

# Urban design: methods and techniques in education

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## ABSTRACT

Urban design is a legitimate concern for architects, planners and landscape architects. It is, therefore, reasonable that the subject matter of urban design should inform the curricula of those disciplines. Urban design, however, is itself a nascent discipline. That is, it is potentially the core subject area for University undergraduate degree courses leading to a qualification in of theoretical literature supported by research, its own history and method together with a wide range of techniques.

There are three main goals of urban design: they are to design and build urban developments which are both structurally and functionally sound while at the same time giving pleasure to those who see the development. Sir Henry Wotton, like many writers since, defined architecture as consisting of 'commodities, firmness and delight'.<sup>9</sup> Urban design shares with its sister art, architecture, these three qualities of utility, durability and the ability to bring to the user a sense of well-being and emotional satisfaction. The general method of urban design and the techniques used within that method have been developed to achieve these interconnected ends. This research, however, does not present the full range of techniques used in urban design. For example, it does not discuss in any depth the structural requirements of urban design nor does it deal with the engineering requirements of urban infrastructure. This research does not deal with the legal requirements of urban development so important for implementation. These large topics of urban design deserve comprehensive treatment and, no doubt, will form the contents of further works in this field. This research, however, builds on the ideas, *Urban Design: Street and Square* and *Urban Design: Ornament and Decoration*, it will illustrate a design technology Based upon the design concepts discussed as they are used to achieve urban development which is in keeping with a unique city context. *Urban Design: Green Dimensions*, Techniques will be discussed which measure the effects of urban developments on city sustainability. The issue of sustainable development is the social foundation of urban design today. The social imperative is an environmental crisis of global proportions; it is in coming to terms with the effect of this crisis on cities which gives purpose and meaning to urban design.

Hence, the aim of this paper is to examine the techniques used in urban Design Method to achieve Sustainable development in urban education.

**Key Words:** urban design, techniques, undergraduate, research, education.

## 1. INTRODUCTION

### 1.1. GOALS OF URBAN DESIGN

There are three main goals of urban design: they are to design and build urban developments which are both structurally and functionally sound while at the same time giving pleasure to those who see the development. Urban design shares with its sister art, architecture, these three qualities of utility, durability and the ability to bring to the user a sense of well-being and emotional satisfaction. The general method of urban design and the techniques used within that method have been developed to achieve these interconnected ends.

Public participation in the process of design and implementation is a key factor in the definition of sustainable development. Sustainable urban development is the result of a process. It is a little simplistic to discuss participation in urban design unless that discussion includes a specific description of the type of participation and the techniques used at each stage of the process. The techniques of participation outlined in this book are based on the detailed analysis.

Urban design, or the art of building cities, is the method by which man creates a built environment that fulfills his aspirations and represents his values. One value which is becoming increasingly important is care for the natural and built environment for the benefit of future generations. Urban design, therefore, can be described as a people's use of an Accumulated technological knowledge to control and adapt the environment in sustainable ways for social, economic, political and spiritual requirements. It is the method learned and used by people to solve the total programme of requirements for city building. The city, therefore, is an element of a people's spiritual and physical culture and, indeed, is one of the highest expressions of that culture.

## 2.SURVEY TECHNIQUES

The survey techniques used in site analysis depend upon the nature and scale of the project. The information which is

necessary to complete the preparation of a design for a small infill site is quite different from that required for an investigation of inner city regeneration proposals

### 3.ANALYSIS

It is unproductive to try to define a rigid dividing line between survey and analysis. The collection of *particular* pieces of information implies the use of a preconceived analytical framework. The accumulation of facts without purpose is wasteful and can only confuse the outcome. Even the drawing of a simple sketch presupposes that a particular view has a relevance for the problem under investigation. Furthermore, it presupposes that the elements in that view which are emphasized in the drawing also have some bearing

on the task. If this is not the case, then why make that particular sketch? Similarly, the collection of social or economic data cannot be all-inclusive. Only those sets of information of immediate use should be stored ready for analysis. A useful principle to follow in survey Design is to keep it brief, at least initially. It is always possible to extend the search as the analysis illuminates the problem definition. In reality there may be no clear distinction between survey and analysis. But, for the sake of convenience, the analytical stage of the design process can be deemed to begin when thought is given to the strengths and weaknesses of the project site, the opportunities presented by the project and the potential threats to the area which any intervention may have to counter. This chapter begins with an outline of the considerations involved in making a forecast of the future and the use of such a forecast as a design tool. The chapter then examines the techniques for assessing the constraints on and development for assessing the possibilities of intervention. The central part of the chapter is focused on **SWOT** analysis; applying to urban design the techniques for discovering the **Strengths** and **Weaknesses** of a project; the **Opportunities** for development; and the **Threats** which may disrupt implementation.

	<b>Streng -ths</b>	<b>Weakn -esses</b>	<b>Opport- unities</b>	<b>Threats</b>
<b>Built Environment physical and aesthetic properties</b>				
<b>Natural Environment fauna, flora, air and water</b>				
<b>Socio-economic Environment including political and administrative conditions</b>				

Figure 1. SWOT analysis

### 4.GENERATING ALTERNATIVES

Central to the urban design process is the exploration of problems through an examination and testing of solutions. Many of the problems in urban design could be described as ‘wicked’, in the sense that they are difficult to define and they are without an obvious and generally agreed solution. The nature of the process, therefore, by which these problems are approached, is dialectical, taking the form of a dialogue between problem and solution. Inevitably the designer expends considerable energy understanding the problems with which he or she is confronted. Clearly the designer, by engaging in this dialectic between problem and solution, clarifies the definition of the problem and the direction of the investigation necessary to seek the solution, as the process itself evolves. The nature of the problem only becomes clear as the iterative process develops. The solutions or ideas used in solving urban design problems for the purpose of this text will be termed concepts. Generating design ideas for solving problems of urban structure is fundamental to urban design. Design concepts are the basis of the creative process: without them the process of urban design degenerates into a sterile activity. Generating concepts is an act of the imagination. Concepts, or the ideas which inform alternative ways of perceiving the problem, can be generated using a number of techniques. Ideas can be gleaned from an analysis of the site, from a study of historical precedent, from theoretical propositions, by using synectical techniques or the art of analogy, by techniques of lateral thinking including brainstorming and by seeking ideas directly from the public.

### 5.PROJECT EVALUATION

Moderate- to large-scale urban design projects are aimed at improving social, economic and infrastructure conditions rather than focusing on the single objective of physical urban renewal. For instance, projects aimed at regenerating inner cities are planned as a series of interrelated actions in which the increase of employment levels is interlinked with sustainable improvement in general. For this type of project the issue of methods and techniques needs to be considered from an economic and social perspective. There is the need to integrate the traditional urban design evaluation instruments with methods and techniques which can give an insight into the social, economic and environmental impacts the project is intended to produce.

### 6. PRESENTATION

The communication of ideas is central to the design process. Ideas, however good they may be, remain still-born until they are expressed in terms which engage the support of key actors in the development process. For this purpose, ideas which infuse an urban design project, together with a supporting argument, have to be expressed with clarity, economy and enthusiasm. The presentation of urban design proposals often involves reports and sets of Documents similar in form and content to those prepared for planning projects. Urban design Reports may include a description of the survey, its analysis and a fully evaluated final proposal with its cost. This written material is accompanied by maps, drawings, photographs and models. The proposal may then be presented in a number of arenas and defended at Public Inquiries and planning appeals.

## 7. Urban Design Studios: an Effective Method in the Education of Urban Designers

A new educational approach, the so-called design studios, based upon problem-based learning, in the education of professionals involved in the urban design process. The design studio is an activity that stimulates creativity and problem solving, and is an effective technique used to resolve difficult urban design and management problems. The development of this method is one of a number of activities.

The establishment of the urban design courses has to be seen and considered in a global context, and is a response to the following challenges:

- Urbanisation is one of the most significant challenges that the global population must face.
- Many regions, such as South-East Asia, are undergoing a paradigm change with profound social effects on economic and social sustainability.
- Successful urbanisation can create healthy, attractive, safe and productive environments for urban populations.
- There is a need around the world for governments and private organisations to develop and apply urban management practices that achieve sustainable economies and communities.

In an increasingly competitive world, it is the town, city and region that are becoming the points of comparison. The design quality of urban areas affects our ability to attract investment and to generate wealth in two ways; firstly through the efficiency of the system and the ability to avoid unnecessary waste; and secondly through the image that is projected from both the built environment and the culture that is associated with it.

The usual maintenance or artificial improvements are totally inadequate in dealing with problem areas of such a nature. Places that have become largely or wholly irrelevant to the future of the city or region and are considered by the community as liabilities require *re-positioning* and not just improvement. Re-positioning means a fundamental adjustment in which the subject urban environment is made to work for present and future community needs. The actions required may include, amongst others:

- Changing public perception.
- Re-modelling transport infrastructure.
- Repairing the system of pedestrian linkages.
- Urban environment changes and improvements.
- Changes to the functional programme.
- Improved public safety.

The combination of issues affecting these areas could include:

- Lack of perceived or actual value of land.
- Complex and often contradicting requirements of the users.
- Damaged natural environment.
- De-generated built environment.
- Environment dominated by transport related structures.
- Concerns about public safety or undesirable activities (such as places of drug use).

### Training

The existing urban areas of our towns and cities experience major social change that manifests itself in decreasing household sizes. This de-population of urban centres and the combined ecological and economic costs of urban sprawl are behind the

government's policy of urban consolidation and a new performance-based planning system.

The resulting re-urbanisation of our suburbs requires a new set of design-based skills from all parties involved in the process. The paramount aim of this project is to improve design assessment skills in relation to development proposals within the existing urban area.

## DESIGN STUDIO CONCEPT

Apart from generating exciting design ideas, design studios also offer an effective model of education. Currently used in architectural and other design based education, this approach has been formalised in recent years under the title of *problem-based learning* (PBL). It can be found in disciplines such as medicine, engineering and mathematics, amongst others.

The essence of problem-based learning is the setting of a problem and allowing the student to direct their own learning through seeking solution to the problem. They engage in a search for solutions, learning not only the facts of the situation and the solutions, but also the process.

The design studio also introduces the participant to the social roles that are represented in a typical design process. The student learns that design occurs not in a vacuum but within a broad network of participants, including professionals such as architects, engineers and consultants, as well as non-design professions, such as clients, bankers and users.

The design studio is an activity that stimulates creativity and problem solving. It can be a particularly effective technique when used to resolve difficult urban problems. Generally, a design studio will be undertaken in a short period of time focusing intensely on a selected area or site. What makes this an effective effort is that the individuals participating are arranged into multidisciplinary groups, ensuring that the knowledge and skills required to resolve the issue at hand are present around the table.

## 8. Case studies

### 8.1. Studio Objectives

The objectives of the studio were to:

- Develop functional and design ideas.
- Demonstrate an inter-disciplinary urban design approach.
- Integrate infrastructure with other city functions.
- Expose local leading professionals to international practice.
- Help change professional and public perceptions about difficult urban sites.

### 8.2. Training Methodology

The following method was adopted for this case study:

#### Briefing Session

The briefing session highlighted the context and issues affecting

#### Group Work

Three multi-disciplinary groups were formed. Each group was to focus on the same site and to work

towards its resolution.

**Presentation of Concepts by Each Group**

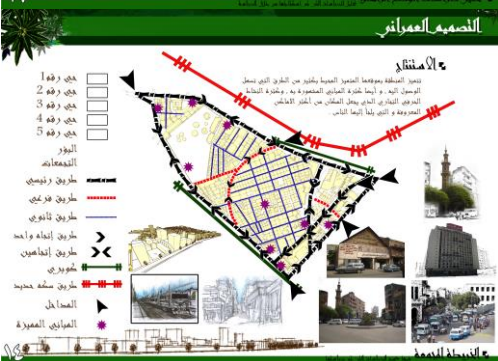
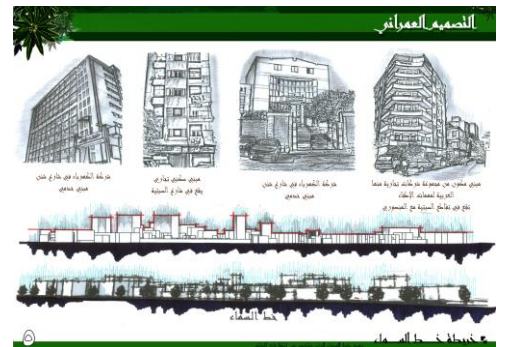
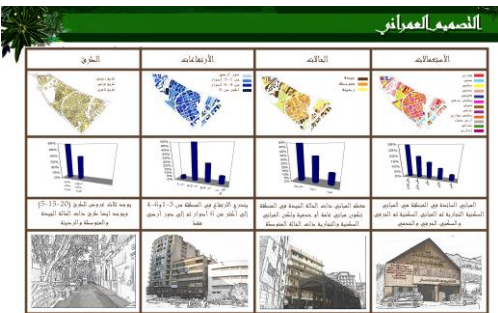
Group leaders presented their designs and concepts

**Design Critique by Visiting Fellow**

The Visiting Fellow accented the strengths and weaknesses of each proposal.

Six different

- **Design-teaching methods commonly used in undergraduate courses were identified and students' learning curve was discussed in relation to each method:**
  1. Traditional studio teaching based on a given architectural program and site for a specific design project.
  2. Traditional studio teaching based on the discussion of an architectural program, elaborated by students and its appropriate urban setting.
  3. Introduction of an actual, local design problem into the studio and the development of a participatory process, with problem analysis and solution justification by students.
  4. Teaching design combining architectural theory with practical design activities.
  5. Teaching design using "form generation" methods and formal architectural languages.
  6. Teaching design using specific CAD design tools.





**FIGURE 2. EXAMPLES OF UNDERGRADUATE GROUPS PROJECT AT URBAN DESIGN COURSE (QASR EL NIL STREET –DOWNTOWN CAIRO )**



**FIGURE 3. EXAMPLES OF UNDERGRADUATE GROUPS PROJECT AT URBAN DESIGN COURSE (PORT SAID TOWN )**



**FIGURE 4. EXAMPLES OF UNDERGRADUATE GROUPS PROJECT AT URBAN DESIGN COURSE (EL MOSHEER AHMED ESMAIL STREET –ALEXANDRIA TOWN )**

**9. CONCLUSION**

This research is a discourse on the process of urban design for sustainable development and its method. It is not an exhaustive account of the techniques used in urban design. Where techniques have been included in the text they are used to illuminate the process and method.

The research makes no claim to be the definitive study of urban design method. It is an Introduction to the subject and therefore requires .The terms method and technique were defined. Urban design method was then set within a theoretical framework. The method advocated in this research assumes a synoptic approach to planning and urban design which presupposes a rationalist view of problem solving where alternative solutions are assessed against a set of criteria derived from the project goals and objectives. The method outlined in this research has its origins in rationalism and utilitarian philosophy; nevertheless, the process has been adapted to take account of the difficulty of seeking solutions to ill-defined design problems. Solving such problems involves a dialectical process of confronting problem and solution in a dialogue. In this iterative process problem definition is refined by posing part solutions. The method outlined in the research is based on a process which Includes: the definition of goals and objectives; a survey and its analysis; a synthesis or the generation of alternative solutions; evaluation of alternatives;The process of implementation. It is recognized, however, that when dealing with design, this Process is not linear, it is cyclical, possibly requiring several return loops to reassess the validity of design objectives, gather additional information, carry out further analyses and adjust the direction of the search for a solution. The synoptic approach to planning and urban Design is a ‘top-down’ process where goals and objectives are derived from a higher tier of authority, whether it is from the Government, a regional authority or a city council. The design or plan is organized so that it conforms with these larger-scale requirements. Public participation is central to sustainable development, which is a goal of urban design. Although design education has been discussed widely, the traditional studio method, in which students develop their design projects under the advice of an experienced architect-instructor, is still the prevalent system. The studio method has been described as a reflective conversation between a student and his coach. The design process and its development language (drawings, models) are considered complex. So-called “wicked problems” are part of design, and this makes the application of classical scientific investigation methods difficult.

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