IMPACT OF INFORMATION TECHNOLOGY ON URBAN FORM

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ABSTRACT

Cyberspace is opening up, and the rush to claim and settle it is on. We are entering an era of
electronically extended bodies living at the intersection points of the physical and virtual worlds, of
occupation and interaction through telepresence as well as through physical presence, of mutant
architectural forms that emerge from the telecommunications-induced fragmentation and
recombination of traditional architectural types, and of new, soft cities that parallel, complement,
and sometimes compete with our existing urban concentrations of brick, concrete, and steel.

William J. Mitchell
City of Bits
MIT, 1995

The evolution of electronic network was received with mixed reactions and created much
architectural discourse, its impact affecting various aspects of urban life from social to economics
and urban planning. From the perspective of urban form, the initial response was the threat to
existence of physical space by the new virtual bitsphere\(^1\) as an alternative meeting "place" for
human transactions which used to occur in the former. With perception of electronic spaces having
the ability to break down urban places, futurologists even went further to predict the demise of the
city where urban processes take place. It seems inevitable that digital networks would change the
city which has been familiar to us.

The paper seeks to argue for a neutral stand that does not see the proliferation of digital
telecommunications as a menace to the traditional concepts of urban spaces by completely
supplanting the need of the latter and make independent, dramatic changes to the physical urban
form. On one hand, while it is anticipated that digital telecommunications would have effects on
urban life and form with impact not to be underestimated, this does not mean that the existing urban
fabric would be utterly transformed by the autonomous electronic paradigm or disintegrated beyond
recognition like the gloomy post-modern city devoid of life in Ridley Scott's "Blade Runner", in the
likes of dystopian vision. This is because digital telecommunications is a superimposed layer of

\(^1\) Mitchell, William, *City of Bits*, "AD 2K The Bitsphere", MIT (1995), USA
infrastructure that builds on the basis of the contemporary urban fabric and hence is interlocked in its relationship with the existing conditions in the mutation of cities. Most importantly, it is unlikely that physical urban form and spaces will be rendered redundant or entirely dominated by substitution effect of electronic networks pervasive in urban life such that urban form is disintegrated. To simply make such a judgement based on one aspect of the complex relationship between information technology and urban form is seeing merely tip of the iceberg.

I would hence like to propose that the transformation of the urban form takes place at the interface of the electronic spaces and physical places, rather than the former as an autonomous factor threatening the latter and rendering its physical conditions redundant.

In the paper, I would like to investigate beyond the direct association of a disintegrated city with the advent of information technology. The intricate relationship between network of information technology and urban form of the city would be thoroughly explored to evaluate the process of transformation of city form, various perspectives taken from Manuel Castells, William Mitchell and Stephen Graham and Marvin to substantiate the findings.

These three authors have taken different positions in perception of information technology's impact on the city, whereby Castells view information technology as an absolute definer of urban form while Graham and Marvin took a more pragmatic approach to show that physical spaces are not going to be dominated in the dramatic way that he suggests. Manuel Castells provides one end of the spectrum by advocating that flow of physical spaces would eventually be dominated by phenomenon space of electronic flows whereas Graham and Marvin suggest that the urban city is transformed on the basis of the existing industrial fabric and its physical conditions are the limiting factors to absolute domination by the new network but a new synergy results from their convergence. Mitchell took a more neutral position by predicting the possibilities of urban form at the interface of electronic and urban spaces. Despite the three different positions taken, the authors do not deny the relevance of physical realm in the proliferation of electronic networks' effects, to varying degree. All, especially Graham and Marvin, ascertain that transformation of the urbanscape is not only the workings of the electronic paradigm, albeit a powerful catalyst, but is also based on the existing urban conditions2. Extract of their theories would be discussed and analysed in the initial part of the essay not only to derive the perceived impact of information technology on urban form, but more importantly, as a basis to substantiate the continued importance of physical urban form and spaces.

The main discussion would be carried out to study the impact of information technology at various levels of the urban form from the macro to micro scales, consisting of namely spatial pattern, urban environment as well as the office and home environment.

To further develop these findings, the local context of Singapore would be used to illustrate how its urban planning has accommodated and accommodating in its future vision the electronic networks as a tool for economic and social excellence, achieving a balance of urban and electronic spaces. How it has applied any of the theories discussed to its urban planning would be evaluated to demonstrate the impact of information technology on a metropolitan city paradigm.

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2 'Urban conditions' refer to the physical, social and economic factors influencing the shaping of urban form.