Urban Public Spaces in Webbed Cities

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Abstract: **Great cities are defined by their public spaces, which anchor socio-economic activities and help define the unique qualities of their communitiesby supporting multiple uses.Active public spaces invite greater interactions and foster communities that are physically and socio-economically viable. Community participation is an indispensable aspect in promoting strong sense of place that has the potential to influence the physical, socio-economical and emotional health of individuals and communities safeguarding the interest of multiple stakeholders. Several transformative trends such as urban polices, urban local governance, growth of metropolitan cities, blurring city limits, changing time structures, increased mobility choices, advancing technology, etc. have been bringing a radical changes in the functioning of public spaces. Among these trends, advancing technology in in Information and Communications (ICTs)is emerging as a powerful generator of new digital public spaces, producing a strong impact on the physical shape of the city. Contemporary cities are visibly comprised of neighbourhoods and communities of 'super connected' citizens. Diverse characteristics of ICTs are shaping the cognition and social organization.**

Against this backdrop, the paper discusses various physical and virtual dimensions of public spacesand attempts to deliberate on variousconcepts and approaches at various scales that can be adopted to promote community participationthrough the usage of ICTs advancements in public spaces to turn them into engaging activity hubs stationed in real-time while respecting the needs of the users of the digital era.

Key Words: **Public Space, Physical, Virtual, Community participation, Information and Communications (ICTs), Physio-Digital Public Space.**

I. INTRODUCTION

'Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody' - Jane Jacobs

Great cities are defined by their public spaces, which anchor socio-economic activities and help define the unique qualities of their communities by supporting multiple uses. The socio-cultural milieu, expanding infrastructure, existing legal framework, concurrent technology, etc. create the built environment. Meaning of concepts such as public, space, democracy and community are continually being redefined in practice through lived experiences."Sense of place" is of fundamental value everywhere - in every city, neighbourhood and community that is recognised instinctively by the inhabitants. Natural and manmade environment shape experiences and impacts our innate sense of place. Engaging public places including streets, squares, socio-cultural districts, parks, open spaces, etc. form the foundation of creating liveable communities. Well-articulated public spaces make community feel empowered, important and excited to be in the places they inhabit in their daily lives. Active public spaces invite greater interactions and foster communities that are physically and socio-economically viable.

II. COMMUNITY AND PUBLIC SPACES

Public spaces are heart of every community. Serving as medium for performance of public life, public space has always been live value analysis of structural changes of public domain.Public space, in its physical and symbolic facetaddresses not only aesthetic or functional adoptions, but is a decisive factor playing a central role in the formation of urban culture promoting social interactions.

Physical and social dynamics of public space play a public space is genuinely public when it is widely accessible and inhabitants have control over its usage and transformation over time. A public space capitalizes on the local community's deeply valued intimate connection to the places in their everyday lives.

Fig. 1& 2 Public spaces -Streets and markets

Fig. 3, 4 & 5Well articulated architecture of public buildings result in better public realm of spaces

Fig. 6 &7 Water fronts as public spaces engaging the community

Shared value is maximised when the connection between people and the places they shared is strengthened. Public space plays different roles for different sets of inhabitants and their publicness. A great public space takes shape when inhabitants of all abilities, ages and socio-economic backgrounds not only are able to access a place, but also have a pivotal role in its conception, conservation and identity.

Fig. 8 & 9 Public space plays different roles for different sets of inhabitants and their publicness.

A. *Character of Public Space*

A public space cannot be measured by its physical attributions alone. It must also serve people as a vital community resource in which function always trumps form. Public space activities that can be categorized as necessary, optional and social are particularly sensitive to the physical quality of built environment influencing the perceptions of public space.Public space is inherently multi-dimensional (refer Table I).

TABLE I: MULTI-DIMENSIONAL ATTRIBUTES OF A PUBLIC SPACE

Sl. No.	Dimension	Attributes
1	Promotes sense of comfort	• Sense of belonging • Better environmental quality • Perceived safety
2	Defines community sense	• Fosters social interaction

		• Community involvement • Attractive and safe environment for people of all ages and gender • Increased social inclusion • Improved accessibility • Greater cultural pluralism • Decreased need for control local governing authorities
3	Promotes public health	• Enhanced environmental quality • Compatible with public transit leading to better connectivity • Promotes active transport (walking/cycling)
4	Supports local economy	• Encourages diverse entrepreneurship • Improved economies, tax revenues and real estate values

Public spaces engage and harbour diverse use groups with various purposes at various times of the day influenced by convergence of local and global concerns. These public spaces are constantly evolving rather than being fixed in time and space as users re-organise and re-interpret physical spaces.Instead of a single 'public' inhabiting an exemplary public space, the multiple and counter-publics necessarily produce multiple sites of public expressions. 'Sharing Economies' or 'Collaborative consumption' in their various aspects correspond to the sub-division of the city into space-time frames each with a typical characteristic features resulting in sprawling form of contemporary urbanization. The sprawl is yielding into the physical separation between specialised fragments of public spaces.

Fig.10, 11 & 12 Linear public spaces along the streetsformed as by-products of physical infrastructure layer

Several transformative trends such as urban polices, urban local governance, growth of metropolitan cities, blurring city limits, changing time structures, increased mobility choices, advancing technology in digital communications ,etc. have been bringing a radical changes in the functioning of public spaces.

Among these trends, advancing technology in digital communications is emerging as a powerful generator of new digital public spaces, producing a strong impact on the physical shape of the city.

B. Community participation to promote vibrant public spaces

Community is comprised of citizens who provide wealth of information and valuable insights into historical perspectives, morphology of the place, development triggers, timeline of changing environments and its impact. These insights need to be understood and analyzed to develop action plan to help nurture a sense of community ownership. A public space created without the involvement of community dilutes its potential value.

Fig. 13 &14 Community participation to create vibrant public spaces

Community participation is an indispensable aspect in promoting strong sense of place that has the potential to influence the physical, socio-economical and emotional health of individuals and communities safeguarding the interest of multiple stakeholders. Practicing and advocating community driven approaches provide testing grounds for exploration, experimentation and collaboration fetching immense changes to communities. Diverse advancing and preferred technological dimensions of the public space can be effectively used as one of the important tool to promote community participation to voice their ideas and aspirations about the public spaces they inhabit.

Technology is often linked to physical reality of the built environment and in the ways various elements of a public space interrelate with behavioral patterns of users. Integration of computing capabilities with the physical world is changing how inhabitants live, work, interact and navigate urban environments. It has been extending to the spatial world changing the structure of our cities. Omnipresence of technology has started to change the way inhabitants experience built environment while augmenting the level of responsiveness and interactivity. Private transportation, mass transportation, real estate markets, urban planning and design fields are experiencing the most immediate effects of technology.

III. DYNAMIC RELATIONSHIP BETWEEN COMMUNITY AND TECHNOLOGY

Fig. 15 & 16 Transformation of public space during day and night (respectively) using digital technologies

As the technology is constantly evolving in a rapid speed, omnipresent computing (applications and services) surround everyday life of urban dwellers adding a new digital layer on the existing urban landscape enriching the urban experiences through the arbitration of digital technologies creating physical and virtual public spaces. Diverse mobility aspects and improved frameworks for local and regional governance are changing the priorities and choices of urban dwellers while posing new challenges to create dynamic and evolving places that respond to lifestyles of contemporary societies.

A. Public Spaces and Information and Communication Technologies (ICTs)

Contemporary cities are visibly comprised of neighbourhoods and communities of 'super connected' citizens. Urban environments experience the effects of technology to a great extent. Internet, which is touted as a "new form of public space" is diminishing the conventional role of public spaces which were once major arenas of social interaction and source of information.

Fig. 17 Digital vending machine along with display panel for stock market updates in public spaces

Fig. 18 & 19 Interactive maps in public spaces for better way finding

Diverse characteristics of ICTs are shaping the cognition and social organization. Media landscape has changed dramatically, from one pre-dominated by traditional mass communication formats to today's more personalised network environment forming 'Personal Communication Society'. Personal communication has emerged as one of the defining communication technologies of contemporary times contributing to a number of socio-economic consequences including new representations of the self, social networks and 'private use of public space'.

B.   ICTs - Physical and Virtual Public Spaces

The mainstremization of ICTs strengthened and revived discourses related to public space and its relation to technological mediation of everyday social activities.With the advent of immersive expedition of internet, software applications and digital social networking communities are more socially connected through virtual spaces than in physical public spaces.Public spaces with free wireless internet access are progressively becoming attractive destinations for inhabitants and tourists alike.

Fig. 20 & 21 Technology as a tool for public space design

ICTs elements such as wireless internet networks, portable electronic devices (GPS and Bluetooth enabled), smartphones, interactive public displays, digital interactive media facades, etc. and all their associated applications have profoundly influenced the usage and communication public spaces.

Cities are promoting the vision that is based on the concept that every public space related policy or project should address public issues via innovative technologies (such as ICTs) on the multi-stakeholder based partnership. Technology is forming the basis for decision making process in urban planning and design specifically the use of ICTs to provide various systems of transportation of people, goods and information.

Owing to the complexity of public spaces, it is appropriate to experiment with short term interventions which can be applied, tested and refined over a period.Working with the community to create a cohesive vision for the place is essential to shapeapproaches and action plans for implementation. A strategy that aims at efficiently generating new uses and revenue, should involve high impact incremental framework beginning with short term, economically viable and experimental improvements that capitalises on the creative energy of the community.

Following concepts and approaches at various scales and levelscan be adopted to promote community participation in conceptualization and design of active physical public spaces to meet the needs of the users of the digital era (refer Fig. 22).

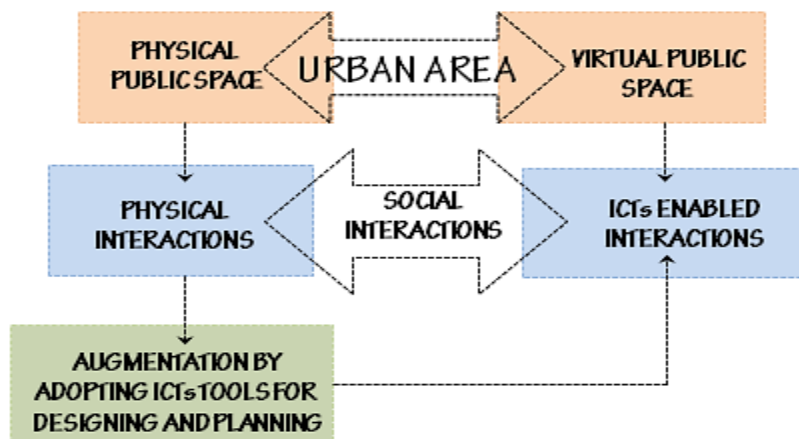## IV. TECHNOLOGICAL INTERFACES BETWEEN PHYSICAL AND VIRTUAL PUBLIC SPACES

Fig.22 Technological interfaces between physical and virtual public spaces

A. Concepts, Approaches and Action plans

1) ICTs Tools for Planning and Designing

Innovative ICTs tools have influenced the planning and design of public spaces allowing better analysis of the urban contexts / public spaces to evolve planning and design strategies through the development of digital simulations. Space syntax can be developed for complex analysis of accessibility, circulation pattern and user behaviour in public spaces. Augmented reality applications provide new ways of for experiencing the ever evolving urban environment. Several modelling concepts aid in creating realistic looking virtual prototypes in physical spaces.
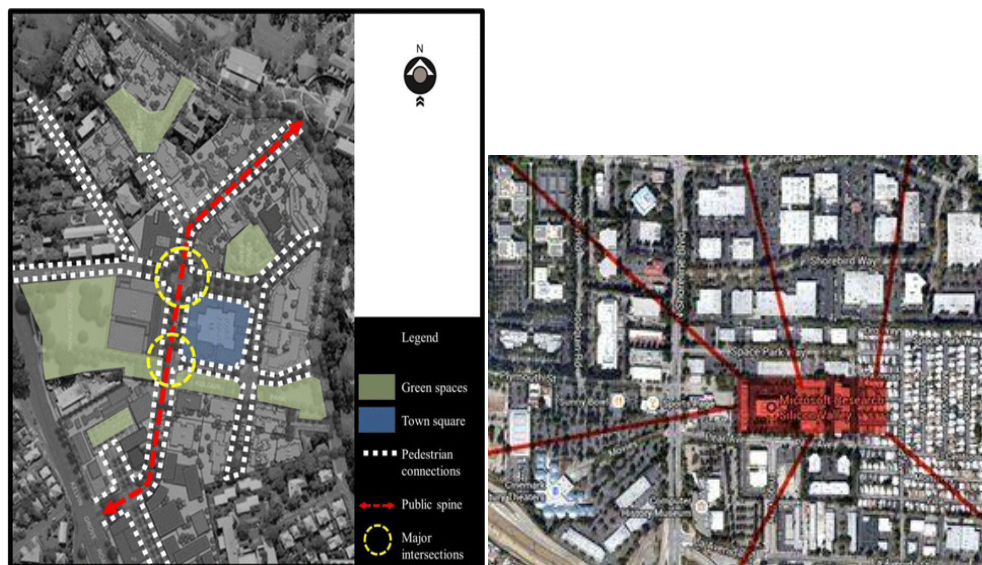

Fig. 23 & 24 ICTs Tools for Planning and designing public spaces

2) Social Media Platforms to Create Awareness

In the contemporary digital age, social engagement can easily be achieved through far distance connections in social media networks (on-line communities) decreasing the need for engaging with their local social environment. In this context, a sense of place needs to be developed through an active engagement with the place.

Communities should be encouraged to involve in creating public spaces which are adaptive and articulated via social media. This helps in constructing a robust sense of physical space from an online sense of connection.

Fig. 25 & 26 Use of internet enabled portable electronic devices in public spaces to promote social interaction and awareness programs

3) Creation of 'Physio-Digital Public Space'

'Physio-digital public space' proliferate the concept based on the co-relation among community-space-information technologies. Wireless internet, GPS based technologies, digital interactive media facades and displays along with interactive applications of portable electronic devices should be integrated in the physical spaces of major domains (planning, designing, culture, entertainment, and education) of public spaces.
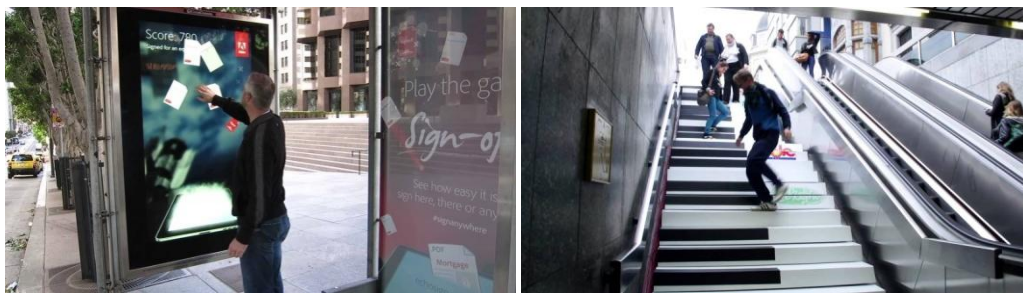
Fig. 27 'Physio-digital public space' on streets   Fig. 28 Integration of digital interface in public buildings to promote physical activity

4) Wireless Internet

While wireless internet connectivity within public spaces contributes wider community participation, it might also result a private interaction sphere within public spaces if used as personal electronic device. To avoid this and to encourage active community participation and interaction, internet infrastructure must be planned to encourage the activities of interactions (either people to people or people to interactive objects/facades) creating sociable environment.

Fig. 29 Technological integration to encourage active transport

Fig. 30 Digitized information for holistic understanding of the place

5) Digital Interactive Media Facades and Displays

Digitally interactive media facades and displays (using ICTs tools) in public space presents an innovative platforms to present dynamic images and graphics relating to various aspects such as interactive city maps at various scales (such as regional, metropolitan, neighbourhood, community), social awareness programs/campaigns/experiments, engaging games for playful expression,heritage / cultural landscape, ongoing / upcoming seasonal events, tourist attractions, climatic information,urban governance, etc.

Fig. 31, 32 & 33 Digital interactive displays on building facades to engage user groups

6) Personal Electronic Device Applications

Personal electronic devices have changed social interaction in public spaces. Omnipresence of internet connectivity, location based services and augmented reality can be effectively used for community participation while offering newer perceptions of space.Physical environment of a public space can be turned into game boards by developing location based interactive games encouraging community participation in creative and fun ways using their personal electronic devices.

Fig. 34, 35 & 36 Location based interactive games encouraging community participation in creative and fun ways
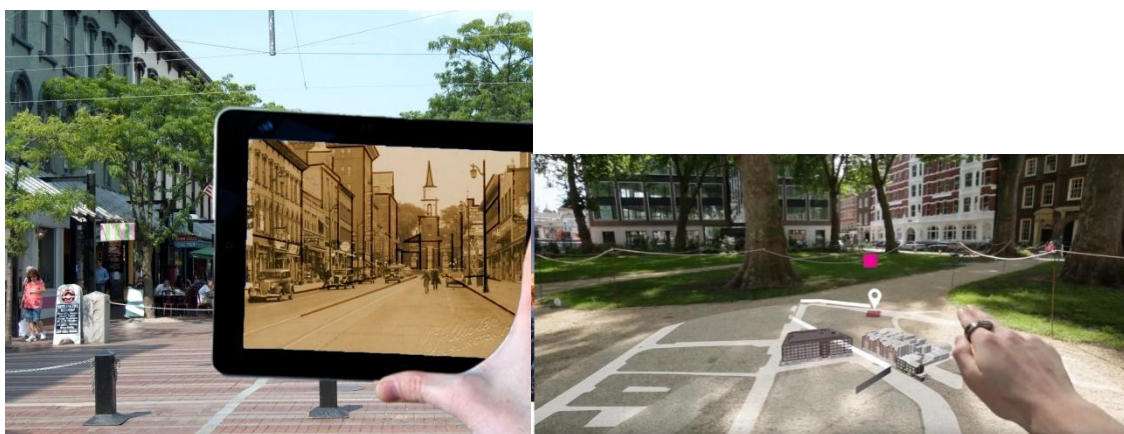

Fig. 37 & 38 Augmented reality can be effectively used for community participation

V. CONCLUSION

Public spaces in contemporary cities are witnessing greater degree of complexity due to the presence of opposing strategies and practices pertaining to their structure and use.Application of ICTs can result in engaging public spaces which are inter-connected and inclusive while favouring controlled urban environmental aspects. Applications of ICTs should not be prioritised towards the public spaces of particular economic interest.

Robust integration of technology in public spaces essentially stimulates active community participation where they interact not only with each other but with space around them. The involvement of planners, designers and architects would be important to promote the engagement of ICTs to create and plan place based and community driven public spaces.Planning and design ideologies pertaining to public spaces should prioritise technology infrastructure along with the provision of essential physical and social infrastructure to encourage and facilitate social interaction while respecting the optimal degree of privacy as well.Overlapping of digital narratives over physical space yields innovative tools to heighten the appeal of public spaces for community participation strengthening 'Sense of Place'.

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