - all of which are external

views – a hardly legible section, plans and a sketch by the architects showing the framing of views seen from the entrance portico. The text seeks to explain the composition of the building. An extract of the Atlas reports:

“...The communal gathering spaces – hall, dining area and verandah – are grand, bold gestures united under a soaring roof plane. The smaller-scale dormitory areas that extend southward along the ridge are pod-like units articulated by concrete blades that screen the sun to the east and west, focusing the dormitories’ outlook on to the river below...” (Phaidon-Press 2004, p.39).

As they are presented, for someone who has prior knowledge of the building, the visual supports clearly do not reflect the written component.

## 2.2. CRITIQUE 2

Apart from the printed versions of architectural publications, there have been a few digital CD-ROM publications of architectural works produced as well. This section examines two such works.

### 2.2.1. *Alvar Aalto houses 2.0 - paradises for ordinary people.*

Media used: Digital Texts, Photographs, Drawings/sketches.

The clean execution of Aalto’s architecture is echoed in the layout of the screen. Graphically, the visual layout is simple yet appealingly conforming to the subjects it portrays. What each of the drawings represents is, however, too vague for viewers to clearly comprehend. Adapting the look of an open book, the initial presentation on the computer screen is divided vertically in half with each segment presenting separate projects of Aalto’s. These images are hyperlinked to larger graphics without additional substantive content or facilitation for in-depth investigations.

The main merits in its information presentation lie in the freedom and speed it provides for the audience to explore the materials on their own. It outlines a brief background of each project, serving as an introductory overview of Aalto’s works. For the materials to be useful in precedent-based learning, however, they would need to provide much more pertinent detailed, legible information and provide the facility for further explorations.

### 2.2.2. *Zaha Hadid Works. Physical Description.*

Media used: Digital Texts, Photographs, Video interviews, Drawings/sketches/painting, Quicktime VR, Animations.

Information which seems lacking in Alvar Aalto houses 2.0 has been addressed to an extent in the CD-ROM of Zaha Hadid Works. Here, a substantial collection of information pertaining to one single project is available. The use of various media would indeed better facilitate comprehension of the project. In the Contemporary Arts Centre project

shown in the figures below, it provides a general background of the work by including interviews of the designer and the project architect. Clearly, there is still a further opportunity to link visuals and provide a better platform for the study of this building since the media as they are presented now appear just as fragmented, serving only as a collection of well-arranged data.

Similar to Aalto CD-ROM, judging from the screen presentation derived from the Hadid CD-ROM section explaining the Contemporary Arts Centre in Cincinnati, it seems apparent that any of the pages could have been a replication from a print media. What sets it apart is the hyperlink feature and the inclusion of audio as well as video contents.

The digital compilations of Alvar Aalto (Aalto et al. 2001) and Zaha Hadid's (Hadid 2003) works are typical examples of electronic archival. While there are disparate standards of content rigor as found in print publications, by compartmentalizing media, giving them little freedom to interact, they have also taken a similar approach and structure of presentation to comparable works in prints. Again, problems with texts and visual components clearly exist and are repeated in these digital architectural publications.

### 2.3. CRITIQUE 3

In 1988, Geoffrey Baker had incorporated digital animations in his video documentary of Richard Meier's The Atheneum (1972) (Baker 1988). Despite the successful, effective execution of video, digital model and verbal narratives, as also concurred in (Brooks 1988), this communication technique has not found its way into popular mainstream educational materials. The mono-directional, time-restricted, linear presentation in a video format like this limits viewers from exploring the material in the way that printed materials would allow. It leaves little room for audience to assess the subject by themselves and construct their own opinions and knowledge about any particular aspect of the building. In terms of the nature of content, it provides an in-depth interpretive analysis of the building – something that is lacking in Aalto or Hadid's CD-ROM's. But the authoritative manner that the medium and content seem to exude conveys a sense of finality. Thus, although compelling as instructional material, in this aspect, it is limited as an educational tool.

In 2005, Uddin used his student's work on the same subject where it concentrated on the computer graphics and animation aspect to facilitate an analytical platform afforded by the electronic media (Uddin 2005). The paper outlines the process and considerations for the production of the material. Despite the promising contention that the digital environment can create 'a new generation' of visualisation for architectural analysis (Uddin 2001), the digital opportunities appeared to have been overlooked.

#### 2.4. CRITIQUE 4

As it is for other kinds of information, the Internet is fast becoming a relied-upon architectural information source. There are many other websites currently dedicated to the dissemination of information on architectural works. None has yet surpassed Great Buildings Online in terms of collection of works and number of referrals from other sites as well as contributions to the contents. Great Buildings Online holds a large collection of ready-access pictorial and textual materials, with 3D computer models provided in certain cases. They are popular with students seeking supplementary materials in their case or precedent studies. It proudly claims to be an academic resource as suggested by the obvious symbolism of a mortar board depicted on the web pages. Yet the pattern of fragmented media that fail to cohesively explain the subjects is also repeated in this digital form. Again, they also inherit the same problems of their printed cousins in the integration of adopted media.

#### 2.5. CONSIDERATIONS

There are obvious merits to this digital replica in the Internet medium – mainly to readily transition readers from the already familiar print formats while taking advantage of the speed of information retrievals and accesses.

What needs to be highlighted in this section and require urgent addressing, however, is the seemingly rampant use of media compartmentalization – a technique of information presentation that has been carried forward from traditional to digital platform. Scott Johnson stipulates that ‘both internal (mental) and external (physical or digital) representation are ....deeply linked to learning, the ability to use existing knowledge....’ (Johnson 1997, pp.7-8 ). When a publication leaves a considerable gap to be filled by the audience, borrowing McLuhan’s term, it turns the publication into a ‘cold medium’ (McLuhan 1964). In architectural publications for educational purposes, it is imperative that messages are clear and explicit. These ‘messages’ are not the outcomes of isolated media used, but are also the results of their interaction - quality of which affects the message clarity. Compartmentalization of media does little to strengthen this interaction. To a certain extent, Edward Tufte in ‘Envisioning Information’ and ‘Visual Explanation’ has addressed presentation limitations in print media, even though they are not specific to architectural discipline.

Findings by W. Howard Levie and Richard Lentz confirm the usefulness of graphics when used with texts in a complementary way (Levie and Lentz 1982). The earlier presented examples illustrate the lack of such complementary relationship between the media used. In all cases, they show

the often textual polysemous signifiers to be open to interpretations in varying ways depending on the reader's cultural conditioning.

## 2.6. AUDIENCE PERCEPTION

Unfortunately, those examples outlined in the previous section are not exceptions to the rule. Despite the clear weaknesses in current publications of architectural works for precedent learning as discussed above, the popularity of such secondary sources of information seems to increase. This is largely attributed to the alternatives that seem to be limited.

While more works are being published in the digital realm, often the author of an architectural content and the digital presentation author are two separate entities. The lack of knowledge in each other's field is thus communicated in the presentation. This, in turn, affects the understanding level of an audience.

In 2006, a world-wide online survey was conducted to assess the effectiveness of current publication from the perspective of users. (Kwee, Radford, and Bruton 2006a) In summary, the findings have shown that:

- There is an audience demand for architectural publications to use various media in explaining aspects of architecture. With the realisation what digital platform could offer, the limitations fixed by the traditional media may and should now be challenged.
- The overall qualities of architectural publications need improvement. They include the accessibility, clarity, appeal, coherence, organisation, completeness and immersivity of information,
- The level of presence of media could affect their performance in explaining architecture. When the presence of a particular medium is low, the perceived understanding of content attributed to that medium is also low.
- Although books are still preferred as an information source at this time, the Internet is the most popular. This suggests that preference does not automatically translate to popularity. Accessibility appears to play an important role in the acceptance and use of an architectural information source.

## 2. A Digital Approach

In light of the above situation and findings, the current challenge is to investigate ways of integrating media in the manner that would better explain an architectural work. As earlier highlighted, a complementary relationship between selected media within a presentation has to be emphasized in order to facilitate better learning. This indeed requires an in-



depth understanding by a publication author of not only the architectural subject he/she is trying to present, but also of the types of information in order to identify suitable medium or media that would best deliver the information. Considering that architecture is largely appreciated visually, visual representations should naturally be the predominant media of choice. However, certain information types require verbal or textual delivery method as well. Much of this has been discussed in more details in (Kwee, Radford, and Bruton 2006b).

The following sections highlight the approach towards a working prototype of a multi-layered architectural presentation. It adopts a project by Glenn Murcutt, Wendy Lewin and Reg Lark, The Arthur and Yvonne Boyd Education Centre as a case study. A significant part of this research project has been the collection and analysis of data for the building which will not be discussed in this paper. However, it is important to explain that although substantial data have been gathered, only a small portion of information is used in this illustrative prototype. This prototype serves to provide a possible architectural publication approach that could be considered and should not be treated absolute.

## 2.6. INFORMATION LAYERING

Groupings of information of similar nature become essential in the organization of contents. This paper proposes the use of information layering within the groups to facilitate closer integration between media that explain particular aspects of the building. Information layering could be carried out by simple, cross-media (Figure 1) or complex method (Figure 2) with each medium supporting or illustrating the message by the other medium or media. The structure could indeed render more elaborate than that illustrated below.

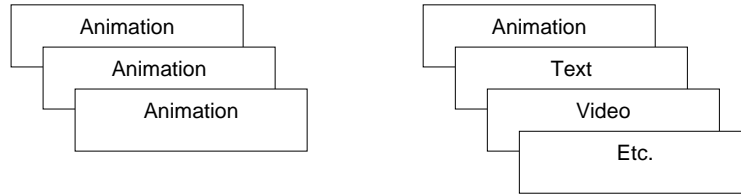


Figure 1. Examples of Simple and Cross Media Layering

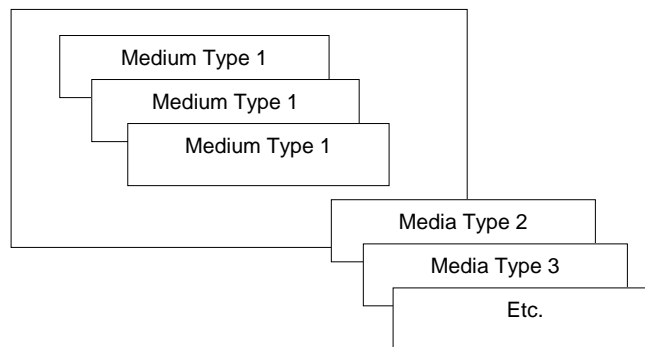


Figure 2. An Example of Complex Layering

## 2.7 AN ILLUSTRATIVE PROTOTYPE

The illustrative prototype has been conceived through the process of building research, selection of information, analysis of public perception, adopting the above approach and investigations of myriad techniques found outside and within the architecture discipline.

A collection of interactive interface allows seamless transitions from one medium to another (Figure 3) while maintaining them within the context of the overall presentation and sub-discussions (see Figure 5 for component and information group relationship).



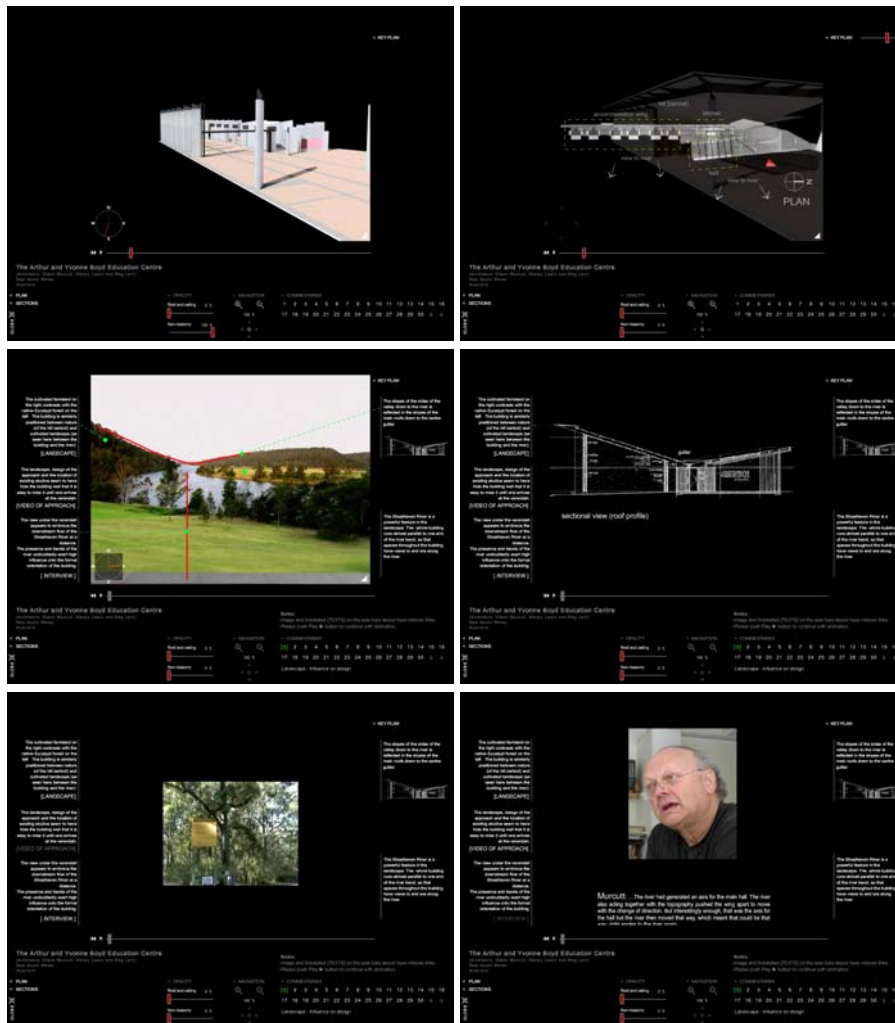


Figure 3. Group 1 – Part Components (sequence: left to right, top to bottom)- layers of animations introduce different aspects of the building and provide a base to branch to other media – ones that would further strengthen or clarify the discussion.

By applying dynamic layering of working drawing with adjustable transparency over planar and sectional model (Figure 4), the two-dimensional coded architectural symbolisms may easily relate to their corresponding three-dimensional illustrations. This mode of interactive overlay provides richer information to each medium. Apart from the ability to understand the component, their sizes, finishing and materials within each of the rooms and spaces through the architectural labels of the working

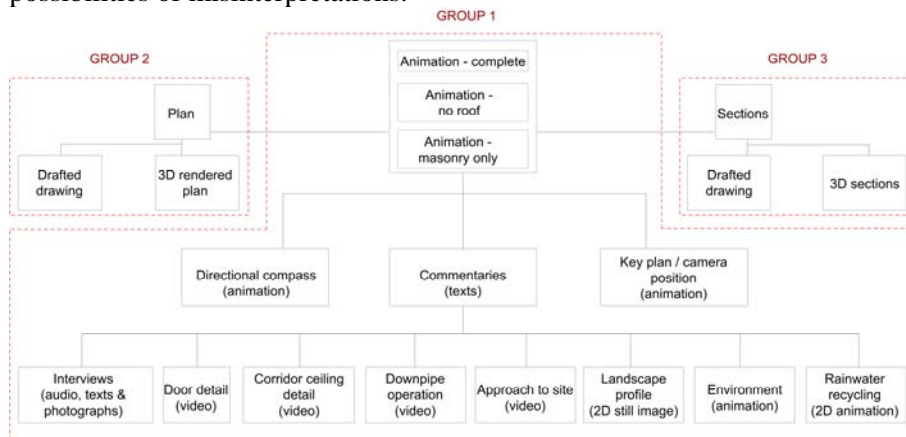
drawing, reciprocally, the technique adds visual qualities to the more abstract descriptions of the drawings.

Similar to some CAD applications, a key plan is added at the bottom of the screen to situate the viewed portion within the overall scheme as another added layer.



Figure 4. Group 2 and 3 Layering Sample (Plan and Section)

As an overview, the illustrative prototype comprises of three groups – each with a set of connected layers (Figure 5). The groups are organised in such a manner that by understanding the materials depicted in the first group, a user is grounded with a good understanding of the building to explore the subsequent groups with ease. Similar to many printed publications, it consists of an information-rich chapter (or group, in this case) and sections that facilitate further in-depth exploration. These two distinct components are imperative in facilitating not only the dissemination but also self-analysis and study necessary for the formation of new knowledge. Through this type of digital learning, the information presented by both components are highly integrated and visually explicit reducing possibilities of misinterpretations.



*Figure 5. Hierarchy and Layering in the Illustrative Prototype*

### 2.7.1 ASSESSMENT

The situation has been found challenging to provide a just assessment of the above prototype. Firstly, there is still much work that needs to be done before a fair assessment could be implemented. Secondly, this prototype has been intended only as a conceptual springboard; as such, one could probably assess it only within that merit at this time. Thirdly, more publications of architectural works that capitalise on the opportunities afforded by digital platform beyond its hyperlinking capability should exist and be used to benchmark the quality of the above illustrative prototype.

Therefore, only small focus group assessments have been conducted to gauge its use in the academic circle, and this paper recognises that the overall responses are subject to question based on several variables stemming from the aforementioned issues. To summarise and highlight the important points, most of the total 12 participants have indicated that they have understood the building well after studying the digital material and will use them if more publications for other notable buildings were made available in this mode.

### 2.8 DISCUSSIONS

Returning to Akin's observation that computer has only succeeded in augmenting architectural presentation, this paper adds that while higher quality images used in an architectural presentation may have been produced more easily and quickly, their presentation methods essentially have not been transformed with much significance in the past decades. Thus, its presentation has not undergone a revealing change. This, indirectly suggests that the level of absorption of architectural information through the publications of significant architectural works have been largely stagnant.

One significant avenue towards augmenting design quality is perhaps by increasing the degree of understandability of existing notable, quality architecture in the first place through good quality publications. Acknowledging architectural excellence by presenting it justly in content depth and with clarity for a wider audience to understand carries several significant domino effects on the discipline in general.

However, having traversed through the difficulties and challenges in creating an illustrative prototype of The Arthur and Yvonne Boyd Education Centre, it is understandable why writers or authors have not been quick to embrace the opportunities provided in digital platform. Their economic sensibility might not have permitted the adoption. It is due to the lack of easy-to-use instruments in authoring this kind of publication and the

associated learning curves that the process and time to publish publications of this nature can be a lengthy one at this point in time.

Responsibility must now shift to CAD manufacturers and eventually architects themselves to make the information about their buildings accessible. CAD manufacturers have been largely active in investigating ways to present designs which will help designers show their products to customers. Many of the technologies available now could well be extended and applied to foster a larger role that will link designers and their designs with design students in their educational pursuits. This opportunity is currently still untapped. Could an architect, for example, insert a simple video/audio explaining the rationale for using a certain material for the façade cladding of his building and attach this to his digital drawing which is readily layered with a three-dimensional representation and animation of it? As such, visual architectural documentation would take on a new role not only as a construction document and graphical presentation in isolation from other related information as it is now; it could be integrated with other media and be forwarded eventually to students to assist them in understanding the process and thoughts poured into that specific design decision. To be fair, some minor improvements of new CAD software are suggesting this role shift is positively nudging forward.

Consequently, the delivery of architectural writings and critiques will have to be redefined within this new paradigm too. Learning exactly how an experienced architect design by studying the appropriate visuals and explanations as well as understanding a third party's views may raise a student's analytical skills and awareness of design principles. It would certainly provide stronger basis for their 'reflection in action' in their own design process and ultimately assist them in forming their unique approaches. As a result too, this deeper understanding may indirectly affect the quality of students' design projects that would translate into their future practice. For the wider public, gaining this understanding may lead to higher demand for quality in architectural design. We can only imagine the implications of such heightened awareness on the built forms of the future.

### **Acknowledgements**

The Many thanks to

- the Bundanon Trust for access to The Arthur and Yvonne Boyd Centre and the provision of accommodation to facilitate extensive onsite study, recording and measurements.
- the Mitchell Library and the architects Glenn Murcutt, Wendy Lewin and Reg Lark for access to the architects' drawings; James Taylor and Associates for access to the engineers' drawings.

- Antony Radford and Dean Bruton for their support, assistance in the collection of information and guidance in the research project.
- Ian Roberts, Veronica Soebarto, Susan Shannon and Geoff Coates who have assisted in the survey implementation and analysis.
- All participants of survey and feedback who have given many valuable insights.
- The University of Adelaide that has funded this research project.

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