Expectations of urban public space by engineer architects and non-engineer architects

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ABSTRACT: The objective of this study was to verify whether architectural education is a factor in formulating expectations concerning urban public space. In particular, the study addressed these points: What elements are important in a good public space? Which types of open space have the potential to become good public spaces? Data for this study were collected through surveys of students at Cracow University of Technology (CUT), Kraków, Poland. Participant selection was based on purposive sampling. The group labelled as *not trained* comprised first-semester junior students, while the group marked as *trained* comprised last-semester senior students of first-degree studies (Bachelor of Science in Architecture). Analyses of the results indicate there was a difference between the two groups in the approach to urban public space. However, certain features of the space were observed to be independent of the level of architectural education. The results of the study can contribute to the process of teaching urban design.

INTRODUCTION

Since the 1980s, the value of urban public space has increased. A well-designed, accessible and lively public space often becomes a key element in planning and revitalisation of urban areas. The benefits of good public spaces are often tied to social justice [1], public health [2], recreation [3], and culture and art [4]. Lively public spaces help cities create their identity and strengthen their role in global markets. New public spaces are often built on sites previously considered unsuitable for this role [5], while existing public spaces are renewed to meet the changing expectations of urban communities.

Qualities and Value of Urban Space

In the literature the qualities of public spaces are listed as: diversity and multifunctionality [6]; accessibility often associated with walkability [7][8], comfort and sustainability [9]. A link has been established between the overall quality of the built environment and the presence of social space. Schneider-Skalska notes that …*its role in shaping the quality of a housing environment cannot be overestimated in the inhabitants' assessment. Let us venture an hypothesis that demand for the creation of such a space will rise with the increasing expectations concerning the quality of the environment and its social character* [10].

The presence of high-quality public spaces is believed to bring economic, social and environmental benefits to their localities and communities. Carmona in his studies on public space design comes to the conclusion that …*it is vitally important to design public spaces well, although experience suggests that often our ambition is not met by the reality* [6].

Research is varied in terms of focus on particular components of the existing space and its general role in public life and the public debate. A noticeable amount of research is devoted to discussions on the issue of greenery in public spaces. Yuen and Hien studied the perception of residents of rooftop gardens in high-rise buildings in Singapore and their potential for creating an urban pattern of green spaces [11]. Kothencz et al showed that aesthetically satisfying green spaces with access to nature can influence the residents' level of well-being [12] Fors et al raised the question as to whether user participation improved green spaces in terms of quality of form and accessibility or the intention mainly was to benefit the people involved [13]. Ultimately, the general consensus is that despite imperfections, public participation is necessary in decision-making concerning shared urban spaces.

Other approaches focus on the infrastructure and technical aspects. For example, Martyniuk-Pęczek and Rembarz extol an infrastructural approach to urban design. In addition, they promoted teaching based on co-operation with local authorities and incorporating participatory planning procedures [14]. As a result, they stated that it is possible to

achieve a good compromise between actors in the development process and improved design quality. Participatory planning is also believed to have an educational dimension, which helps to raise societal awareness concerning urban public space [15][16].

These studies provide a wide context for this article. Public space is a distinct element of a city's form and its socio-cultural dimension. Creating such spaces is a task for professionals: architects, urban planners and engineers with the necessary instrumentarium. They are intended to serve a broad spectrum of users, create a social space, promote social inclusion and reconcile various functions within one area. This is a complicated task, in which technical, creative and social aspects must be assigned equal weight. Smatanová points out that …*this social aspect - creation for people - understanding the needs of society, community or individual is essential in the work of an architect* [17].

Following this thought, two essential participant groups can be identified in the design of urban space. These are the designers - who give space its form - and the users, either individuals or communities, who verify the result. Several programmes that introduce architectural and urban design to high schools have been conducted in Kraków, Poland, in recent years [18]. However, this form of public education is relatively rare and mostly there is a gap between the two groups of actors/participants in public space design. This gap can be filled by professional architectural education.

Teaching the Design of Urban Space at CUT

At Cracow University of Technology (CUT), the education of architects during both the Bachelor's and Master's course is structured into blocks. The design block includes modules focusing on architectural-urban design and planning. Students are familiarised with architectural and urban composition, design theory and the relationships that shape space. During each semester, they are assigned at least one exercise that includes a site development plan. Design classes are supplemented with lectures that familiarise students with, among other things, selected cases of public spaces built in Europe and around the world. This strategy is continued during the two consecutive education stages: the Bachelor's and Master's course [19].

Educational outcomes concerning urban design assume that students, upon graduating from the Bachelor's course, will possess, among others, competencies in: …*understanding mutual relationships between the building and its surroundings; the design of building complexes with greenery and selected urban infrastructure; preparing a site development plan …while accounting for technical, societal, natural, cultural and legal requirements* [20]. As a result, individuals who begin their courses belong to the group of *users* of the city. Bachelor's course graduates can be considered to be a part of the *designers*, who actively affect the form of the city. In this context, it is important to define whether the expectations of these two groups differ in approach to urban space, and if so to what degree and, as a consequence is architectural education a factor that affects these expectations.

The study was guided by the following research questions:

1. What are the students' personal expectations concerning urban public space?
2. Are the expectations different in groups with different levels of architectural education?

METHOD AND MATERIALS

The main objective of this study was to investigate how two groups of respondents approached urban public space and to identify potential differences and similarities. The secondary objective was to establish a connection between professional education and expectations concerning the use and form of public space. For the study, a survey was used of two groups of respondents. The respondents were selected through purposive sampling influenced by the level of engineering and architectural education. For this study, the deciding factor was familiarity with subjects associated with urban design.

The first group of respondents comprised first-year Bachelor's course students. The design task during the first semester involved formulating a conceptual urban design proposal for a real-world urban public space. In addition, students were tasked with performing a critical comparative analysis of two existing public spaces. Thus, students come into contact with the problems of urban public spaces as seen from a designer's perspective. The study was performed before groups started work on their assignments. This group, labelled as *not trained* for the purposes of the study, was considered to have no architectural education. The second group comprised senior Bachelor's course students and were labelled as *trained*. Seventy persons from each group participated in the survey. The study was performed in November 2019.

To determine subjective expectations concerning the form, functioning and furnishing of public space, the respondents were asked to answer three open questions. For each question, the respondents were asked to name three properties that were most significant:

1. What do you think a good public space should be like?
2. What elements would you like to see in a good public space?
3. What would you rather not find in a public space?

The survey also included a fourth, closed question. The respondents were asked to choose any number of answers according to their personal preferences i.e.

4. Which of these do you think can be a good urban public space? Please highlight: street, park, shopping arcade, underground passage, walkway, train/bus station, promenade, bazaar, market square, bus stop, avenue, waterfront, overpass, roundabout, footbridge, shopping mall, square, parking lot, café terrace.

The small sample size required sensitive analysis. Answers to the first three questions were assigned to a number of problem categories identified in the literature as significant to public space users [1][6][8]. These categories included: function, perception and meaning, nature, appearance - personal impressions, condition, accessibility - pedestrian and car traffic, design quality, comfort and safety, dimensions, equipment and details. It was assumed that many answers can be assigned to each of these categories. The number and content of these answers were analysed.

RESULTS

As expected, the answers were highly varied, both among the *trained* and the *not trained* group. Each problem group featured a wide array of phrases, from very vague expressions that described the qualities of the space itself, such as *beauty*, *functionality*, *modernity*, *chaos*, *kitsch*, to descriptions of specific phenomena or objects, as in a *dog park*, *mobile seating* or *collapsed pavements*. Respondents from both groups showed a considerable inclination to use specific answers to describe undesirable elements. The vaguest expressions were used to answer the first question; including *functional*, *attractive*, *planned*, *enticing*. There were also highly subjective or abstract expressions: *exceptional*, *intuitive*, *well-proportioned*.

In the case of the first question, only 13.51% of respondents from the *not trained* group and 10.95% from the *trained* group applied specific answers, which largely referred to detailed technical solutions: *well-lit*; *isolated from vehicular traffic*; *without advertisements*. In the case of the second question, these values were 23.07% and 21.28%, respectively. Of the *not trained*, 59.21%, and 53.41% of *trained* respondents gave specific answers to question three (Figure 1). Similarities were observed in the manner in which the two groups formulated their answers. However, a slightly greater amount of specific answers was noted among the *not trained* group.

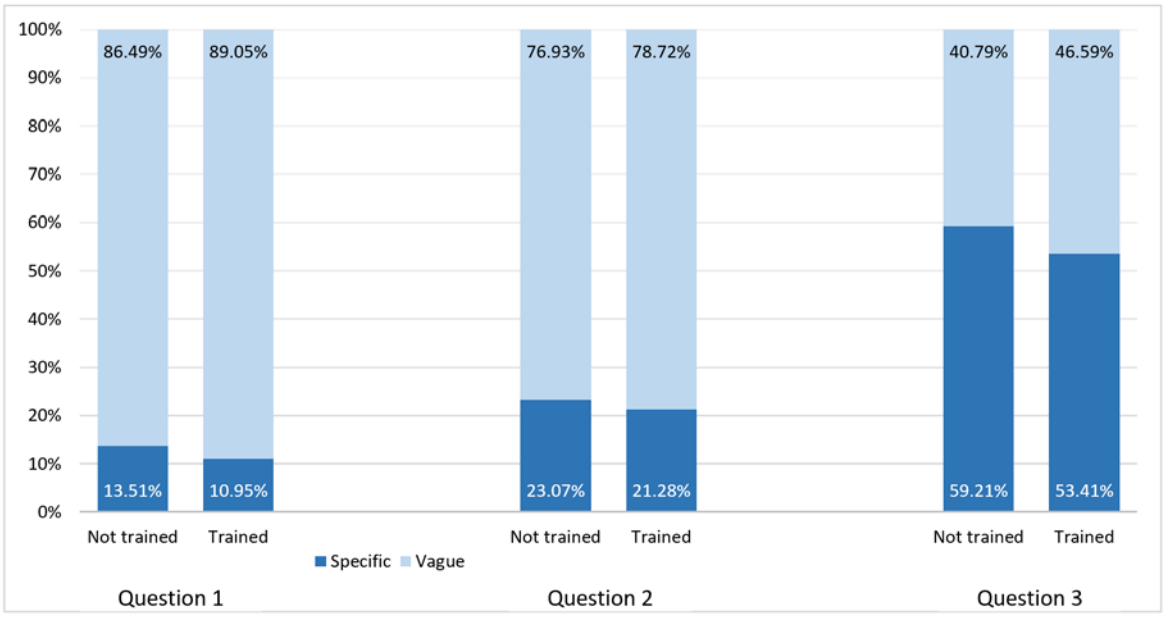

Figure 1: The percentage of specific and vague answers to the first three questions of the survey.

The first question of the survey concerned general characteristics that the good public space should possess in the eyes of the respondents. Despite their considerable variety, a certain number of answers were repeated. According to respondents from the *not trained* group, such a space should be functional (14.59%) and green (13.51%). The *trained* group reported that the most desirable quality of public spaces was accessibility (14.02%), followed by greenery and natural elements (13.8%).

As for the second question: both groups showed a clear preference for greenery (22.48% in the *not trained* and 25.24% in the *trained* group) and benches/seating (16.56% in the *not trained* group and 15.34% in the *trained* group) as elements of public space.

The answers to the third question displayed the greatest variety in phrasing. In the *not trained* group, the greatest number of similarly phrased answers pointed to neglected greenery (7.89%), while the *trained* group pointed to parking spaces and car parks (7.45%).

The answers showed both similarities and differences between the two groups in terms of content and assignation to categories (Figure 2). Similarity was observed in the answers between categories.

	Question 1		Question 2		Question 3	
Category	Not trained	Trained	Not trained	Trained	Not trained	Trained
Function	16.21%	9.90%	18.93%	14.35%	11.84%	5.59%
Perception and meaning	5.40%	10.95%	11.83%	10.89%	3.94%	6.83%
Nature	16.21%	13.80%	32.54%	33.16%	11.18%	4.43%
Apperance - personal impressions	17.30%	12.85%	2.36%	0.95%	10.52%	7.45%
Condition	3.78%	3.33%	0.59%	0.49%	17.77%	16.77%
Accessibility - pedestrian and car traffic	7.03%	18.09%	2.36%	4.95%	7.89%	26.70%
Design quality	23.24%	14.35%	1.18%	6.43%	5.26%	14.28%
Comfort and safety	3.23%	6.67%	2.95%	3.98%	7.89%	4.34%
Dimensions	7.57%	9.04%	1.18%	0	6.57%	1.24%
Equipment and details	0.05%	1.90%	26.03%	24.75%	17.10%	12.42%
		Difeerences > 8%			Similarities 1% > 3%	
		Strong difeerences > 15%			Strong similarities < 1%	

Figure 2: Similarities and differences by category.

A correlation was observed by analysing the percentage distribution of answers. The group with no architectural education was less inclined to express their views on the accessibility of space, including accessibility for persons with special needs. A small percentage of answers focused on the relationship between pedestrian and vehicular traffic, i.e. their balance or the space that promotes walkability. This category also displayed the greatest difference in the number of answers between the groups: almost 20%.

Only 7.89% of respondents from the *not trained* group pointed to problems with access or difficulties with traffic as elements that should not appear in public spaces. The same category pointed to problems by almost 26% of respondents from the *trained* group. The respondents were capable of identifying undesirable phenomena, such as the presence of vehicular traffic, busy streets crossing the space, groupings of parking areas and car parks, and the delineation of pedestrian paths along roads. The dominance of vehicular traffic within the area of the public space was a part of the *accessibility* answer category and was reported as undesirable by more than 15% of respondents belonging to this group.

Another difference was noted in the *design quality* category. The group with no architectural education often referred to qualities of space in a general manner - to a significantly greater degree than the second group. The terms used most often included *functional*, *well-planned* or *attractive*. The *trained* group formulated responses in a more diverse manner, pointing out the division into functional zones, the possibility of adapting space or flexibility of the arrangement.

In terms of responses to the third question, about undesirable elements within public space, the *trained* group much more often referred to the *design quality* category (14.28%, relative to 5.26% in the *not trained* group). Respondents pointed to poor composition or even its lack within space, undeveloped areas without specific functions, improper scale, monumentalism and emptiness. The *not trained* group was less inclined to formulate answers to the question. The most typical answer was *lack of variety* or *poorly matched furnishings*.

Similarity in the answers was noted in the *nature* category: both groups indicated it as a significant element of a good public space. Each of the groups had over 30% of answers in this category. The content of answers was also uniform: members of both groups mentioned trees, clusters of greenery, water bodies and fountains.

A significant number of answers was focused on the furnishings of the space (26.03% and 24.75%). Concerning the question about elements that should be featured within a public space, both groups pointed to benches and seating. Litter bins and illumination were significant in answers given by *not trained* respondents. The spectrum of answers was much broader in the case of the *trained* group. These included positions such as mobile seats, hammocks, swings, bicycle stands and neon signs.

The distribution of answers to question four for both groups is presented in Figure 3. Both groups identified the park as the best urban public space (10.83% and 8.62%). In light of the answers given to previous questions, this result was not a surprise. The *not trained* group was more eager to point to spaces traditionally associated with public functions. Apart from the park, the respondents also pointed to the market square and the square.

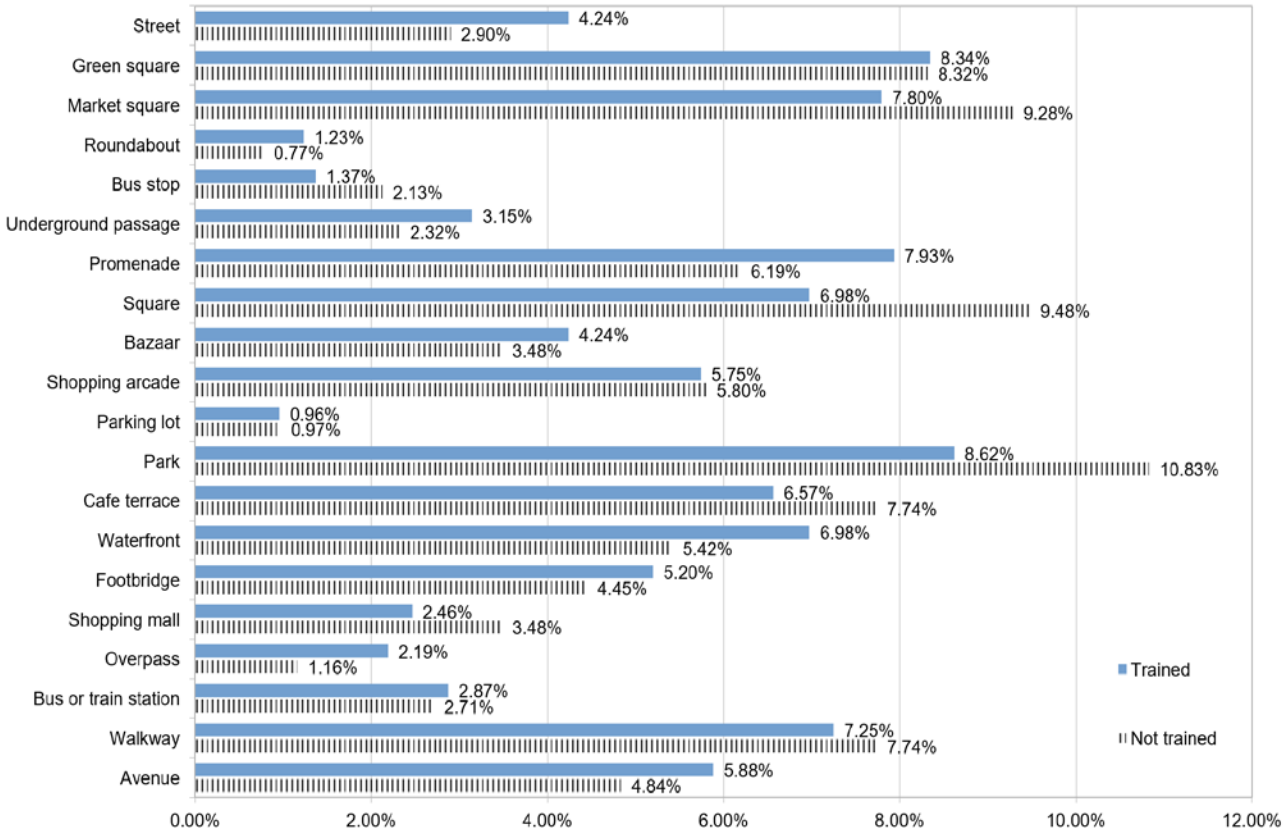

Figure 3: Respondents' perception of the capacity of different locations to perform as a good public space.

Other spaces that the *trained* group pointed to were the green square and the promenade. More members of the *not trained* group were inclined to acknowledge the café terrace and the shopping mall as a good public space. Conversely, members of the *trained* group demonstrated a greater inclination to point to places, such as roundabouts, underground passages, footbridges, and bus and train stations - spaces with strong relation to transport and rarely associated with social spaces.

The respondents' approach to the street was interesting, because it was considered to be the principal form of public space (along with the square). However, relatively few respondents were convinced that it can perform well as an urban public space. More respondents pointed to the avenue, the waterfront, the walkway and the café terrace in this respect: places that are typically associated with recreational functions. The difference in the number of answers between these two groups of respondents can be linked to their level of architectural and urban education.

CONCLUSIONS

The study revealed expectations concerning urban public spaces of young people who use them and can actively shape them. Similarities and differences in the approach to different aspects of public space were noted, from the general to the detailed.

It can be concluded that more than three years of architectural education can shape awareness and modulate expectations concerning characteristics of space. It also influences specific expectations concerning space furnishings, function and form. The manner was observed of how the group without practical or theoretical architectural education formulated answers. They preferred more specific answers given from a personal point of view and personal experience with public space. The group that did possess knowledge and skills, at a level required of a Bachelor of Science in Architecture, displayed a greater diversity in general expressions, which were often derived from professional literature on urbanism.

Expectations concerning the natural elements of the environment were unaffected by the respondents' level of architectural education. Both groups placed an equally strong emphasis on the presence of greenery in urban public spaces; this featured most among answers given in the survey. Natural elements, greenery and water were equally significant to persons with or without architectural education.

The second factor that was observed to be independent of respondent education level, was the presence of seating. Benches, clusters of benches and mobile seating were indicated by both groups as necessary elements within a good public space, because it is principally intended to act as a place of rest and relaxation. Technical and sanitary conditions also were equally significant to both groups: the respondents highlighted the need to install litter bins and pay attention to the condition of buildings and paved surfaces.

Differences that can be associated with level of architectural education were in the field of general accessibility, walkability, pedestrian and vehicular traffic. The group without architectural education verbalised problems connected with dominance of vehicular traffic to a much smaller degree. Its members also less frequently considered the street a good public space. Education in urban design gave members of the *trained* group an awareness of contemporary directions in the development of urban structures, desirable functional and spatial relationships, and the role of pedestrian traffic. The answers they formulated were more varied and included many types of solution.

Concerning teaching urban design, knowledge is required on the perception of urban space and the formulation of individual preferences. Public participation is required in creating and making decisions about public spaces, yet the form and programme of this participation is formulated by specialists: architects and engineers. As indicated by the study, the perception and expectations among these two groups differed in some respects. Therefore, this study can be continued with the intention of exploring the expectations of persons who have had no contact with any form of architectural education. This is a significant question in the context of teaching urban design and the rational management of urban space.

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