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The phonic identity of the city urban soundscape for sustainable spaces

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Abstract The world is urbanizing rapidly, with more than half of the global population now living in cities. Improving urban environments for the well-being of the increasing number of urban citizens is becoming one of the most important challenges of the 21st century. Although city planners customarily have visions of a “good urban environment,” those visions are usually limited to visual esthetics. The qualitative perspective of sound, which includes sonic diversity and acoustic ecology, is a neglected area of urban design.

Today, many cities have effective legislation that is aimed at reducing the negative effects of noise. Even though many cities may be perceived as very noisy, there are a number of effective practices that can be rather quickly implemented. The soundscape approach, which considers environmental sound as a resource, can be most effective when applied in the urban planning and design process. This paper aimed to apply the soundscape approach in the planning of urban spaces’ redevelopment. It explores how the sound impact on the shaping of urban open spaces through international case studies. Then the paper suggests a strategy for including the urban soundscape in the planning process for one of the noisiest squares in Cairo, in order to create a quiet space amid the city’s bustle. In this context, the paper concludes that, the concept of soundscape is an established theme in the acoustics environment and that there is a need for soundscaping techniques that are specifically adapted to the outdoor environment.

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Introduction

We are all, in general, largely unaware of the importance of sounds in relation to how we perceive the quality of a place and a good living environment. Whenever urban sound is on the agenda, the topic is primarily noise abatement and legislation to reduce noise.

The study of urban sound is increasingly becoming an established research field in many parts of the world. Many scientists and planners today argue for the need to make

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environmental acoustics a study program in which innovative design is used to bring out the positive aspects of sound in the urban environment.

This paper will focus on the importance of engaging in the soundscape of the city, emphasizing that the city should be enriched with natural sounds. Then the paper will prove that sound is an important part of people's experience of place and that it contributes to the definition of the phonic identity of the city.

The research problem

The sound environment in the modern cityscape is a growing problem. It is a serious threat to our health and impairs recreational possibilities. Traffic noise pollution in particular is a big environmental problem. City planners often have many innovative solutions for how to create a "good and sustainable urban environment." However, the dynamic sound perspectives in the urban environment, such as sonic diversity and acoustic ecology, are still very much neglected, especially in urban design. There is therefore an urgent need for better, more understandable representation of the sound environment. We will focus on the urban soundscape and its applications in urban design, especially in urban open spaces.

Research objectives

The aim of this paper was to view sounds as potential resources in urban planning and in the design of outdoor environments. Landscape architecture and planning could be developed and give way to conscious acoustic design and active sound management in order to produce the "right sound at the right place." These objectives could be achieved through the following:

- moving beyond just reducing noise levels and initiating innovative experiments of designing urban soundscapes that would create a calm environment and quiet spaces amid the city's bustle;
- describing acoustic phenomena in urban environments;
- determining the application of acoustic aspects of urban design;
- reducing unwanted noise in outdoor areas (streets, piazzas, open spaces, and nodes);
- managing the acoustic environment of cities through creation of sustainable solutions;
- enabling landscape planners to view sounds as a planning resource to increase awareness of soundscapes;
- enhancing our natural soundscape to create a pleasing soundscape.

Research methodology

Soundscape plays an important role in evaluating the quality of an environment. It is the life of a space that one experiences by listening. This paper explores the concept of the urban soundscape in urban open spaces from theoretical, analytical, and practical viewpoints, aiming for tranquility of spaces and sustainability.

This paper seeks to define the urban soundscape concept, its objectives, and how the phonic identity of a city helps to

accentuate the characteristic properties of the area. Next, it analyzes how the concepts in international case studies were developed to optimize the soundscape for city sustainability. Then, it deduces a framework of the strategy of the urban soundscape planning process. This is followed by an applied study of one of the noisiest squares in Egypt and a questionnaire regarding the development of the visual image of Ramses square by noise reduction through the concept of urban soundscape and acoustical considerations.

Finally, this paper suggests a set of recommendations for developing urban open spaces from the perspective of soundscape and its application in urban planning and design.

Research hypothesis

The concept of the urban soundscape can positively impact the phonic identity of a city in order to add the tranquility of the city, because urban soundscape strategy has sustainable solutions for reducing noise. This paper assumes that the future soundscape of any city should be an important factor in guiding the planning process.

Urban soundscape as an approach to the phonic identity of the sustainable city

Definition of noise pollution

"We often refer to noise as 'unwanted sounds.' There are three different types of noise; unwanted sound, unmusical sound (defined as non-periodic vibration), and any loud sound." [1]

"Noise pollution is the source of most outdoor noise worldwide and is mainly caused by machines and transportation systems, motor vehicles, aircraft, and trains. Outdoor noise is summarized by the word environmental noise. Poor urban planning may give rise to noise pollution, since side-by-side industrial and residential buildings can result in noise pollution in the residential areas." [2] "The noise is indicative of patterns of unsustainable living and consumption." [3] (Fig. 1).

More aggressive control of the noises from cars is an important step in reducing noise at the level of urban design. For example, car-free urban districts, more common in



Fig. 1 Traffic is one of the main sources of noise pollution in cities. Ref.: González, A. (2014). What Does "Noise Pollution" Mean?, *Journal of Environmental Protection*, Vol. 5, No. 4 August, 2014.

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