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The Malaysian Architectural Education Conference

the **FUTURE** of ARCHITECTURAL **EDUCATION**

MAEC 2012

MALAYSIAN ARCHITECTURAL EDUCATION CONFERENCE

FACULTY OF DESIGN AND ARCHITECTURE
UNIVERSITI PUTRA MALAYSIA



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THE ROLE OF ARCHITECTURE IN PRODUCING URBAN QUALITIES FOR SUSTAINABILITY: IMPLICATIONS FOR THE FUTURE OF ARCHITECTURAL EDUCATION

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Abstract:

Architecture has historically evolved into an interdisciplinary subject dealing with design, engineering and psychology. The contemporary tendency in both professional practice and education to view architecture mainly as a form of art has led to the neglect of its holistic dimension in producing the built environment. Thus, the different approaches to how architecture can affect the development of sustainability need to be taught by introducing a comprehensive framework, which is built on all fundamental factors within the production of urban qualities. This paper therefore explores a comprehensive and multi-layered teaching framework by relating the space theory of the French sociologist and philosopher Henri Lefebvre to the contemporary discussion about sustainability. Henri Lefebvre distinguished three main dimensions producing space, known as conceived, perceived and lived space. All three dimensions play a significant role in producing the three main urban qualities, which can be categorized in terms of urban efficiency, urban diversity and urban identity. An attempt is made to identify the distinct role of architecture in developing these urban qualities that are essential for sustainable urban growth. It is the position of the authors that the teaching of architecture for sustainability cannot be reduced to a series of lectures about ecological design and the integration of sustainable technologies. In fact, a more holistic view of architecture and its role within urbanism has to be delivered by instructors and practiced by the students through structured experiences that range from macro contexts to micro scales and those in between, where the ultimate objective is to graduate professionals capable of positioning architecture in its contextual realities. Thus, the teaching of architecture for sustainability needs to be based on an open philosophical framework asking the essential questions of space and time.

Keywords: *sustainability, urban qualities, identity, efficiency, diversity*

Introduction: Sustainability and Contemporary Architectural Education

The use of the term "sustainability" has a rather short history and often refers to the definition made at the Brundtland Commission of the United Nations in 1987: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (United Nations, 1987)." Due to a rapid increase in environmental damage caused by human developments, endangering the livelihood of future generations, the term sustainability was initially used with a main focus on ecological balance. Another significant step in defining the general terminology of sustainability was made at the 2005 World Summit, when economy, society and environment were defined as the three pillars of sustainability (United Nations, 2005). According to this more holistic view, economic, social and environmental demands should develop in balance in order to establish sustainable growth. Thus, economic growth, which does not endanger social peace and ecological balance, was seen as the main challenge to sustainable development. Today, the terminology of sustainability is widespread and used in all disciplines while the main focus differs depending on the viewpoint of the specific discipline. While environmental engineers are concerned about damage to ecosystems, sociologists are engaged in analyzing the impact of immigration and multiculturalism on coherent social structures.

Architects have always worked in interdisciplinary realms, but due to their engineering background the use of the term sustainability has strongly emphasized the technical aspects required to construct ecological buildings. As a result, sustainable architecture is often taught in universities as a side subject or specialized program dealing with modern technologies and climate-appropriate design rather than as an integral component of the curriculum. The main responsibility of architects is to function as a moderator dealing with the demands concerning the design of a building in order to find the best compromise between clients, actual users and society as a whole (Salama, 2009). Therefore, architecture students need to be prepared for this demanding role equipped with a more holistic approach that caters to the various parties involved. Worldwide, curricula are currently addressing this reality through a variety of different courses and studios that promote interdisciplinary thinking. The main focus of teaching in architectural classes, however, remains on the object, the building itself, without enough emphasis relevant to the role of architecture in a

wider context. Thus, creativity and technical know-how are highly desired and promoted while research about how buildings are perceived by potential users, including investigations about social and cultural backgrounds, are usually neglected in curriculums worldwide (Salama, 2008, p. 101).

This paper therefore introduces a framework for the teaching of architecture for sustainability from a holistic perspective focusing on the role of buildings in the urban context. The one-sided view of architects as artists with an engineering background can only be replaced with a more holistic perspective when the definition of their work is underpinned by a philosophical basis. In this regard, architecture students need to learn more about the philosophical, psychological and sociological dimensions of their future profession and how they can play a proactive role in promoting sustainable development. Thus, the starting point of any holistic framework regarding the role of architecture within sustainability has to be human beings themselves and how they produce space. In essence, a framework is presented based on the work of the French sociologist Henri Lefebvre, who is often referred to in urban and social sciences. The authors translate his work from a holistic scale to an urban and architectural scale in order to illustrate the applicability of his recognitions regarding the production of space.

1. The Role of Architecture in Producing Urban Qualities

1.1 The Theory of Space Production

In order to create a more holistic framework for the teaching of sustainability within architectural studies, a theory of how built environments are produced must be used as a basis. The work of the French sociologist and philosopher Henri Lefebvre has had a large impact on the contemporary understanding of space as a product of complex 'social superstructures' (Lefebvre, 1991, p. 85). In his work *Production of Space (La production de l'espace, 1974)*, he argues that space cannot be understood as a simple collection of elements because a society's space is actually a product that has been created through its own individual spatial practice. In order to explain his idea of social space Lefebvre developed his frequently quoted triad of perceived, conceived and lived space (Fig. 1).

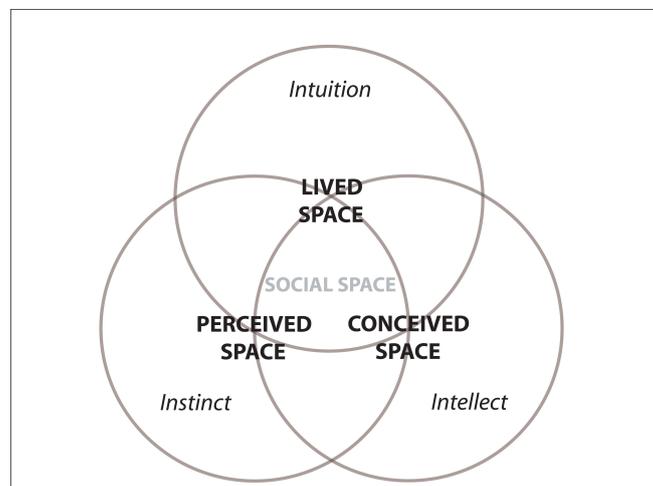


Fig. 1: Henri Lefebvre's triad of space production. Source: Authors.

Firstly, he defined 'conceived space' as the space conceptualized by scientists, also known as 'representations of space'. These representations are abstract as they are rooted in the principles, beliefs and visions held by practitioners, decision-makers and others who are in a position to impose their personal notion of 'order' on the concrete world and so create a practical impact on space within social and political practice (Lefebvre, 1991, p. 41). Conceived space is thus based on knowledge and science in combination with ideology (Lefebvre, 1991, p. 233).

Lefebvre defined 'perceived space' as the space of 'spatial practice'. He defined it as the space where movement and interaction take place, where networks develop and materialize. Thus, it includes both daily routines on an individual level and networks as the result of collective movements. He maintains that the specific spatial practice of a society can only be evaluated empirically by analyzing and studying the structure of its networks (Lefebvre, 1991, p. 38). Due to the

fact that spatial practice is empirically observable it is also referred to as the readable or visible space and can be seen, described and analyzed on many levels (Lefebvre, 1991, p. 413).

Thirdly, 'lived space' is discussed by Lefebvre as the unconscious, non-verbal direct relation of humans to space. Also known as 'representational space', it is directly lived through associated images and symbols (Lefebvre, 1991, p. 39). Thus rooted in the imagination, it is essentially subjective, a passive experience wherein the outer physical space resonates with the inner imagination. Specific locations within a given vicinity can, for example, become focal points due to their position and status within the representational space of the particular community of people who use that vicinity (Lefebvre, 1991, p. 45).

Beyond the three elements briefly described above, the production of social space as a whole has a direct impact on the environment and in the case of cities it materialises into the built reality. Lefebvre himself emphasised the direct use of his perceived-conceived-lived triad (also known as the first ontological transformation of space) within the process of understanding spatial developments. He never understood it as an abstract model reduced to comparative studies of ideologies (Lefebvre, 1991, p. 40).

1.2 The Production of Urban Qualities

In the case of a city the conceived space is mainly formed by conscious decision-making processes within urban governance. The main responsibility of urban governance is the supply of an efficient urban structure by implementing guidelines and regulations in the form of policies and physical planning. These legal frameworks for urban developments are in turn based on visionary decision-making regarding overall development goals and strategies.

While urban governance is most responsible for the supply of an efficient urban structure, it is the various users of space themselves who shape the urban environment according to their requirements. This demand-driven development is needed for the urban quality of diversity, which is essential for economic growth and flexibility. In most service-oriented economies three main parties active in spatial practice can be distinguished – developers, companies and inhabitants.

In addition to the conscious planning of individuals and the collective spatial practice, the third dimension of space production is the identification of inhabitants with space. This identification is the main basis for social consolidation because it is rooted in a long-term commitment from inhabitants to the space. The reasons for a close intimacy between inhabitants and urban environments are best described in images – the image of liveability, the image of success and the image of cultural values. These three images cooperatively create the identification of a society with its surroundings, which is the basis for the urban quality of identity.

Consequently, three main urban qualities can be distinguished, which in turn are the basis for sustainable urbanism. The supply of an efficient urban structure by urban governance is key to improve the ecological balance of cities. The urban diversity created by the spatial practice of developers, companies and inhabitants is the basis for economic growth and flexibility. Last but not least, the urban identity created by the identification of all social groups with the urban environment is essential for social peace. The model in Fig. 2 illustrates the triadic principles of all the components that produce the urban environment, its qualities and sustainability factors.

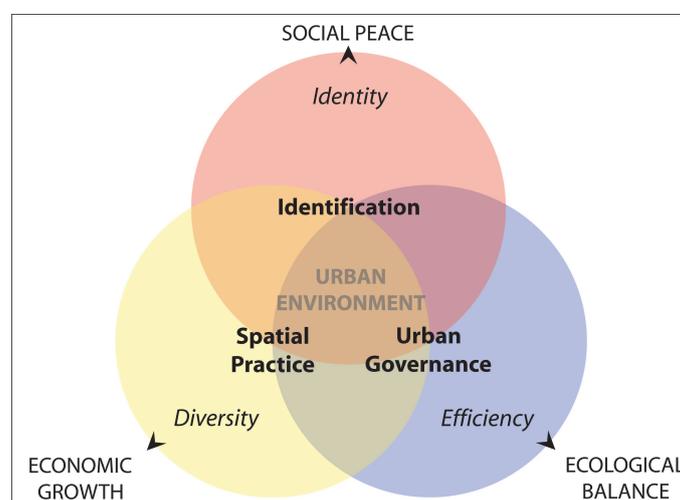


Fig. 2: The Production of Urban Qualities. Source: Authors.

1.3 The Role of Architecture

In comparison to other disciplines architects need to understand the production of space comprehensively since their work lies profoundly in the coordination of all the factors that produce a new space. Architects need a basis of scientific knowledge, for example, about construction techniques, communication and observation skills when they design a building and a sense of intuition to choose the images expressed by forms and colors. On their own architects can be seen as managers of the process of producing a space on a small scale. They have to develop the design of a building by integrating three main qualities that include ecological design, user responsiveness and meaningful images. These three qualities can be referred back to the conceived, perceived and lived triad. Thus, architects need a wide knowledge base in order to decide on the right construction techniques, they need to observe people's behavior and communicate with potential users in order to integrate their needs and they need the intuition to combine design elements into a legible and meaningful ensemble.

If an architect succeeds in integrating ecological design, user responsiveness and meaning in a project, he/she automatically contributes to all three previously mentioned urban qualities. Thus, by using adequate construction techniques for ecological buildings an architect plays a significant role in enhancing urban efficiency. When an architect designs a building that serves the purposes of individuals as well as communities, he contributes to urban diversity. An architect can also play a significant role in developing urban identity if his/her design reflects the subjective preferences of a society. Thus, architects play an important role in developing built environments that are ecological, diverse and meaningful (Fig. 3).

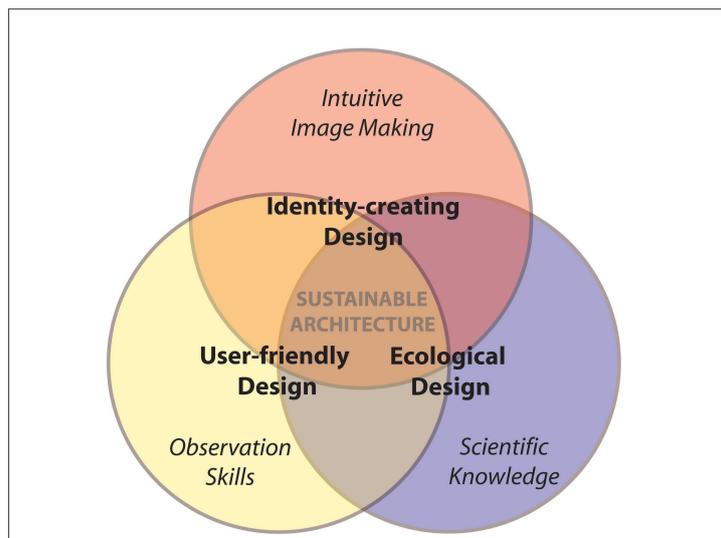


Fig. 3: The role of architecture in developing urban qualities. Source: Authors.

2. Teaching Architecture for Sustainability

2.1 Scientific Knowledge for Ecological Design

Architecture cannot be taught without introducing the key issues relevant to architectural history, the basics about the profession itself, and the main construction techniques. In order to increase their awareness of ecological design students need to learn about historical contexts because building design in the past was a result of reactions to climate conditions. Furthermore, it is important to offer content about the techniques that can be used to create energy-efficient buildings, taking into account climatic conditions, as well as building materials and new technologies. Architectural students need to be encouraged to investigate the various fields of ecological design. Based on the theory of space production outlined earlier it is important to deliver each ecological design aspect with reference to its role in a wider context and how it contributes to a more sustainable development. Students need to learn that ecological design is not a specialized topic but a basic challenge of the profession itself. It is also important to cover the financial aspects involved, including low-budget solutions.

2.2 Research Skills for User-Responsive Design

One aspect that is often neglected in current architectural curricula is the teaching of skills to understand the impact of buildings on actual users. Architecture students need classes where they study human behavior by observing people in public buildings and places. One important field is Environment Behavior Studies (EBS), which can be defined as the systematic examination of relationships between human behavior, cultural values and the physical environment (Moore, 1979). Therefore, various observation techniques have to be introduced to students in order to provide them with tools for their own individual research. These observation techniques should be combined with interviews of users and general analyses of the built environment itself so that students develop their awareness of how buildings affect human behavior. In this regard, it is important that students learn to distinguish the general impact of buildings within the urban context and the impact of building layouts on the actual users within a building. Thus, it is crucial to select representative buildings and public places to be studied by students. These observation studies should be written up in essays in which students exercise and develop the ability to analyze information and draw conclusions from their analyses.

2.3 Image Making for Meaningful and Identity-creating Design

In addition to teaching the scientific knowledge basis as well as promoting research skills for the design of user-responsive architecture, various design classes are needed to train the artistic intuition of students for creating sustainable environments. Art is often taught in an isolated way as a source of inspiration without teaching the impact of forms and colors on human psychology. In order to design buildings that contribute to the urban quality of identity, architects need to train their abilities for intuitive image making. In this regard, students need to research and experiment within design studios to understand the impact of certain color combinations and forms and the meanings they evoke with relevance to a specific group of people. Based on the framework of Lefebvre, three main images can lead to humans self-identifying with a space – the images of livability, success, and cultural values. Architecture students need to learn to balance between these images in relation to the chosen location and its context. Thus, these design classes cannot be entirely practiced with a focus on pure artistic expression of the students themselves and their own inner worlds. Architecture students need to learn about their responsibility in how they affect society with their design choices.

3. Proposal for an Integration of the Framework

Contemporary architectural studies generally integrate all aspects to develop the complex set of skills needed by today's architects. However, they have mainly focused on theoretical knowledge disseminated in lectures and design classes taught in studios. The encouragement of students to investigate built environments and how they impact users only takes place as a side subject despite its significance for user-responsive design. Furthermore, art classes are often taught detached from the actual impact of design choices on the image-making process and thus the creation of urban identity. As architects need to work within all three spaces (conceived, perceived and lived) to produce sustainable structures, the delivery of the curriculum should balance between theoretical knowledge, empirical research, and creative design. The following five suggestions offer initial steps as to how this balance can be achieved within a typical curriculum leading to a professional degree in architecture.

1) Introducing the theoretical framework in lectures

By introducing the triad of space production architectural students are made aware of their future role in enhancing sustainability. Thus, it is recommended that this framework be introduced as early as possible in a series of lectures at the beginning of the course. These lectures should encourage students to read more about theories of space production and provide them with a list of main literature. They also should involve discussions and in-class debate in which students voice their ideas relevant to the framework.

2) Providing more extensive courses about ecological design

If an ecological design course is not yet part of the curriculum, it is highly recommended that one be established that introduces various methods of constructing more ecological buildings. It is important that students learn about building materials and their application in certain climatic conditions as well as construction techniques that increase energy efficiency. Furthermore, new technologies relevant to the urban context, such as gray water usage, district cooling, and heat pumps, should be introduced. It is highly recommended that seminars be held where students themselves have to investigate and discuss aspects of ecological design.

3) *Integration of Environment Behavior Studies (EBS)*

Specific courses should be introduced to help students investigate the built environment via observation techniques. First, students need a series of lectures that introduce how certain techniques are used and what the purposes of these techniques are. These courses can be taught in groups, with each group focusing on a selected range of buildings and public spaces. The main purpose of Environment Behavior Studies is to develop an empirical basis for how buildings affect human behavior in order to improve the students' ability regarding user-responsive design.

4) *Reconfiguring the direction of design courses*

Art and design fundamental classes should be modified towards the teaching of a more conscious process of image making. Therefore, a series of lectures should be included in the curriculum that offer knowledge about the various ways that the expression of environments impacts human psychology. Their main focus should be to develop the students' skills in using the various images by giving them specific design tasks. These tasks can either be focused on concrete buildings or abstract spaces. Other forms of art, such as film making or stage design, can be integrated in the teaching of a more conscious sensibility about image making.

5) *Promoting integrative design projects in studios*

Design projects are often carried out detached from other subjects leading to the oversimplification of key design parameters. Thus, it is recommended to emphasize the equal integration of the variables that affect that development of a design project. When students design a building, they have to integrate their theoretical knowledge as well as their empirical knowledge based on their own research. Furthermore, the design and its purpose of image making have to be put in the context of the actual realities of the project's context.

Conclusion

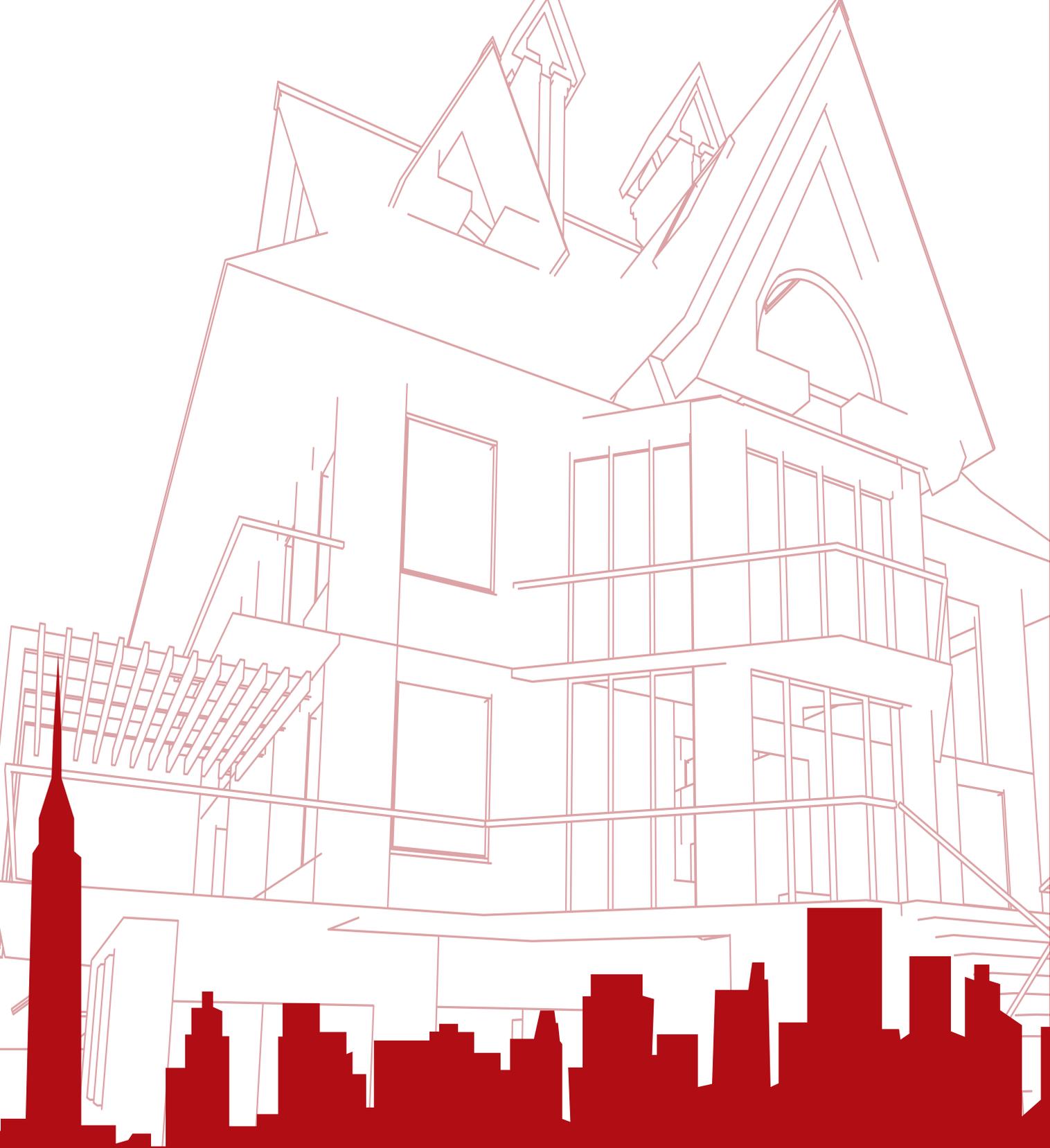
The framework presented in this paper based on Lefebvre's theory of space production emphasizes a holistic understanding of the architect's role in the development of sustainable environments. In this respect, Henri Sanoff states that architecture should be based on knowledge and awareness of people needs and it should not be based just on the creative impulse of the architect (Sanoff, 2003). Thus, teaching architecture for sustainability has to be based on a holistic view of society and its needs. By developing a curriculum based on a space-production theory, architecture students learn to understand their particular role in making design decisions. They will be prepared to work in interdisciplinary realms since they can gain insights into how other professions interrelate in the production of space. By implementing a general framework that connects the topic of each taught module within a larger picture of space production, including a philosophical discourse, a more integrated understanding of architecture can be transmitted to students rather than simply teaching a piecemeal series of topics. Subsequently, students learn to understand the role of each knowledge segment in a macro context and thus a systematic pedagogy is introduced.

The most important aspect that will shift teaching towards creating more awareness about sustainability is the encouragement of students to focus on the built environment and its context in society. One would refer here to the statement made by Habraken when he argues "*Teaching architecture without teaching how everyday environment works is like teaching medical students the art of healing without telling them how the human body functions. You would not trust a medical doctor who does not know the human body. Knowledge of everyday environment must legitimize our profession...*" (Habraken, 2003, p. 32)."

Due to rapid urbanization worldwide architectural students need to be prepared to understand the various conditions of their future profession. Architects play an important role in shaping cities but their awareness of the city as a whole is often limited. Urban qualities are dependent on architectural developments and thus the skill of architects in integrating efficiency, diversity and identity within each single building. Architecture is one of the very few transdisciplinary professions that has its importance in mediating between various needs and interests. Due to economic circumstances today's architects usually have limited time to extensively explore the environment. Therefore, it is crucial to raise their awareness of key aspects and to train them on a certain set of skills to comprehend complex contexts. Teaching architecture for sustainability is thus equal to training integrative decision making based on theoretical, empirical and intuitive knowledge.

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