

# sustainable urban landscape and new atrium

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**Abstract—** Atrium enable transition between the public and privet realms and are often used to connect buildings to their context.

This paper aimed at expanding the use of an atrium space to a city and urban space, in order to improve the quality of interaction between human and the city, to create mental impressions and good memories of urban spaces and create beautiful urban scenery. In this article atrium spaces introduced be as a factor to improving the quality of the urban landscape through the connection between old and new urban spaces, particularly to discuss the sustainable urban development and aesthetics of urban space and accept its new role and responsibility and accountability to the new expectations. Findings in this paper shows that with using atrium spaces as a covered public spaces, particularly atrium Plaza, can be create coordination of urban landscape and create urban spaces with the appropriate dynamic conditions with a comfortable environment.

**Keywords-** Urban landscape, Atrium, public space, sustainable approach

## Introduction

The urban landscape is the human-city interface, therefore a significant part of the urban knowledge and feelings are affected by it. The citizen's perception from the city and urban landscape is form by various factors, which according to the urban landscape's objective and subjective aspects importance in its perception, in comparison to other factors, therefore we must pay more attention to the formality and type of urban landscape, from their point of view. One of these factors "attention to the public spaces and their quality" as a determining and altering factor, is of utmost importance.

Designers and architects, when designing buildings and urban spaces, are in the need of an appropriate perception of the principles, and the factors affecting these spaces in the City Image; So that an appropriate connection could be formed between the people, buildings, and the city. The goal from the

current study, is "investigation in the manner of increased urban landscape perception, and the atrium's effect on them".

Over the past ages, the modern architecture has created some kind of introvert-extrovert architecture model, by deepening the internal public spaces and emphasizing the transparent surfaces, and the atriums are considered as such spaces within the buildings, and have various uses. But could the atriums be used as a factor to improve the urban landscape quality?

The study method is based on the contents of the architecture literature, and afterwards an analytical-exploration method with the nature of the effects from atrium spaces, on the urban landscape. According to this, the construction concept of designing a urban landscape, with a capability of spatial understanding and its effect on increasing the perspective quality, is inferable. In this study, we gathered the data using the library approach. Our assumption in this study is that by combining and expanding the inner building public areas, especially the atriums and urban public spaces, we could increase the building-city connection, and as a result, improve the urban perception and urban landscape.

## I. DEFINITION OF URBAN LANDSCAPE

The word "urban landscape", alike the word "urban", although it is an old concept which was present from the past, alongside the appearance and genesis of the cities, but was mentioned as a specialized word at the late 19th century, in the regard of American cities, due to the design and activities of "Frederick Law Olmsted", the father of landscape architecture [1]. The concepts of urban landscape were first stated by "Gordon Cullen", in the "Architectural Review" magazine. He considered the image of each city to be an answer to the human behavior, climate, and safety factors, or in other words, skillful interventions in the framework of increasing environmental capabilities. Cullen believes that the perception

of each person from the urban landscape, is affected by the sense of smell, place, and environmental concept which each person is placed within [4].

## II. THE IMPORTANCE OF UNDERSTANDING URBAN LANDSCAPE

The importance of a urban landscape, as an interface between human and the city phenomenon, is enough to sometimes be mentioned in the definition of urban design, such that the urban design is actually the management of the urban landscape. In better words, a urban landscape is the change of an idea, into an empirical reality.

Urban landscape is a means to feel the city, which means transferring the space's emotional sensation to the users (AKA. people). In the everyday path from home to school, most of the time, no memory is formed within a person's mind. But a different space, alongside some green space, attract the human's sight every day, and is deemed fresh and memorable forever.

In fact, with a person's insight and experience from the spaces, comes a better recognition of the city. Therefore it could be said that through improving factors that increase the city image perception, it leads to the city legibility.

Now the manner of how this mental image, weak or strong, is formed within the minds of different people, depends of various factors, which one of the most fundamental ones depends on the type of area, created sense and scent, and its conditions.

## III. IMPORTANT ROLE OF ATRIUM FOR RAISING THE QUALITY OF TOWN SCAPE

The visual effects that a city could have on the people and their daily lives, are numerous. Such that if we gather the people, they prepare equipment so they could use and enjoy their free time, which are more than they need; parallel to that, if we gather the buildings, we will create a visual pleasure which is not resulted from sporadic buildings. Of course, attending to the coordination between these buildings is a hard job, which has attracted the attention of many architects, and urban/urban landscape designers [3].

Actually, the "Art Proportions" is to create a logical balance between all the elements, which are used in the environmental genesis. Indeed, we must create the connection between the buildings, trees, nature, water, traffic, and other things alike, so that this art show could be a reality; because a city, is an exciting event in the environment [3].

By introducing new public areas and activities into the public fields of the city, we could encourage the people to use them more often. Along with it, we must create a matching image so it would maximize the effect on the sense of place, and lead to a fixation on these areas. By roofing the urban areas, we could create an appropriate environment. Vast covered areas, in the urban landscape view, propose a sensation of integration, as an element of outdoor architecture [2].

Also atriums, as a space is including all environmental elements including plants, water, etc. with various forms and geometries, or a construction compound which is worked on its different infrastructures such as the coordination between urban spaces, creating the perfect city views, and also its effect on the city stability, could improve the urban landscape (figure- 1).



Figure 1 - new public space of Union Station , including wide glass sidewalks space and new public space. (<http://urbantoronto.ca/news/2013/07/history-and-modernity-meet-over-tracks-union-station>)

### A. *The role of atriums in the coordination between the old city and new urban spaces*

One of the current goals followed by the architectures when designing or expanding the building, is the capability of a new connection between the inner-building areas with the urban spaces. With this done, a convergent relation would appear between the people within the building, and the society outside it. The key role of this evolution, is based on the atriums. By designing the atriums beside the museums, or by roofing up the urban fields, the public spaces would be carried into the museums. This relation is amplified when the atrium connects an older build, with a new one [5].

The capability to help protect the older buildings, is one of the atrium's functional abilities. In fact, by reusing the present buildings for covering, and therefore transforming old courtyard builds into exquisite atrium buildings, they are given a new role and purpose. Therefore, by inserting the atriums into such designs, the need for new buildings would be reduced, and also new urban equipment are suggested [10].

In the renaissance of old buildings, their values and historic urban fabric are preserved, while they gain a new use. Parallel to the renovation and protection, atriums are considered a tool to change the use of important buildings and the new-old integrations. On the other hand, with the promiscuous construction nowadays, there is grave need of coordinating views, and integrating the present buildings with modern designs. Inserting the atriums as an intermediary space between the old and new buildings, reduces the tension between the architecture, and makes the coordination of new

and old buildings, possible. Therefore, it is used as an intermediary to change use of old buildings, in new projects (figure 2).



Figure 2 - Creating a comfortable pedestrian away from outside unfavorable climate became possible through building glass pedestrian in Lyon, France.

#### B. Atrium and Coordination urban façade

Atriums, with various sizes and forms, could perform as an interface between the present buildings, and connects their facade, and lead to coordination between the building facades. On the other hand, by inserting a huge glass space in the view, we exit it from its uniformity and rigidity, and lead to the facade's charisma. Thus that the atriums, by representing their inner concept, through the transparency of the surfaces connected to the street, in addition to a stronger communication with the city, is effective in introducing the building into the city, and its legibility. In better words, atriums could perform as an urban [7].

Atriums as an Urban Monumental Architecture, are mostly seen in the courthouses, city halls, and post offices. These uses were first seen at the turn of the 19th century, in America, and were considered as urban indicators. Most of these buildings are still active, and are rebuilt with new applications [6].

Similarly, its causes the expansion and renovation of the present buildings, by connecting them to each other, and preserve the old view, so to serve as the mediator between the old build and the new one. Therefore, atriums are considered as a tool to confront new constructions, and also regulating the city view ([10].

Additionally, by the use of atriums, the view of old and sensitive buildings, could be restored any protected, through reconstruction.

#### C. Atrium role in creating sustainable urban public space

The atrium's capability in helping the urban designing strategies, could be helpful on many accounts. Change in the modern era, from single-building projects into urban

complexes and blocks, has caused the atriums to have an effective role in creating a relation between the phenomena, or construction volumes, alongside its activities as a basic interface element [9].

The atrium spaces, add more public areas to the city, and even causes them to confluence with public areas, or even expand them. Additionally, atriums protect the buildings from the water and air outside, and create an appropriate for the people, all over the year. Simultaneously, this space adds a continuity to the urban significant sidewalks, when the main sidewalks and the inner sidewalk systems, are connected to the building's internal atrium. Most of these factors permit the atrium space to act as an urban renovation catalyst. The surplus equipment that could be presented in the atrium, such as shops and service areas, are located in an environment with green spaces, fountains, and exhibition [6].

By using the glass atriums, with different spaces qualities in their geometry, we could create various unified areas. In such spaces, in addition to the simplified connections and access, it creates a gracious area for gatherings and passing free time, talking and friendly meeting, regardless of weather conditions, and also permit the people's presence in the urban areas, all over the year. This factor, is most useful for the warm and dry, or cold environments, especially in the winter or summer [8].

In winter cities, by designing environments with different temperature qualities, from the forms and materials as a main stimulus in the internal public areas (atriums), various spaces are prepared to satisfy the people and their activities, all around the year [8].

These internal public areas (atriums), designed for the winter, could be used for the social life in all months of the year. The cities of Montreal and New York, allocated the lobby of office buildings, to public areas. The New York Central Station and Washington DC, which include thousands of passengers and tourists; the atrium of the IBM building in New York, is a very famous example for the internal public spaces (figure 3).



Figure 3 - Public Space of atrium IBM Building

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The Easton Business Centre in Toronto, skillfully connects the huge shopping center, to the present urban street texture and public transport. Which includes an atrium covered with plants, pools, shops, offices, and restaurants surrounding it, and the Radio .St in Utah, which uses an adjustable glass sunshade system during the year. Also in Europe, the Hamburg Enclosed Mall, alongside its 8 kilometer sidewalk, was designed by Ralph Skin, and reduces the urge of travel to cities with a better climate over the winter [8].

In fact, the atriums as enclosed squares and plazas, cause increased social interactions, alongside the daily human activity. Such spaces, in addition to forging a more intimate space, cause a decrease in social unusual activities, and increase the public security. Atrium squares, are attended to as economic resources, and are considered an effective factors in improving the urban stable economy.

Urban winter gardens, are introduced as another example of urban atrium spaces. These winter parks are covered with snow, and by forming an appropriate environment with a different climate, alike the Roman Forums, are to create a close bond between the artists and people, especially the kids to make a snowman or monuments, and to enjoy the winter far from the Inclement weather outside (Fuller Crane 2005) (figure 4).



Figure 4 - Crystal yard, Internal park IDS Center, in Mini Police city center.

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Although the atrium decreases the direct Curran and received light from the windows between the two buildings, but by generally comparing the comfort of the two conditions, it could be seen that the differences are caused more by the personal feelings, and an appropriate and uniform distribution of temperature, humidity, and ventilation in all the spaces overlooking the atrium, led to public satisfaction.

The atrium of the Headquarters Buildings in New York, as some kind of new urban public space, is an enclosed internal park, which is designed to be used by the citizens, the public, and the office residents, over the entire year. The atrium space proves as a passage between the city (42 ST, the urban park that is beside the urban residence of the Theodor royal family), and the internal space (surrounding offices) (figure 5).



Figure 5 - Headquarters atrium building - Public Internal Park -1967.

Figure 5 - Headquarters atrium building - Public Internal Park -1967.

#### IV. CONCLUSION

The current study indicates that according to the urban landscape importance, and the factors affecting especially over the past few years, the space quality of the buildings and urban spaces, are brought to the attention of the programmers and politicians, to improve this matter. Since the atrium is one of the most used spaces in the past, and especially modern architecture, nowadays it has found a more important role, and by performing the role, it could be affective in improving the urban landscape patterns, via these ways:

- The atriums are the connecting factor between the old and new view of the buildings, and organizing the urban façade and features.

- By connecting and renovating the obsolete and historical (old) spaces, to the modern buildings, and by creating public urban areas between them, the atriums grant a new meaning, identity and application to these spaces, though the creation of an appropriate space.

- The atrium's role in new aspects such as the social-cultural meaning, and the sense of place and time, improves the urban landscape's socio-spatial structure.

- The atriums, as urban monumental elements, are appropriate during the entire season of the year, especially in the winter cities, which leads to the urban landscape's stability.

- Also within the building, the atriums could prove as the core and center of the building by creating a different

environment, with high social values, gadgets and visual communications.

Generally, the atriums could gain a special place in the city, because according to its stable traits, ability to work in a micro-climate, it could amplify the temperature, moisture, and external air flow fluctuations, and significantly reduce the heat loss. This matter is of utmost importance in a Sustainable Urban Development, and must be attended to.

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