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The Effects of Technological Aspects on the Formation and Transformation of Cities: The Case of Amman

Bushra Zalloom
Zarqa University

Abstract: The contemporary world is dominated by the power of technology and capitalism ideology (called techno-capitalism in this paper). The techno-capitalism transforms various cityscapes worldwide into unsocial hubs for economic purposes and giant realms for play. This transformation weakens social cohesiveness and harms the cityscape by causing poverty, inequality, and a loss of identity, even if it enhances the possibility that the city will enter the global market, and stimulate economic growth as well as innovation. This paper aims to discuss the evolution of cities by studying the reasons behind their continuous dynamics and exploring the influences and effects of techno-capitalism. To achieve the research aims, Amman's case study will be studied and analyzed to explore the effects of technological and non-technological aspects on the formation and transformation of the cityscape. At the conclusion, the paper will propose some strategies to preserve the uniqueness of the city while keeping up with modern technology.

Keywords: Technology, Capitalism, City transformation, City identity

Introduction

Since the 19th century, technical advancements have accelerated, fuelling urbanization's fast rise. They expedited the transformation of the spatial and social boundaries and distinctions caused by time and location. The effects of new technologies fundamentally alter the current urban structure and its primary purposes, paving the way for the arrival of different kinds of functions that affect the cityscape. Many primary roles that were dominant and have been for thousands of years changed as a result of digital technology.

Previous studies confirm that the cityscape of traditional cities is a product of the social and cultural aspects that represent its sociocultural characteristics. During the last decades, these various urban landscapes worldwide have been transformed into what is known as the High-tech international style. Technology and capitalism played a vital role in this transformation and their influences are observed in the built environment as well as the cityscape. The use of new technology, globalization, and economic boom have affected the urban process and development. The macro-scale sensitivity of urban fabric as well as the micro-scale uniqueness of the architectural style have been transformed to fulfil capitalism's demands and reflect modernity, power, and prosperity. As a result, many cities started to change their image, and local government was convinced to adopt a techno-capitalism perspective on city planning and design.

This paper provides an analysis of how urban structure has been affected by techno-capitalism and transformed by focusing on the case of Amman, the capital city of Jordan, and discussing the causes and effects of this transformation. First, it discusses the influences of technological factors on urban form, then, it analyzes the formation and transformation of Amman's cityscape during the last decades, and finally, some strategies to preserve the uniqueness of the city while keeping up with modern technology are proposed.

Method

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- Selection and peer-review under responsibility of the Organizing Committee of the Conference

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The case study method has been used to achieve the research aim of studying the effects of technological aspects on the formation and transformation of cities. The case of Amman is analyzed to explore the impacts of technological and non-technological aspects on the cityscape. The review of existing literature is made to comprehend the main aspects that affect the formation of Amman and to understand the effects of modern technology on the cityscape and social life. The physical features have been recognized by conducting site visits to analyze the design of the high-rises in Amman, their construction, the used materials, and their impacts on surroundings areas.

Results and Discussion

The Influences of Technological Factors on Urban Form

Technology, according to Geyer (2002) does not determine historical evolution or social changes on its own; rather, it reflects how society might evolve in certain ways by utilizing technical potential. Technology creates the boundaries between reality and new cybernetic spaces in modern cities, it produces virtual analogs that shape new social norms and requirements (Mozuriunaite, 2016). Using technology in architectural design and construction provides the same growth pattern, the same high-rise building style, and the same cityscape without referencing the locality, therefore, the image of the city doesn't represent the individuality of the location, and the viability of social systems is harmed by this placelessness. As a result, the city's identity and traditional culture are subject to adaptation and change (Zalloom, 2018). The techno-capitalism effectively translated commercial concerns into new urban forms while ignoring the significance of spatial interactions (Madanipour, 2001). The risk of losing one's unique identity in the global environment is due to the globalization of urban form (Antrobus, 2009).

Lin (2010), Kostof (2009) and Oktay (2002) and others claim that a city's identity is influenced by the links it establishes with the outside world. The identity of the city is significant in forging ties in the modern era of globalization. Therefore, city administrators who want to modify their cities must be aware of how their environment is seen to attract investments (Antrobus, 2009). Cities should be redesigned to meet the demands of modern technology without harming their identity, they may be viewed from several perspectives as centers for business and creative industries (Sassen, 2006), as realms of play (Stevens, 2007), or as spaces for consumption (Lin 2010). Information technology plays a vital role in branding the city and its urban spaces as a modern hub for technology that attracts investments.

Formation and Transformation of Amman's Cityscape

Following the Second World War, two schools of thought emerged and influenced Amman's architecture. Jordanian architects who received their education in the West attempted to apply modernist architectural concepts (Pilder, 2011), however, those who received their education at Jordanian institutions applied the Arab-Islamic architecture as a model for creating a new Jordanian style. These various viewpoints enrich the city's architectural language and represent Amman as a hub for architectural innovation.



Figure 1. Transformation of Amman's skyline from humble to high-rises

Amman, once known as the city of hats and steps, by the time it is known as the city of circles. The history of Amman's development is defined by its eight circles; starting from the First circle in Jabal Amman district

through the Eighth circle in Wadi al-Saier district (GAM, 2022). Zalloom (2018) reviewed the historical development of Amman and stated that local socio-spatial aspects formed the cityscape, which includes its natural assets, such as "the hilly topography, and the Amman Stream", and its built environment, such as "the humble skyline, the grand stairs, and the natural stone cladding." Amman was identified by its humble skyline with four-story buildings clad with stone, the emerging technology transformed its skyline into an exhibition of electing Hi-Tech styles clad with glass (Figure 1.). Additionally, the lack of construction codes and conservation policies turned parts of the city into displays of electing design with no respect for urban identity.

The techno-capitalism philosophy uses its ideology to reshape the universe in accordance with its own limited viewpoint. The economic crisis of the twenty-first century had a huge impact on the physical, social, and cultural elements. The transnational mobility of capital brought particular practices among diverse geographic zones where the built environment is invested for consumption and production (Madanipour, 2001). Similarly, the influx of migrants during the Gulf Wars in 1990 and 2003 had a great effect on Amman as they significantly changed the city's physical, sociocultural, and economic qualities (UN, 2005). By purchasing real estate, making commercial investments, and introducing new consuming habits, the newcomers helped Amman's economy. The city rapidly developed new cafes, restaurants, hypermarkets, and malls that provided WI-FI connections to satisfy the users' needs, in addition to expanding existing telecommunication and modern infrastructure in response to the new, rising consumption pattern (Pilder, 2011). The development of a new urban (digital technologies) paradigm is enabled by new communications systems, which connect operational city systems.



Figure 2. The emerged International High-Tech style of high-rises in Amman

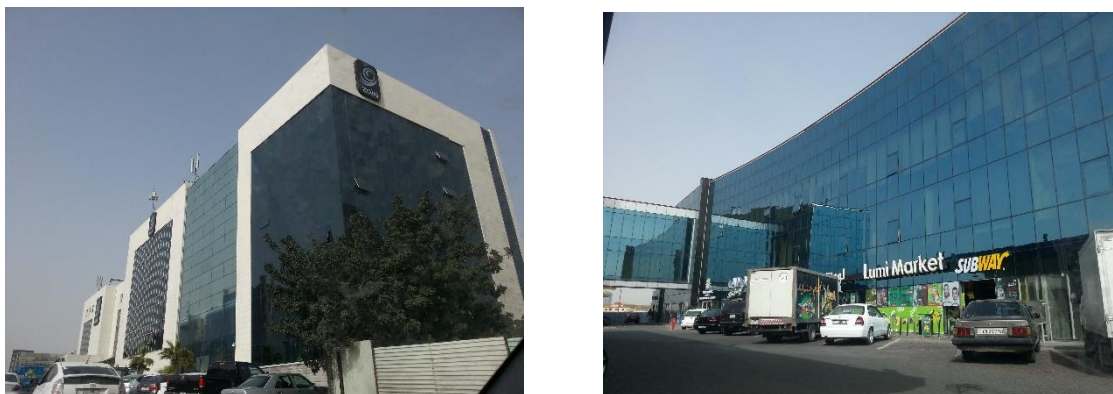


Figure 3. Using huge areas of glass in cladding the facades of buildings

Furthermore, the information technology revolution has changed the use of construction materials to represent modern aesthetics; several shops, for instance, replaced the local stone with enormous quantities of glass, and sometimes with colorful aluminum composite sheets known as Alucobond sheets (Zalloom, 2020). The growth of high-rises and retail centers with luxurious facilities and infrastructure for the elite is an obvious illustration of urban reformation and the formation of spatial organization (Al-Faouri, 2011). These high-rises are made of irregular and cubic glass pieces. Showcase glass-unit and aluminum-sheeted buildings, which display a standardized architecture while supporting technology and its innovative successes (Figure 2, Figure 3). High-rise buildings were viewed by decision-makers as a crucial answer for meeting the demand for residential projects, addressing the rapid growth in land value, and lowering the infrastructure costs associated with

horizontal expansion. Even if the economic factor is important, no effort has been made to preserve the urban form's general characteristics.

The micro-scale of architecture and the macro-scale of urban landscape were impacted by this transformation and began to adopt the Hi-Tech style which is also known as the global style. As a result, the city becomes an exhibition of different architectural languages that reflect power and prosperity. Buildings represent techno-capitalism, promote the environment that suits the consumer capital, and symbolize technical signifiers inside and outside them (Figure 4). The culture of globalization threatens the cityscape as ready-made products are installed everywhere, and privately built structures with various Hi-Tech designs dominate how the city is perceived.

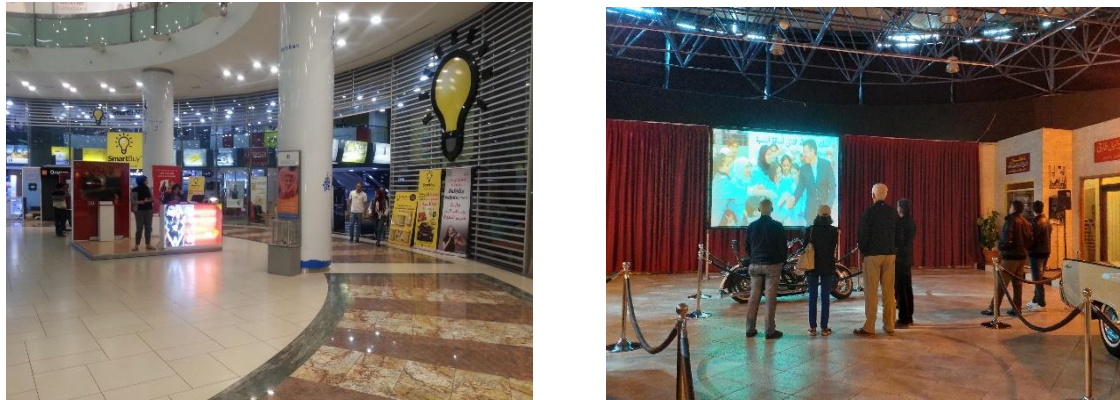


Figure 4. The use of technology inside various types of buildings

The socio-spatial character of Amman was presented through its outdoor spaces, squares, markets, and piazzas. Public steps were built along pedestrian walkways to enhance the city's distinctive urban character as it slowly grew from its center. Today, working from home makes life and work easier. People who live in one region might be employed by firms in another region by using technology. Digital communications have established themselves in both the industrial and service sectors. Electronic mail quickly takes the role of paper mail and minimizes people's movement and the use of transportation (Mozuriunaite, 2016; Jucevicius, 2007). Moreover, the great demand for real estate has caused spatial and social division since rising land and property values are forcing residents to move to the city's outskirts, where costs are still reasonable. All these factors affected the role of public spaces.

The benefits of new technology lead to new transportation requirements and societal behaviours that have an impact on the existing urban infrastructure. The spread of the internet and virtually active systems alter social mores, a nation's cultural legacy, and how its citizens use cities (Mozuriunaite, 2016). This type of technological advancement causes a reaction that will inevitably have an impact on other variables. Physical movement and living in an urban environment are no longer necessary for intellectual work. This type of digital mobility reduces interpersonal interactions and socializing. Cities that are growing assimilate, change, and shrink as a result of the mixing and interdependence of their physical structures.

Recommendations: Strategies to Preserve the Uniqueness of the City

This section suggests some strategies to preserve the uniqueness of the city while keeping up with modern technology. The study shows that Amman's recent history serves as an example of how techno-capitalism influences urban identity and helps in spreading the High-tech architectural style. The failure of modernist and regionalism architects, as well as the impact of local businesses in reshaping the city, were clear indications of a lack of policy and the absence of a defined strategy or vision for the growth of the city. The Amman case confirms that technology, as well as capitalism, have affected the cityscape and created a fragmented cityscape that harms social life. Therefore, a comprehensive approach is required to fulfil the investment needs and implement technology while preserving the identity of the city and its lure.

Practical tactics to control the city and its distinctiveness should be used, and new forms of governance must be connected to novel approaches to preserve the uniqueness of the city. This is how urban threats may be transformed into urban threads. The initial stage is creating a city-wide agenda by conducting a thorough

evaluation of how existing public areas are currently operating. Each district should be included in this evaluation, along with residents and other shareholders. Such a district-by-district strategy motivates locals and decision-makers to revisit their neighborhoods and discover unanticipated opportunities. Spaces that are not being used or are being used inefficiently can be discovered and upgraded. Social innovation strengthens the sense of place identity by giving a chance to expand the public realm for public participation, ingenuity, cohesion, and creativity. Where place-making is well-established, the community and the local cooperation are the experts in the process of developing sustainable, dynamic, and distinctive public spaces that really benefit the residents.

Further steps are taken by various cities to develop the urban form and strengthen their cultural heritage, including direct investment in cultural tradition to enhance the area's unique character; promoting quality of life and place distinctiveness worldwide to attract businesses and skilled labor; preserving the historical customs and values; scheduling festivals in the historical context; hiring knowledgeable tour guides; restoring ancient public places and giving them various purposes that the residents may experience and enjoy in their everyday lives. In addition to addressing the physical component, these activities bring new usages for the built environment.

These strategies can additionally include reshaping the social fabric through enhancing social activities, comprehensive governance for the developments and their amenities, and finally, public involvement in decision-making and planning. The public viewpoints are the most valuable sources of knowledge because they can precisely choose what makes their cities an attraction.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPSTEM journal belongs to the author

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Author Information

Bushra Zalloom

Associate Professor, School of Architecture,
Zarqa University, Zarqa, Jordan
Contact e-mail: bzalloom@zu.edu.jo

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