The Tectonic Expression: ‘Reading’ the works of Wooi Lok Kuang

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Abstract. In an age of commercialism and consumerism, there has been a notable demise in the employment of a tectonic expression in the making of architecture. This is due in part to a culture of mass production to meet the rising needs of consumers, resulting in a shift in the emphasis of the value of detailing and construction as an architectural expression. Instead, there arose a preoccupation with pastiche ornamentation, reducing the significance and meaning within detailing. Furthermore, construction began to be viewed as a means to achieve spatial effect as an end. However, the need for a tectonic expression in architecture has been highlighted by Western key thinkers such as Kenneth Frampton, Vittorio Gregotti and Marco Frascari, who have stated that tectonic can be employed as a resolution to the degeneration of culture as a result of homogeneity of architecture. This is because tectonic involves the poetic amplification of construction knowledge which stems from culture and craftsmanship, and an appropriate application of tectonic in construction can lead to the construal of meaningful architecture. In Asia (Malaysia), there is limited study on the meaning of craft that stems from the richness of local cultures in relation to tectonics. By adopting a mixed-methodology of case study and interview, this paper studies works of Wooi Lok Kuang, a seminal Malaysian architect published for his folio of timber architecture, namely, Wooi Residence (2004), Ting Residence (2010) and House 9 (2015). It situates Wooi’s design methodology of assembly of ‘joints’ in an Asian/Malaysian context within the larger body of knowledge regarding tectonics as found in the western literature and argues that Wooi’s design methodology that is rich in cultural and contextual influences expounds on Frascari’s framework of ‘joints’, including key factors that are specific to Wooi’s architecture and the Malaysian context.

1. Introduction

In order to meet the demands of growing consumerism, the built environment has progressed towards industrial building technology and mass production, rendering the once eloquent craftsmanship of architecture to homogeneity. The current trend in making buildings amortizable has been achieved through the subconscious reduction of architecture to scenography (Frampton, 1990). The art of making buildings has lost its expressive design content, resulting in the lack of articulation of construction. Tectonics, which is the poetic application of construction, involves a consciousness of meaning within the applied construction technique. This meaning stems from the unique way in which it has been worked...
within a specific culture and context. The return to craftsmanship requires a reemphasis of the application of tectonics as a result of reconciliation between architecture and culture as expressed through construction details in joints. Architecture should be concerned with not only the pragmatic sense of design, but also with the symbolic significance of being situated in a culture-rich context.

A contemporary reflection on architecture posits tectonics, as an anachronistic notion (Garland, 2003). With a growing consumer culture, architecture developed towards industrial building where tectonic expression is replaced with modern technology as a consequence of mass production (Nilsson, 2007). Economic considerations became the emphasis of architecture in order to capitalize on the process of mass production, giving rise to homogeneity and devaluing the poetic articulation of tectonics. Furthermore, the success of Robert Venturi’s decorated shed (Venturi, Brown, & Izenour, 1977), which portrays an application of independent ornamentation to a system of space and structure, prioritizes spatial expression as an end of the production of architecture. Kenneth Frampton’s seminal work *Studies in tectonic culture: the poetics of construction in nineteenth and twentieth century architecture* (1990) summarises this decline in a tectonic expression as being the result of two correlating factors; a) mass production of architecture to meet the demands of consumerism, and b) spatial tendencies as an end in architecture.

With the rise of mass production, the development of technology has streamlined the production of architecture. Gregotti (1996) notes a loss of actual practice, tradition and knowledge of craftsmanship within architecture with the advent of a digital culture. It was not a matter of the elimination of details, but rather the ‘alteration of the hierarchy of detail to whole’, with less emphasis on the value of construction as an architectural expression. Marco Frascari (1984) echoes this notion by pointing out that detailing works that were once the centre of architectural expression, details are now being resolved through drafting technologies. “Real details” were replaced with “virtual” procedures, where details are viewed as production drawings and not as joints or parts of a building. Frampton (1990) summarizes this argument as the reduction of architecture to scenography, or ‘value-free aestheticism’ (Grassi, 1980).

In addition, the abandonment of a tectonic expression is due in part to an emphasis on space in the perception of architecture (Weiner, 1996). Frampton (1995) observed that man’s understanding of space is an integral part of experiencing architecture, and that architecture is always perceived with spatial-temporal emphasis. This observation found roots in the theories of Bruno Zevi (1957) who opined that other arts that contribute to the making of architecture, though important, are always subordinate to the spatial idea. Although space itself does not define architecture, Zevi claims that it embodies the character quality and the essential attributes enclosed by an architectural container. As such, an atectonic approach that underlined artistic and plastic thinking overtook the emphasis of construction in architecture (Garland, 2003). Vittorio Gregotti (1996) cited the rise of this decorative end as the basis for lack of tectonic expression in architecture. Contemporary architecture employs pastiche as a way to replace the meaning in authentic ornamentation. Construction is viewed as merely a means to achieve spatial effect as an end (Srirangam & Ng, 2012).

In response to the demise of a tectonic expression, Frampton propagated the return to tectonics in his seminal essay *Rappel a l’Ordre: The Case for the Tectonic* (1990). This reassertion of a tectonic expression was derived from Giogio Grassi’s (1980) polemic on the realization of ineffectuality of architecture that trailed in the wake of figurative arts such as Neo-plasticism and Cubism as architecture is a systematic craft in itself, involving established
knowledge of construction developed through cultural application and refinement. Frampton defines tectonics, or the ‘poetics of construction’ (1995), as the art of putting together details through an amplification of its construction within the assembly or architecture of which it is a part (1990). Thus, Frampton suggests the employment of tectonics in the joining of elements as a prospect against the degeneration of cultural consciousness in construction.

Marco Frascari (1984) also emphasized this idea of joining of elements in tectonics. Tectonics is the realization of construction knowledge in the form of ‘joints’ and contains intrinsic properties that, with the application of detailing in joining parts together, have the potential to construe and give rise to meaningful architectural articulations. He regards details as significant ‘joints’ in the role they play in constructing and construing meaning as each detail forms a part of a whole, while being wholes in themselves. This paper will further explore this notion of tectonics as ‘jointing’ from Frascari’s view point (1984) by expounding on the definition of ‘joints’ in relation to tectonics. It also highlights a cultural consciousness in the usage of ‘joints’ in the Asian and Malaysian context and draws towards the conclusion that ‘jointing’ can provide a resolution to the production of “meaningful ornamentation wrongly sought after in pastiche”, as the amplification of construction can be a source of construal of meaning as a return to the origins of architecture.

Asia has also seen a surfacing of the global phenomenon of homogeneity in mass production and tendencies toward spatial expression. However, a recent awareness of the demise of a tectonic expression in Asia has caused architects in Asia to take redemptive stances in the execution of architecture that is true to cultural consciousness. For example, the works of Malaysian architect, Wooi Lok Kuang. An overview of the works of Wooi Lok Kuang of Woo Architect reveals a consciousness in the application of construction detailing and materials that stems from a thorough understanding of the climate and the cultural context in which his designs are situated. This paper further explores the design philosophy of Wooi, as well as his works, specifically the Wooi Residence (2004), Ting Residence (2010) and House 9 (2015). These built examples of tectonic expression allude to the entelechy of poetic manifestation of structure within the Malaysian context, displaying material consciousness of an ingrained local building culture that eases the tension between a design intent and it’s mode of communication. It analyses these works through the framework of Frascari’s notion of tectonics as ‘joints’, highlighting the constructing and construing of cultural meaning reflected in the presentation and documentation of Wooi’s design intent: How can the construction of ‘joints’ bring about the construing of meaning through tectonics in the works of Wooi Lok Kuang?

2. Materials and Methods
This paper employs a mixed-methodology in designing the research. Literature review, case studies and interview will be used as a method of research and inquiry. It is ‘an empirical inquiry that investigates a phenomenon or setting’ (Groat & Wang, 2013). The case study will focus on multiple works of Wooi Lok Kuang in order to identify patterns within the design process of Wooi in using tectonic expression to craft meaningful architectural spaces. An analysis of the case study will employ a theoretical framework developed from the review of literature and theoretical writings of various sources. The aim of the case study is to highlight the design thinking behind meaningful constructing and construing of architecture. In addition, Wooi Lok Kuang himself will be interviewed to develop an understanding of his background and his belief system that leads to specific design decisions made.
A review of literature, such as writings, drawings and photographs, will first be carried out to provide a background study on related references pertaining to the notion of tectonics. Citing works from key thinkers such as Kenneth Frampton (1990, 1995), Marco Frascari (1984), Vittorio Gregotti (1996), and Gottfried Semper (1989, 2004) provides valid references that can be grouped into common themes, allowing for the research to develop a theoretical framework of the notion of tectonics as constructing and construing.

Included within this research is an interview of Ar. Wooi Lok Kuang. The purpose of the interview is to establish an understanding of the background of the architect, including his upbringing in Malaysia and his education in Australia as well as the formation of his unique design ideologies. The interview with Wooi reveals a correlation between his background, design ideologies and the design decisions undertaken, particularly in 3 of his selected works, the Wooi Residence (2004), Ting Residence (2010) and House 9 (2015).

These selected works will also be analysed through the theoretical framework of ‘joints’ as the site for constructing and construing of meaning, underlining the design philosophy and methods employed by Wooi in the construal of meaning of each ‘joint’ or part in relation to its whole. The case studies will attempt to reveal the design thinking and methods adopted by Wooi, whether the design intentions are achieved through conscious or unconscious means. This study attempts to position cultural and contextual consciousness in tectonics as a resolution to homogeneity in the built environment as a result of mass production and spatial emphasis.

3. Findings and Discussion
In Wooi Residence, Ting Residence and House 9, Wooi’s careful assembly of ‘joints’ is highly informed by a pre-determined design concept. Each ‘joint’ is then situated to articulate a desired spatial experience or quality that reflects the design concept. There is a refinement in the way details are assembled, reflecting an evolution of Wooi’s design process with every new project.

An analysis of Wooi’s selected works reveals a consistent development in the application of formal and material ‘joints’. The three characteristics that drive his tectonic expression, namely, a) Malay cultural influence, b) construction innovation and c) spatial experience, is a culmination of his prior experiences, primarily his childhood in a Malay kampong.

Malay cultural influences can be seen most richly explored in his earliest design, Wooi Residence (2004), which then led to a recurring usage of these ‘joints’ in his later designs. For instance, the idea of a selang in both Wooi Residence and House 9 provides a formal ‘joint’ between spaces of varying privacy levels. In addition, the anjung is a recurring material ‘joint’ seen in both Wooi Residence and House 9. In both instances, although the material ‘joint’ does not portray an exact replica of detailing, the idea behind the ‘joint’ is inspired by its original usage in the traditional Malay house. There is also one-off application of ‘joints’, the tiang seri in Wooi Residence being one such instance.

In most cases, Wooi’s construction innovations arise as a response to site forces, or topos. In the case of Wooi and Ting Residences, the form of the building is derived from the existing contours on site. Hence, ‘joints’ serve to amplify the curved nature of the site, construing a formal link between internal spaces and the external site. Wooi’s innovations also stem from a design intent such as Wooi’s emphasis on openness in spatial planning to maximize cross ventilation. Material ‘joints’ employed work towards reducing columns and beams within spaces such as the flat slab system in House 9 that is paired with the use of steel structures.
Wooi’s construal of spatial experiences develops throughout the course of his practice. In his earliest work, Wooi Residence, there exists an experimentation of formal and material ‘joints’ to create spatial experiences such as the vaulted, leaf-shaped ceiling of the master bedroom or the timber strip walls of the master bath. However, in his later projects, there exists a refinement in Wooi’s usage of ‘joints’ in narrating a journey through the site from the entrance of the house to the sanctuary within. The spiral staircase of Ting Residence formally links the entrance level and the dwelling spaces above with the interplay of materials. In House 9, a similar narrative of a journey from the entrance into the forecourt and later into the internal street shows a clear sequence of formal ‘joints’ to mediate privacy levels. Wooi’s refinement in a systematic methodology of designing from ‘joints’ has resulted in a unified narrative through the site.

4. Conclusion

The origins of tectonics expounded tectonics as the poiesis, or crafting of architecture using constructional knowledge and skills. In Wooi’s assembly of formal and material ‘joints’, he echoes Frampton’s and Frascari’s school of thought whereby tectonic expression involves technology, or the knowledge of making. For each of his construction innovations, Wooi emphasizes the role of engineers and builders along with their established structural and construction knowledge in the crafting of ‘joints’. In the crafting of the main curved roof of Ting Residence, for instance, this formal ‘joint’ consists of a hierarchy of materials and material ‘joints’ that is assembled to create a curve that reflects the surrounding topos. The result is a tectonic expression that is made possible by a combination of architectural, structural and constructional knowledge and skill in the use of materials and structural systems, a marriage between the technical and the articulatory as opined by Schumacher (2014).

The analysis of Wooi’s selected works reveals a consciousness of the culture and context in which his designs are situate. This consciousness is manifested in a consistent construed meaning or intent within his assembly of ‘joints’. There exists a tangible and intangible aspect to the meanings being construed in Wooi’s usage of ‘joints’. Wooi attempts to incorporate reinterpretations of elements of the traditional Malay vernacular within his designs. His use of Malay cultural nuances as formal ‘joints’ such as the tiang seri as the principal post of Wooi Residence as well as a selang to connect spaces underlines an intentional signification of meaning within his tectonic expression that is enriched by influences found in the Malaysian context.

Wooi’s designs begin at ‘joints’ and junctures, as evidenced by his practice of sketching details and commissioning 1:1 mock-up ‘joints’ before incorporating them within his designs. Like Frascari opined, Wooi also believes that details or ‘joints’ are the most elementary units of architecture that is capable of articulating meaning. His constant experimentation with ‘joints’ stems from cultural and contextual factors. Echoing Frampton’s notion of tectonics, Wooi draws inspiration from both the topos and typos to inform the construction of ‘joints’.

The origin of Wooi’s unique tectonic expression may be traced to the various experiences he underwent. He develops an acute understanding of the Malay culture as well as the Malaysian context. Furthermore, the analysis and synthesis of Wooi’s tectonic expression underlines key factors that enriches his design methodology and serves as a remedy to the demise of a tectonic expression in the Malaysian context.
Wooi begins each design exploration at the ‘joints’, respecting the hierarchy of parts to whole. Each formal and material ‘joint’ draws its inspiration from culture, specifically the Malay culture, as well as context, the topos and typos. Next is the assembly of these ‘joints’ into a unified tectonic expression that is driven by a design concept. In all three of the cases studied, Wooi emphasizes an openness in spatial planning in order to allow daylighting and cross ventilation to permeate spaces. In all three case studies, Wooi’s ‘joints’ display a systematic assembly of the technical and articulatory that is augmented by drawing from the Malay culture as well as the different characteristics of topos and the various requirements of the client, typos. Wooi utilizes the same design methodology that results in varying manifestations of tectonic expression across each design.

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Malay cultural

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