Taming Sari's virtual living-street museum

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Abstract   This paper investigates Track 2 - 'Experiential Simulation' within the context of architectural heritage and urban development. The issue is about incorporating the past whilst building for the future. The project thus explores an option to integrate sensorial aspects in the design process. Typically the design process refers to the stage of design before the scheme is completed. In this investigation, an important component of the design process must continue into the post-completion period. The basis of argument is that the way users use the place and space informs the design process. This investigation is set at Jalan Taming Sari, Taiping. Taiping is a historical town, one of the oldest in Malaysia. It has recorded many firsts in its time. Parts of the town have now been included as a conservation zone. The drawback is that this is turning it into a sleepy-hollow. The intention of this project is to conserve the heritage and historical memories but allow for physical development to change the faces of the street. Since memory plays a huge and vital role in all visual thinking, capturing those historical memories into perceivable images become a primary concern. The proposition is to turn the stretch of Jalan Taming Sari into a Virtual Living Street-museum. Simultaneously, plans for new urban functions are also developed.

'Visions' of the past, present and future become the starting point to illustrate a subjective approach for urban design. These bring out the emotional reaction, evocation of memories and experiences, instinctive and continuous bodily habit of the street-users to relate to the street's environment. Layering the past, present and future urban design schemes in this manner will benefit the local community and visitors. Besides, the value of the lay people to the success of the streets in the city has been proven. Whilst the new physical urban development will have direct impact on both groups, the memories of the past might have greater interest for the visitors. The past impression along the street is digitally modeled in 3D based on traces of remaining historical edifices. Similarly, future plans of development are envisioned for this street to boost its economy and enhance community live-ability. Tourists' touch-bases are inserted in strategic pockets along the street as part of the modern plan. The tourists will use these touch-bases as registration point to download applications onto their smartphones that will also activate viewing sunglasses. The tourists' smartphone will automatically detect the past (or future) imagery of the street complemented by relevant historical description of the building, related figures and events as the tourists move along Jalan Taming Sari. The whole street could be lived virtually either in the past conditions or in the future envisaged development. This project is still ongoing and what is presented in this paper is the conceptual framework. Nevertheless, the scheme has offered insights into how visualization from the past could be woven seamlessly into the future plans as a form of experiential architecture and urbanism.

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Introduction

This paper investigates Track 2 - 'Experiential Simulation' within the context of architectural heritage and urban development. The project is carried out by the M.Arch. Urban Design Studio at UiTM. A street in the City of Taiping, Malaysia is the experimental site. The challenge of this project is unusual in that the urban design process needs to extend beyond the proposed urban intervention stage. There is a necessity to look into options of conserving history that complements historical preservation whilst reconciling new physical development. The team looks into digital technologies with the benefit of offering experiential simulation of the past, present and future. First, digital technology is used to document the existing historical buildings and structures. Missing blocks along the chosen street are reconstructed where necessary. Next, a new urban design scheme is visualized that is proposed to revitalize the area. Finally, a framework that combines Augmented Reality (AR) and pervasive computing is outlined as a method to provide the sensorial perception of the built environment there.

Background

Taiping is a historical town, one of the oldest in Malaysia. It has recorded many firsts in its time. This includes having the first railway line in the country. The discovery of tin in 1848 led to Taiping being the colonial British administrative centre and the hub of tin-mining industry in the 19th century (http://www.mptaiping.gov.my). The name Taiping was derived from the Chinese characters 'Tai-Peng' in reference to the immigrant Chinese tin-miners working there. The name means 'ever-lasting peace'. After the tin-mining industry dwindled, the main economic activities turned to rubber and rice. A highway construction in 1980's that bypassed Taiping transformed its tempo further. Modern development is scarce here. Despite, Taiping has several tourist attractions such as the Botanical Gardens and forest reserve of its surrounding hill range. Parts of the town have now been included as a conservation zone. The drawback is that this is turning it into a sleepy-hollow. Strict conservation, depending upon its implementation, may be an impediment to an area's prosperity because of limited new development. To aggravate the situation, the younger populace here tends to migrate to other vibrant places with more economic opportunities, leaving behind a majority of pensioners' population.

The issue of this project is about incorporating the past whilst building for the future. The intention is to conserve the heritage and historical memories but allow for physical development to change the faces of the street. The project thus explores an option to integrate sensorial aspects in the design process. Typically the design process refers to the stage of design before the scheme is completed. In this investigation, an important component of the design process must continue into the post-completion period. The basis of argument is that the way users use the place and space informs the design process. Since memory plays a huge and vital role in all visual thinking, capturing those historical memories into perceivable images become a primary concern. In order to know the past, a degree of reliance on some form of document is required (Brawne, 2003). Moreover, within the field of architecture and urban design, the visual evidence is imperative. The reason is that buildings as a rule are experienced by a moving observer, albeit he or she may stop from time to time. The total experience of architecture and urban design is therefore orchestrated through a sequential viewing of images that necessitates the crucial movement through space. The proposition of this project is to turn the stretch of Jalan Taming Sari, the selected project site, into a virtual living street-museum.

Project Methodology

Jalan Taming Sari in Taiping is chosen as the test-bed because it was a pioneering street in this heritage site. Rows of two to four-story colonial shop-houses line the 2.4km street. Other important landmarks include the market structure, Chinese-clan association buildings, Indian association building and clock-tower. The first part of the project is analyzing the project context. The second part is documenting the existing physical features along Jalan Taming Sari. Built

forms are modeled digitally. This also involved recording selected buildings with more important historical values. The third part is inserting new functions and programmes into the area especially where there are vacant lots, including suggesting a refurbishment plan for the derelict structures (Fig. 1).
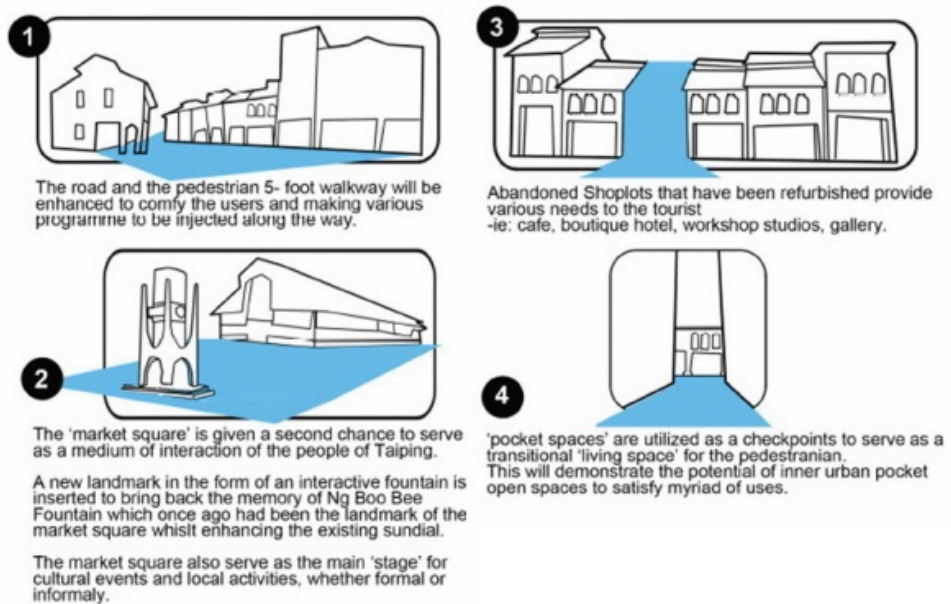

Fig. 1 Design strategies for proposed development

New structures are introduced that will maximize the plot ratio whilst keeping within the permissible building regulations of this conservation zone. The idea is to regenerate the area economically, socially and environmentally (Fig. 2). The first three parts are the normal methods in urban design at UiTM. The final part is configuring the framework for the virtual living-street museum. This aspect takes the project beyond our usual territory.
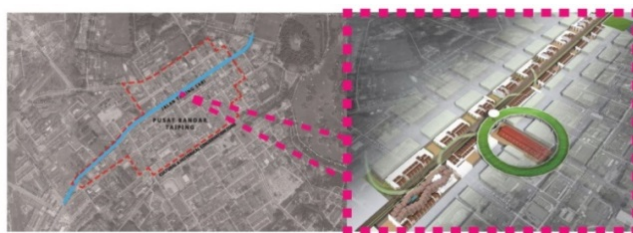

Fig. 2 Jalan Taming Sari with proposed development

Proposed Scheme and Discussion

'Visions' of the past, present and future become the starting point to illustrate a subjective approach for urban design. These bring out the emotional reaction, evocation of memories and experiences, instinctive and continuous bodily habit of the street-users to relate to the street's environment. Layering the past, present and future urban design schemes in this manner will benefit the local community and visitors. Besides, the value of the lay people to the success of the streets in the city has been proven. Whilst the new physical urban development will have direct

impact on both groups, the memories of the past might have greater interest for the visitors. In this scheme, visitors imply domestic and international tourists as well as scholars with interest in architectural heritage. The past impression along the street is digitally modeled in 3D based on traces of remaining historical edifices. Similarly, future plans of development are envisioned for this street to boost its economy and enhance community liveability (Fig. 3).

In a typical living museum, only the present embodiment will be of concern. Within such a setting, the experience of history will be vicariously shared within the limitation of a bound space with walls and roof. On the other hand, virtual museums such as facilitated by The Smithsonian rely on virtual exhibits to illustrate the sense of the past (http://www.si.edu/Connect/Virtual). The setting remains within the boundary of the four physical walls and roof. The framework for the virtual living street-museum at Jalan Taming Sari on the other hand, combines both experiential conditions simultaneously.

Fig. 3 Future vision for Jalan Taming Sari

The exhibits comprising the physical and virtual objects form the *world space* as described by Pederson et al (2011). This represents the *visual perception space* surrounding them and in which the tourists-visitors-users can perceive at each moment. No doubt, humans perceive real space and environment using all five senses. A virtual reconstruction of the past and future envisioning will do better to consider an authentic representation that fits these senses (Chalmers and Zanyi, 2010) -- although this is beyond the scope of our study. The closest possibility is that audio-facilitation of approximate if not accurate historical 'sound-capture' may easily be integrated into the interfacing devices. However, Auer (2008) noted that a deeper understanding of the interface between people and the environment cannot rely solely on the five senses but must also involve higher reasoning and critical thinking. This framework also interweaves the physical and digital worlds together with the inherent data about the street and all of its contents. In this way, there is an opportunity to move backward or forward into time within the everyday reality of a living street-life. Pervasive computing and the ubiquitous smartphone facilitate this process. Tourists' touch-bases are inserted in strategic pockets along Jalan Taming Sari as part of the modern plan. The tourists will use these touch-bases as registration points to download applications onto their smartphones. Additional viewing devices may include pc tablets and sun-glasses of the Google glass-nature (Fig. 4).
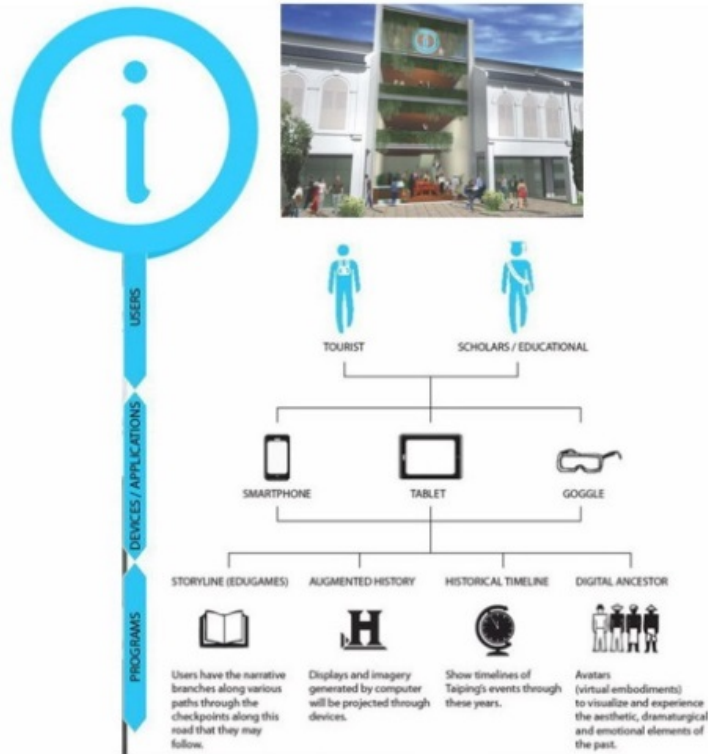
Fig. 4 Registration touch-bases, users, viewing devices and programs

Similar to entrance fees to a living museum, users need to pay the registration fees to activate the informative historical applications. This strategy is part of the economic consideration within any urban development as a form of returns of investment. This is in addition to the understanding that architecture and urban design offering pleasing environment contribute to the cultural economy of a place (Knox, 2011). The applications will function within a specified usage period and only within the determined boundary of Jalan Taming Sari. Unlike the concerns by Strobbe et al (2012) about incomplete, inaccurate and inconsistencies of context information in the Context-Aware Service Platform (CASP) that they developed, our project aims for a simpler solution.

The tourists-users movement will be constricted along Jalan Taming Sari alone as the defined virtual living street-museum. This contrasts with the flow of urban users who roam varied parts of the city. The location-and-context positions of tourists-users at Jalan Taming Sari are therefore fixed and firmly bound. The registration touch-bases ensure that the applications will operate only within this vicinity. Furthermore, ownership of the historical information is under the jurisdiction of the local museum department because they hold the curatorial authority for this street-museum and all its 'virtual displays'. In the open market of the city, competing service providers may rival for the best offers. Here, access to this historical information is again controlled by the same museum department. The contents of the 'exhibited' historical information are thus factual and chronologically valid. This set of pre-built panoramic images from the past or future also differs from the type that Langlotz et al (2012) discussed. Theirs is one where panoramic views of the street are captured and users may make new annotations to the views. Heritage data (visual and textual) of Jalan Taming Sari on the other hand, is non-manipulatable.

In our scheme, the tourists' smartphone will automatically detect the past (or future depending upon the user's periodic selection) imagery of the street complemented by relevant historical description of the building, related figures and events as the tourists move along Jalan Taming Sari (Fig. 5). Alternatively, the activated sun-glasses may also offer more immersive-type visualization (Fig. 6). Supporting information service and data update such as local trishaw and train schedule, best Chinese restaurants or special sales taking place along Jalan Taming Sari may also be embedded into the system. All these form part of the valuable data that are emitted by the street dwellers, business operators, buildings, cars and vehicles that the tourists-users may benefit (The Economist, 2012).
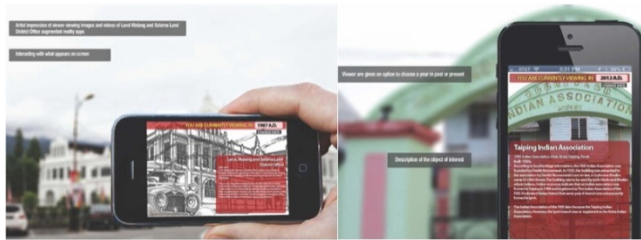

Fig. 5 Past, present and future object recognition and real-time historical data

Fig. 6 Existing object recognition and historical data generation

The whole street could be lived virtually either in the past conditions or in the future envisaged development. The latter is similar to what Bok and Ruve (2007) term as pre-experiencing the future of development planning in an urban network through participative simulations. The setting within the existing and real condition of the City of Taiping implies that the tourists-users will still be an active player of the city life as much as the locals. The sensorial perception of the urban environment is nothing like the cooped up feeling of being in a dingy museum. Lessons about local history and culture become part of the serving as these tourists-users sit down to savor local food and drinks whilst experiencing for themselves the everyday reality of the place.

To a certain extent, this is rather similar to the way Brown (2011) used films of everyday life in adult education. Only, at Jalan Taming Sari films are replaced by AR and pervasive computing. What it does is promote a dialogic approach to understanding changes that take place in other parts of the world and what these do to various groups of people. The framework mentioned earlier indicates a generic tourist-user group, although this need not necessarily be limited to adults only. Families do travel to places with little children in tow. As a user-friendly approach, this virtual living street-museum may even offer age-suited virtual contents. Illustrations and historical data may be tailored according to the audience age-group, intellectual capacity and interest level. This is pertinent because children have a different sensitivity to visual, auditory and kinaesthetic cues when perceiving their school environment (Mahdjoubi and Akplotsyi, 2012). A non-schooling age child may find a simplified cartoon-like visualization more comprehensible compared to the detailed versions for school-goers and adults (Fig. 7).

Fig. 7 Cartoon-type or detailed images to match age-groups

In the process, the sensorial perception of the urban environment may transform into a form of edutainment well-suited to the current youth media-consumption and promote active technological engagement to children as young as four-years old (Davies, 2010; Ballagas et al, 2010). In any case, the question of the street-users as observers and the observer's culture is pertinent in this context. The simple and sketchy line drawing may be enough to explain the world of architecture and urban design and its historical relevance. Yet, the maker of the drawing must choose the state of usefulness and purpose of the drawings - whether these are meant to inform, stimulate, provoke or provide a wake-up call to the observers (local and visiting). Because representational images of the built environment are easily able to transcend any reference to reality and even transport the viewers into a form of séance (Cook, 2008), a whole gamut of interactive gaming may also be developed from this conception of Jalan Taming Sari's Virtual Living Street-museum.

Conclusion

People go to places, and derive sensorial perception of the built environment based on two motivations according to Poria et al (2003). First is to see and be educated or obtain enjoyment via historical artifacts. Second is to be emotionally involved in an experience, particularly with stronger attachment to a personal sense of heritage. On both counts, there are ample educational opportunities in this framework for Jalan Taming Sari. For one it echoes the idea that simulation is useful for studying physical and social phenomena and for predicting future conditions of such phenomena (Bok and Ruve, 2007). The technological adoption and adaptation in this experiential simulation also hints at social innovation and prospective foresight that they recommended. More directly related is that this virtual living street-museum will enhance the sensorial perception through walking in the city by ingraining informal learning of public places and their history (Ruitenberg, 2012).

Undeniably, virtual representations of heritage or the future may not necessarily authenticate or serve as a historical substitute. Regardless, the collective memories of a place and related events may still be commemorated in the process. In fact, the immersion of Jalan Taming Sari within virtual technology may add another enriching layer to its cultural contents that reflects its continuity into the 21st Century. This project is still ongoing and what is presented in this paper is the conceptual framework. Nevertheless, the scheme offers insights into how visualizations from the past are thus woven seamlessly into the future plans as a form of experiential architecture and urbanism.

Acknowledgments

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