PUBLIC PARTICIPATION IN URBAN DESIGN BASED ON INFORMATION TECHNOLOGY

Yu Dazhong

Dept. of Architecture (or Design and Research Institute)
Shandong Institute of Architecture & Engineering
47 Heping Road, Jinan, Shandong, China, 250014

Abstract. For years, lack of public participation has affected the quality of design and planning. The developing cities constantly face the anti-development sentiments on the part of local residents because of controversial decision of development. Rapid development of information technology provides us with a chance to mend the delay of communication with the public in design procedure. It makes it possible to get the resident's reaction to a new project. Unlike a purely CAD-based environment, computer application to urban design is based on a blend of computer-aided design, spatial information system, and interactive multimedia. It is the combination of geometric, geographic, and annotated information and the need of data integration by collaboration and meanwhile it provides opportunities of participation. Due to the position at the crossover of architecture, landscape architecture, and planning, urban design attempts to control the proceeding in both design improvisations and socio-economic policies. In this proceeding, public participation plays an important role in exchanging opinions with the masses. In the situation of participation in China, we can synthesize some useful methods of public participation in the urban design by means of computer simulation, computer communication, and diverse software and tools, etc.

1. Introduction

How to design our cities? Which methodologies should be used? Taking into consideration the need for a participatory approach to the utopian thinking about cities, our methodologies for designing cities should be public participation of course.

It is the purpose of this paper to discuss why and how urban designers can utilize public participation to bring the public into the design procedure in China. The overall goal of this paper is to take urban design a step further and illustrate how it could be applied in using computer technologies in the information times. In order to address the pressing problem of involvement this paper first discusses the need for participation in China and some of the shortcomings such as the lack of democracy that impedes the progress. Then it

debates the relationship between urban design and public participation underlying the information technology and issues the strategies and methods of participation in urban design at last.

2. Public Participation in Urban Design

Public participation refers to the sociological terms such as "participation" and "involvement". Its fundamental meaning is "members are permitted to express their opinions on the objective, responsibility and manner of the collective activities, and exert affection on it with their behaviors". And it is extended to be various expressions like "Citizen Participation", "Community Participation", "Civic Participation", "Popular Participation", "Local Participation", "Resident Participation" and "Village Participation", etc. In urban design the general concept of public Participation is not only for the purposes of engineering agreement. It is also to engage people in meaningful and purposive adaptation to and changes in their daily environment.

Public participation in urban design is thought to be two views by people now. One is considered a kind of technical method of urban planning design, which is often seen in the works written by architects. The other is considered a thought in order to improve the society, which is often seen in the works written by the social planner. Considering public participation simply as a technical method neglects its socio-politicalization and does not understand its truth. I think public participation in urban design is not only a special procedure in city construction and a step of urban design, but also endeavors to improve the society, although maybe with a little reward.

2.1. NEED AND RERALITY FOR PUBLIC PARTICIPATION

The need for participation in urban design can be assessed by a number of factors. The design of urban and architectural spaces touches everyone in their daily lives and thus the designers bear a great deal of responsibility for the community. The need for public participation is not exclusively required by the scale of the design and development, but rather is due to the vast interests and skills of the community members.

By effectively utilizing these skills one can bring the public into the design process as valuable contributing members, despite their lack of design training. The inherent general skills of the public allow participants to effectively participate in the setting of design goals and development character, without the need to actually create a physical design. Contributions of this nature are extremely valuable to the design process, especially when guided by us design

professionals who can translate those goals and characteristics into a physical environment.

2.2. PUBLIC PARTICIPATION AND URBAN DESIGN

Urban design ranges in scale from parts of an environment to the larger wholes of districts, towns, cities, or regions. Urban designers are concerned with the sensory and cognitive relationships between people and their environment, with how people's needs, values, and aspirations can best be accommodated in built forms. Urban design is not primarily an individual's act, but is a public, collective activity and its tasks may have definite ends or may be ongoing, and implementation may or may not be under the designer's whole or partial control. It is a profession and field of study concerned with design ideas and possibilities, with community choices and decisions, and with ways for achieving desired ends.

The level of public participation is a cause for concern in the design process. Traditional face-to-face methods of public involvement in urban design often lead to unsatisfactory results. Public participation must be seen as one of the most important parts of the planning process.

Public participation in urban design is based on an idea of a close relationship between design and use, and is a mutual learning process, "which is not only a question of users' participation in design, but also a question of designers participating in use."

3. Public Participation and Information Technology

During the 20th century we have witnessed the rapid accumulation of technological advance leading to the creation of computer technology and beyond.

The advance of computer technology has led us to a world where the development of artificial intelligence is a goal of computer scientists and where we can play in a virtual world of our own making. The speed at which information travels to inform or educate the recipient is now measured in terms of bits per second, reflecting the pace of change today.

3.1. INFORMATION TECHNOLOGY AND OUR PROFESSION

Public participation has mainly been concerned with the development and design of computer artifacts and information systems. Computerization is one of the most important socio-economic processes in the world today. The planning profession has followed a parallel growth pattern to that of

technology, and is in many ways linked to the advance of technology through its widespread use in society. The modern urban design connected itself with information technology in design thoughts and method, began in the industrial revolution as a form of urban management and has grown into a profession of land and population management. At the same time, the influence of technology on the tasks of the planning profession has been considerable, as have the products of technology on the planning tool-set. These all are the advantageous conditions for public participation in urban design.

As has been shown, there are strong links between technology and our profession. The path through which these links are expressed is such that technology affects society, and society makes demands on the city. These demands are eventually reflected in the mandate or tasks of the urban planning and design. The information technology revolution has brought many changes to the city, unlike industrial revolution which greatly increased and concentrated population in an industrial core, and renovated the transportation systems to support an industrial economy. It has spread the urban area and made people do most things through telecommunication. It has also changed the concept of not only the space but also the procedure and method of urban design.

3.2. PUBLIC PARTICIPATION AND DEMOCRACY IN THE WIRED SOCIETY

Many people have realized that the new televisual technologies are the contemporary tools of the revolution towards an educated and participatory democracy. Today, the realization refers to the Internet and other new communication technologies. A continuing preoccupation is how we can have a democratic system of communications. The first essential in a democratic system of communications is that communications are something that belong to the whole of society, that it is something which depends, if it is to be healthy, on maximum participation by individuals in the society.

Democracy aided by computers, and in particular, by computer networks is the subject of many current debates and discussions locally and globally. There are also many practical, mainly experimental initiatives in the field. Computerization can be understood as all human processes where computers are involved. In sociological terms, it makes sense to talk about an ongoing computerization of society, or, in more popular terms, the coming of the information society.

4. Public Participation in China

Although public participation has been popular in the west world in the past 30-40 years, it is still strange to the Chinese now. I can not say there has been no public participation in China till now, because of some fragmentary studies in about 10 years.

4.1. CURRENT SITUATION

Public participation is a sensitive topic because of our political system in China, so one word can briefly expresses the current situation that low level of social study, social practice and human right movement results in low level of public participation.

Thousands of years' feudal history almost destroyed our society and our democracy. The deadlocking idea mode of "complete uniformity" surpressed the activities of the public and the imagination of planners, undefined concept of public participation made planners give up the effort in this field. The collective principle of "commonness" checked the pursuance and probe of personality. "Following the fashion" is the adage some observe and individual independence and social criticism spirit have disappeared. Because of the attitude of "doing less" and "doing one's own things", some planners would like to be in the present state and finish technological work routinely, rather than set foot in "social activities".

The previous urban planning and design system and thought in our country basically originated from the Soviet Union's experiences, which regarded the urban planning as the continuity and embodiment of the national economic program and emphasized the national economic program's direction to the urban planning. In the 1960's and 1970's, the anti-imperialism and anti-revisionism and cultural revolution movement made planners dare not set foot in western theories in urban planning. In the meantime, the science of urban planning survived sinuosity and even the disaster of extinction, and certainly there was no development in planning. This superincumbent planning system was applied until the end of the 1970's and the 1980's when much destruction had to be renovated, and massive construction had to be developed and planning assignments were piled up.

4.2. NECESSITY FOR AND DIFFICULTY IN PUBLIC PARTICIPATION IN URBAN DESIGN

What is then the purpose of public participation? In my view, the purpose should be to empower the participants. The participatory process in urban

design should be seen as a process of participant empowerment, enabling participants to participate in decision making through an effective involvement. Empowerment has to do with expanding the range of decisions that are made through democratic processes. Public Participation in design should not, then, be confined to the design of 'systems', but inevitably brings in wider elements of working and everyday life.

The main challenge for participation in design is to deal effectively with the political aspects of the broader organizational contexts upon which participation in design initiatives depends for the long-term survival. The dilemma remains that without wider societal changes in the direction of greater democratization, the knowledge and commitment that participation in design can stimulate and promote, will ultimately reinforce the patterns that limit the growth of capabilities and thus undermine further initiative. Only by giving participation the meaning of full engagement in vital organizational affairs - the politics of design - is the process likely to flourish and be liberated. Without democracy, we would lose the general dimension and are left with just a number of local methods for designing systems.

Public participation must be a social activity accompanying the development of political democratization, which is estimated to be a symbol of democracy level. It is not special to capitalist countries, but a necessary process of the development of human beings. In fact the history of the development of human beings is the history during which the level of people's social participation is continually rising and the range of that is continually widening. A socialist country where people are masters, there should be public participation and even real public participation, and naturally this should be in urban planning and design.

4.3. STRATEGY AND METHODS ENABLING PUBLIC PARTICIPATION IN URBAN DESIGN

Now architectural models are used as one-way communication in urban design instead of more effective ways. They are often crafted to a very high level of detail, which is fine for marketing purposes but has been found to be detrimental to the participatory process. This outcome can actually be less favorable to the public at large, but due to lack of quality participation this often occurs. With the development of new computer technology, Urban Designers now have a new tool at their disposal in creating urban environments. Those individuals who choose to learn these new techniques will have a distinct advantage over those who resist the new tools. Urban Designers must learn to use the multimedia capabilities of today's computers to communicate and solicit design information.

4.3.1.   CAD (Computer Aided Design)

Occasionally one may also find CAAD (Computer Aided Architectural Design) and CADD (Computer Aided Design and Drafting) in documentation. All of these terms describe the same technology, which allows for the drafting of industrial and architectural design using computer equipment. Drawings are represented in the computer by point coordinates and vertices. Advanced CAD applications will allow for the construction of 3D models of nearly any object. One advantage that CAD has over the traditional manual techniques of drafting and model construction is that changes can be easily made, which can not be easily done using manual techniques. A basic understanding of the purpose and use of CAD is important for the eventual utilization of computer technology in collaborative design, which requires a degree of CAD proficiency to assemble an accurate model of the development environment.

4.3.2.   Virtual Reality

A variation in the multimedia capabilities of computers today is virtual reality. Virtual reality is likely to have the greatest potential to impact the process of collaborative urban design for it allows real-time user feedback on design experiments. Virtual reality, however, is a very advanced tool and relatively few urban designers are currently using this technology.

Virtual Reality is a term that has been used in the media to describe a number of different technologies. One of the basic principles behind virtual reality is to improve the user / computer interfaces so that it is more intuitive. This would allow even a computer novice to navigate a 3D-computer environment. Humans navigate through 3D space on a daily basis and thus the movement within a similar computer space should result in a minimum of disorientation.

Many cases have proven that many people can participate in a single virtual environment, however the urban design profession needs to have the ability to modify a virtual environment from within that environment with the assistance of other participants. Virtual City models of urban areas are already in existence around the world. Many cities have developed a computer model of their core to assist in planning activities. The urban models will be easily adapted to virtual reality applications once the processing power is available.

It is expected that this technology will be very slow to be adopted by the urban design field as there are still many technical issues to be resolved. Currently, to simulate a realistic environment requires very powerful expensive computer systems. Significant progress in computer technology has been made in the past 10 years and should accelerate in the future.

4.3.3. Digital Video Conferencing

Although Video Conferencing systems, until just recently, are very expensive systems to implement, it is still a developing method to be used in participation. The basic services that a Video Conferencing system offers are video transmission, audio transmission, and document sharing. The video signals do not have to be restricted to head and shoulder images of the participants. In fact participants can move their desktop video cameras to focus on an image on a drafting board or desk. This flexible form of visual communication is quite valuable in sharing design information.

They allow users to draw in real-time on a blank canvas or on top of another person's white board scrawls. Some integrated systems allow a user to pull up an image or drawing such as a CAD drawing, and allow all the conference participants to draw over top of it using the white board tools. This technique of computer communication is extremely valuable to the urban design community as it allows the communication of traditional visual materials across significant geographic distances. It is not unreasonable to expect that this technology will soon be applied in the personal computer.

4.3.4. Internet, WWW and VRML

The Internet, and more specifically the graphically rich WWW, has become a significant technology in the communication industry. The Internet is a world-wide network of computers and the WWW is a graphical interface for retrieving information from those computers. By using this technology one can currently share ideas and images with millions of people. However, a new technology known as VRML is allowing this same network to transmit and share virtual environments. This quickly developing technology is leading to the development of a tool for Urban Designers to use in the communication of design and development issues.

If one were to attempt to implement the Virtus VRML solution as a cooperative urban design workshop, one would be limited to navigating a completed virtual model and only be able to suggest changes via drawings on a white board within the space. This is not exactly using the 3D tools available to its full potential. However, it does provide for an example of the techniques available today, and the tools that may be available in the future.

4.3.5. Collaborative Urban Design using GIS

We can also explore the potential of geographical information systems (GIS) as a basis for an urban design support system. We believe that the current powerful desktop GIS can be adapted and augmented to provide a

computer-based support environment in which spatial data at the urban design scale can be managed, visualized and explored. Furthermore, analytical design tools can be imbedded in the GIS.

The urban design support system being developed on the foundations of special platform such as ArcView GIS has specific tools for sketch design, 3D visualization, morphological analysis and economic feasibility.

4.3.6. *The Future of Urban Design in IT Society*

As the scope of urban problems grow, we designer must be flexible in information gathering to encompass wider aspects of society. In order to get adequate information on which to base decisions and directions, yhe designer must find new and innovative answers to the planning issues of today. We should be required to utilize the Internet for research and communications, and economics magazines may become very important in developing planning policy for public participation. We will be forced to depend on information technology in order to handle the demands of the masses that may have already advanced far beyond the capability or power of the planner to influence. Information technology is integral to the work of planners in the areas of communications and co-design.

5. Conclusion

It is a common belief that the evolution of IT will break down the barriers of time and place through real time communications and global hookups. In the near future, people including the Chinese will live in a world where Internet access is a basic human right, where education and business are done completely through Internet communications, and where the way we see life is completely changed to be freedom, isn't which utopian thought?

IT provides us with the chances or possibilities of public participation in China because virtual city and community can rapidly raise the masses' sensation of involvement in which they can be anonymous at first. Rapid development of IT provides us with basic conditions and more methods to do it and to mend the distance with the western countries. Western countries have provided us with useful experience of public participation. More and more opening to the outside world of the government provides the masses with more freedom and human rights in order to participate in social activities.

Acknowledgements

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