Towards an integrated architectural media space

by Ava Fatah gen. Schieck

Abstract

Large projection screens are becoming more and more ubiquitous in urban spaces. However, there is currently no methodology for designing media walls as an integral part of the urban built environment. This paper reviews the application of display walls and projection screens as an emergent new type of urban form in major metropolises around the world. It identifies issues related to the implementation of media walls, which perhaps form the basis for an integrated architectural media space. We suggest that in order to achieve real integration on an urban scale, we need to consider the design of space as a whole, taking into account the urban space, the dynamic visual information and the social interaction space.

Contents

Introduction

The urban built environment plays a critical role in the construction and reflection of social behaviours. This is reflected in the way it acts to structure space by shaping patterns of movement and co-presence between people (Hillier and Hanson, 1984). On the other hand there have been a number of technologies that have influenced the form and dynamics of cities to a great extent. Pool (1976) argued that the telephone has helped to facilitate both the dispersal and suburbanisation of the US cities, and the intensifying

concentration of core cities. Skyscrapers, for example, were made possible not only through the constructional innovations, but also by the invention of the elevator and the telephone.

Over the last decade, information displayed on large projection screens has become more and more ubiquitous in urban spaces. Dynamic digital information is turning into construction material. Architectural surfaces are transformed into moving images. A new form of architectural space is emerging that is different from what we have known. What happens to the urban space when the architectural material becomes a media screen? Do we perceive the space by the content of the display? What about the activities that take place behind the buildings' walls? To which degree can they influence or help inform the content of the broadcasted information or shape the moving images. These moving images may play a vital role in our perception of the space around us and our understanding of the public realm that embraces them. However, most screens serve mainly commercial purposes, showing objects in different scale and proportions without taking into consideration the surrounding environment.

Categories of potential applications

In the following section, we outline selected examples and highlight their characteristics in relation to media technologies, the urban space within the built environment setting and passive or active participation.

Entertainment
Las Vegas' Strip grew by experiments, mistakes, wild visions, pragmatic solutions, and chaotic collage. It became "collective Art" freed from the limitations of architectural theory and high-art taste (Venturi et al, 1972). Hess (1993) described Las Vegas as a mass medium revealing the dreams, fantasies, and desires of American mass culture. In Las Vegas, form follows fantasy. More recently this was taken a step further; with LCD (Liquid Crystal Display) screens dominating the Strip skyline. These are mainly driven by commercial advertising, appearing in various shapes, sizes and orientations. The screens generate a scattered landscape of tempting advertising images defer to the car; broadcasting new dreams and fantasies.

Figure 1: Las Vegas' main Strip

Business
One example of the application of a media façade in a dense urban context on a big scale is the headquarters of the technology stock market NASDAQ in Manhattan. It is housing the curved NASDAQ ticker and the high-tech LED (Light-Emitting Diode) display that wraps around the cylindrical corner of the building. The NASDAQ display broadcasts up-to-the-minute financial news driven by events, market highlights and advertisements.

The NASDAQ building, transformation of space perception through time

Art and entertainment
The headquarters of the Dutch telecommunication company KPN in Rotterdam is an example of using the media screen to cover the entire façade. The building, situated in the former docklands-Kop van Zuid-area is a freestanding object that can be seen from a two-km distance. The main trade off is the orientation of the billboard screen facing the residential areas in Rotterdam. This raises "light pollution" issues. Unlike the NASDAQ, the animation on the screen, a non–interactive artwork, is partially designed by the general public and art students from the Art Academy in Rotterdam.
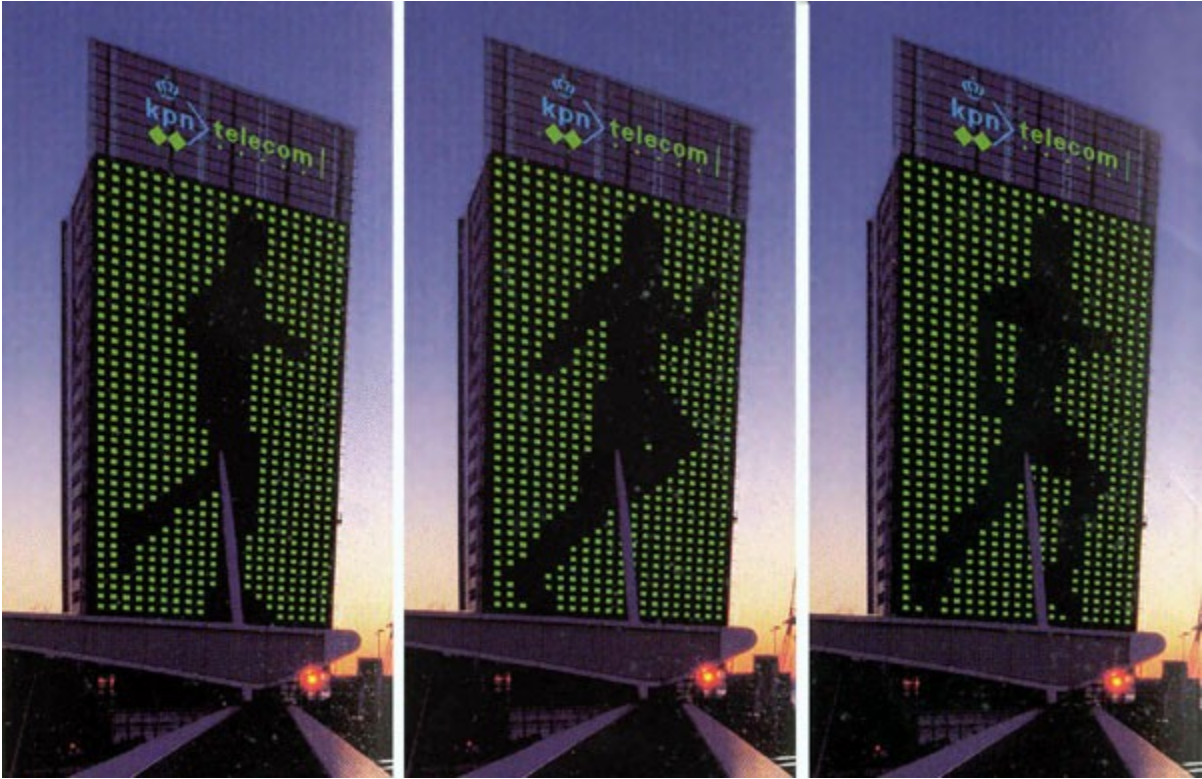
Figure 3: Symbols on the KPN screen viewed from the platform

Recreation and entertainment
The Crown Fountain, located at the southwest corner of the Millennium Park in downtown Chicago, features a shallow pool with two glass block towers one at each end. One side of the tower gives the illusion of projected video. The projected video is more related to its context than the previous examples. It does not broadcast a pre-programmed commercial advertising but rather displays community related images in a kind of open air gallery setting displaying the faces of one thousand Chicagoans one at a time. During the final minute of the display, the lips purse and a spout of water shoots from their mouths. This low level of action attracts people's attention and makes them feel engaged and aware of their presence within the fountain's setting.

Figure 4: Facial elevations among the skyscrapers

Different ways of utilisation

One way of applying moving images in a more flexible way is by covering buildings with projected images. In this case the projection is temporary and does not require high level of architectural intervention in the built environment, as is the case with using LCD screens. In the following we describe two different applications:

Events
For the last four years, projection specialists have used the Remembrance Day symbol to cover the Shell Centre on London's South Bank with giant projected poppies. The projection was clearly visible from anywhere along the South Bank. This approach offers flexibility; however, one concern is that an approach like this might lead to less integrated solutions. Two images or layers are superimposed on top of each other, without having a relation to the original building. The building is used only as a canvas to project on. The themes (celebrations) dominated the solution, and could have been projected on any other building. Yet, this approach could be applied to listed buildings as heritage concerns prohibit major interventions.

Figure 5: Shell centre as a projection surface

Supporting social interactivity
The interactive installation Body Movies in central Rotterdam has explored the intersection between new technologies, urban space and active participation. The piece was a temporary intervention designed to establish architectural and social relationships where unpredicted behaviour may emerge. The Schouwburgplein square was transformed by projecting over one thousand portraits on the façade of the cinema building. The portraits could not be seen when the square was empty as they were washed out through powerful lights. As soon as people walked into the square their shadows were projected onto the building and parts of the portraits were revealed within them. People passing by were invited to embody different representational narratives, creating a collective experience that nonetheless allowed distinct individual participation (Lozano-Hemmer, 2002).

Figure 6: Body Movies: Co-presence of two realities (source: Arie Kievit)

Discussion

Over the last decade, the architectural landscape in cities like New York, Tokyo and London has been undergoing a major change. Large LCD screens and LED billboards are appearing as part of the city architectural landscape. Architecture is becoming visual interface that can communicate or become itself a medium of communication. The screens are beginning to form a vital part of the visual perception of the cityscape affecting our awareness and understanding of the space around us. What happens to a building when the architectural material becomes a display screen? Do we perceive the space by the content of the display? The medium or the message? How can we understand this dynamic form or analyse it? And how do we represent this dynamic as perceived rather than as a piece of geometry? The representation techniques learned from architecture are static, contained and two- dimensional whereas the new form is dynamic, open and three-dimensional. We argue that perhaps a new form of urban space is emerging that is fundamentally different from what we have known. A form that is different from the spaces in the physical built environments for which our analysis tools were evolved, and hence we are ill equipped to deal with and analyse.

Issues relevant to the new form of architectural media space:

Huang and Waldvogel (2004) have specified four key ideas, as design guidelines that form the basis for an inhabitable interface inside buildings; an interface for the virtual architecture in conjunction with the physical environment. These key ideas are:

- Spatiality: Spatial elements rather than object elements;
- Physical and virtual flexibility;
- Distractedness;
- Physical and virtual privacy.

Figure 7: Times Square: Building transformation through time, from static mass (left) to a dynamic space (right)

These also apply to the urban space. Some buildings in Times Square, Figure 2 and 7, represent spatial elements rather than object elements. On the other hand, the KPN building, for instance, represents architecture of communication over space; communication dominates space as an element in architecture.

Figure 8: The KPN building as it changes throughout the day

A similar situation can be observed in Las Vegas. According to Venturi et al, (1977), all cities communicate messages - functional, symbolic, and persuasive - to people as they move about. In Las Vegas, all three message systems are closely interrelated on the Strip. Sometimes they are combined, as when the facade of the casino becomes one big sign or the shape of the building reflects its name, and the sign, in turn, reflects the shape. More recently, this is highlighted through novel designs of the LCD screens broadcasting animated images that dominate the Strip skyline. Having mentioned that, we suggest that in order to achieve integration on the urban level, the displayed content and output technologies need to be embedded in the architecture of the building and become part of the emergent space and perhaps space-defining elements themselves.

Social interactivity vs. commercial monologue
The combination of the physical architecture with the virtual information and

representations displayed on the building facades, both embedded in the urban landscape in the city, can be seen as both an interface with, and the generator of, different social interactions. Artists across the world are experimenting with the new technology as an attempt to augment the urban public domain through the support of social interactions. Rafael Lozano-Hemmer's installation, Body Movies, represents a critical example of using the new media in the urban public space. Lozano-Hemmer (2002) argued that in the installation, unlike the typical use of new technologies to perform a pre-programmed commercial monologue, the participants' input and feedback- through projections, robotics, sound and local sensors- becomes an integral part of the public space and the outcome is influenced by participants' actions. And it seems that in this way the new media technologies not only serve to reproduce and reinforce existing social structures, space and chance encounters, but also hold out a prospect for promoting new social forms (Schnädelbach et al, 2003).

Location and mobility
The location of the animated screens or signs plays a critical role in the perception of the animated images and the reception of the communicated messages. In the case of the KPN building, for instance, the animated screen is facing a residential area, turning its side to the main shopping area in centre of Rotterdam, and leaving the residential area exposed to distraction through the bright green light. Huang and Waldvogel (2004) have noted that in order to avoid distraction the display surface should not be at the centre of attention in the space, so that users are only passively aware of it. The parameters that can be regulated accordingly include the location of surfaces, orientation of surfaces, size, resolution and image refresh rate. On the other hand designing for the highway is different than for the pedestrian. In Las Vegas, for instance, the signs are designed to attract on different levels: on an eye level, on a car level and finally, to be seen from the highway, some sign forms scattered along the Strip made a distinct landscape of symbols and lights. The signs inflect toward the highway through the position and the form of their element (Venturi et al, 1977). We noticed that this also applies to the spatial arrangement of the LCD signs and screens that have started to appear in the Strip in the last decade.

Figure 9: Las Vegas, LCDs attract on different levels: pedestrian, car and highway

Mobility of the observer (people) and the observed (the screens) through time is another aspect that should be taken into consideration. High-speed mobility changes the perception of static and dynamic; transforming images from two-dimensional to three-dimensional. More recent observations of the Strip witness an emphasis on change of position. Big LCD screens are designed to attract from different directions by arranging them spatially on a curved rail. This enables the screen to change orientation and slide back and forth from one end of the curved rail to the other. In this way the screens attract not only on different levels, but also from different directions that change dynamically through time.

Figure 10: Las Vegas, mobile screen - change of content and orientation in real time

*Relationship of elements and narrative*
The challenge in the creative use of media technologies, as noted by Broeckmann (2004), is to develop strategies of articulating the new public domains that connect physical urban spaces and the potential space created by the new media and technologies. It could perhaps be argued that in order to achieve real integration on the urban level we need to bring together the urban space, the dynamic visual information and the interaction space. One way of achieving this could be by creating a kind of narrative that makes sense of the visual dynamic information and the interaction space through integrating them into a meaningful whole. This may also promote a feeling of presence – of being there. Having said that, it might be worth mentioning that creating proper proportions is still part of a good design: the key word is proportion. No matter what you may call it - beauty, eye appeal, good taste, or architectural compatibility, limiting the size of electrical advertising displays does not ensure any of these. Proper proportions - the relationship of graphic elements to each other are necessary to good design, whether it be a matter of clothing, art, architecture, or an electrical sign. Relative size, not over-all size, is the factor in determining guidelines which will satisfactorily influence attractive appearance.

Obsolescence vs. flexibility
One relevant concern is the discrepancy between the durability of architectural material and the rapid obsolescence of technology standards. Most of the current display technologies have a short half time that is a fraction of the corresponding half time of physical architectural elements. What happens to the display wall in three to five years, when the technology has fundamentally changed? One simple way to address this discrepancy is by separating the elements based on their necessity to be replaced (Huang and Waldvogel, 2004). Another suggestion could be by using temporary projection on exterior or interior walls. This would allow flexibility in terms of material and space use especially for solutions related to re-use and conversion of listed buildings, as conservation issues prohibit key interventions. Both the physical and virtual architecture define the flexibility of the space in order to accommodate different scenarios. In this way solutions could be provided without the need for changing the main spatial configuration (Fatah gen. Schieck, 1999).

Privacy concerns and light pollution
The privacy issue may arise and needs to be addressed, especially in the case of capturing participants' input, using projections, cameras, sensors, and projections. In addition "light pollution" –as the case with KPN building-might require the implementation of regulations to regulate the amount of light-intensive signage and the massive light displays and its effect.
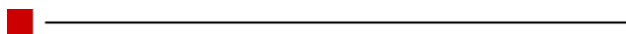
Conclusion

We believe that in spite of the increasing realisation of the application of the new technology on buildings' external facades as a communication medium, particularly through innovative architectural projects, there is still a lack of academic, as opposed to

architectural, interest. This paper argued the need for developing a theoretical base on which to found design principles for the new emergent urban forms that synthesise between the virtual dynamic (information) and the physical environment (public space). The theoretical base and the new concepts may help us understand better the nature of the new emergent environment and help analyse it. We believe that in order to achieve real integration on an urban level we need to consider the design of space as a whole, bringing together the physical space, the dynamic visual information and the interaction space. FM

About the author

Ava Fatah gen. Schieck is a registered architect in Germany and a senior research fellow at the UCL, London. She is primarily interested in exploring the relationship between new technology and architecture and looking at the intersection between the digital and the physical space. Ava runs the Digital Space and Society module on the MSc Adaptive Architecture and Computation course at the Bartlett Graduate School. Her current research is into the use of location-based computing within the urban context. Previous research includes interface design for augmented reality collaborative environments and its impact on the design process and information space.

http://www.vr.ucl.ac.uk/people/ava/

E-mail: ava [dot] fatah [at] ucl [dot] ac [dot] uk

References

Andreas Broeckmann, 2004, "Public Spheres and Network Interfaces", in: The Cybercities Reader, Routledge: London.

Joke Brouwer and Arjen Mulder, 2002, TransUrbanism, NAI Publishers.

Ava Fatah gen. Schieck, 1999, Converting Islington Public Hall in London, Preservation, design and planning in historic context, Cologne University for Applied Science, (thesis: unpublished).

Stephen Graham (ed.), 2004, The Cybercities Reader, Routledge: London.

Alan Hess, 1993, Viva Las Vegas: after-hours architecture, San Francisco: Chronicle Books.

Bill Hillier and Julienne Hanson, 1984, The Social Logic of Space. Cambridge University Press: Cambridge.

Jeffrey Huang and Muriel Waldvogel, 2004, "The Swisshouse: An Inhabitable Interface for Connecting Nations", Proceedings of the 2004 conference on Designing interactive systems: processes, practices, methods, and techniques, Cambridge, MA, USA.

Rafael Lozano-Hemmer, 2002, "Alien Relationships with Public Space", in: TransUrbanism, NAI Publishers.

William Mitchell, 1999, E-topia: "urban life, Jim - but not as we know it", MIT Press.

Ithiel de Sola Pool (ed.), 1976, "The Structure of Cities" from The Social Impact of the Telephone, Cambridge, MA: MIT Press.

Holger Schnädelbach, Alan Penn, Steve Benford, and Boriana Koleva, 2003," Mixed Reality Architecture: Concept, Construction, Use", Rodden, T. ed. Technical Report Equator, University of Nottingham, Nottingham.

Robert Venturi, Denis Scott Brown and Steven Izenour, 1972, Learning from Las Vegas, Cambridge, Mass.: MIT Press.