Teaching infrastructure urbanism to aid participatory planning

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ABSTRACT: The teaching of urban planning at faculties of architecture entails constant tension, caused by issues related to the priorities among urban design (the form) and urban planning (the process). The authors note that knowledge of the relationship between urban design and infrastructure planning, particularly within the realm of public debate within the local community, is of key importance in educating young urban planners. Described here is a new design approach to infrastructure urbanism in the Faculty of Architecture at Gdańsk University of Technology (FA-GUT), Gdańsk, Poland. This was introduced into the semester programme of an urban design studio and as the subject matter of Master's theses. The scope has been expanded to include elements of participatory planning, the core of which entails improving the quality of public space in the district by integrated planning to fulfil the requirements of modern urban design and planning.

INTRODUCTION

The need for changes in the teaching of urban planning has been a topic widely discussed in scientific circles and in specialised literature [1][2]. The main noticeable challenges concern teaching under the conditions of constant change, where urban planners serve as enablers [3]. Building soft skills, which facilitate dialogue within the space-shaping processes, poses a serious challenge for education. This now constitutes one of the primary directions in the creation of urban-planning educational programmes [4][5]. Staff in the Faculty of Architecture at Gdańsk University of Technology (FA-GUT), Gdańsk, Poland, have also joined this debate and have created new curricula since 2005.

The needs, the problems and the challenges shaping the education of Polish architects and urban planners, include the issues associated with information flow between the practice and academies, as well as the need to co-operate with the administrative institutions [6]. A flow of information creates new competencies for both parties involved [7].

Another contemporary challenge in urban education concerns the need for interdisciplinarity in the research on urban space. Combining knowledge from various fields, as well as understanding each side results in better designs of urban structures [8]. The need for the conflation and interdisciplinarity is so significant that various terms, such as *infrastructure urbanism*, have emerged. A multitude of approaches has appeared along with the development of the practice and the academy. In this perspective, the teaching of urban planning at the FA-GUT has contributed to the interdisciplinarity at the crossroads of architecture and construction.

The concept of infrastructural urbanism specifically deals with the possibilities of improving the readability of urbanised structures, using systems of urban infrastructure [9]. Creation of both the point-island and the linear-network systems of large-scale urban order are examples. The experience of the Netherlands and the USA - the leaders in modern urban planning in the spirit of *landscape urbanism* - has developed gradually.

The next stages of expansion is the potential of new take-ups: from a merger of infrastructure planning with architecture, through landscape planning as *landscape of infrastructure* [10], *landscape infrastructures* [11], and *flowscapes* [12], to urban development of the scale, within the concept of *infrastructural urbanism* [13]. It also refers to the issue of including landscape in the scope of the term, *infrastructure*, represented by a frequently used phrase, *landscape as infrastructure* [14].

INFRASTRUCTURAL URBANISM AND PARTICIPATORY PLANNING IN POLAND

In Poland, after a decade of political and economic transformation at the turn of the 20th and 21st Centuries and owing to the support of EU programmes, municipal urban infrastructure was mainly renovated. However, the underfunding of academic research of the city for decades has contributed to the significant weakening of co-operation between

academies and local governments, hence the lack of transfer of know-how to public administration. This hinders using foreign research, which represents the latest ideas for the creation of new development visions. This generated a situation, in which numerous new infrastructure developments have met with planning inertia - there was no revision of the urban development plans based on outdated doctrines of a functional city and a centrally-planned economy.

New infrastructure investments combine *infrastructural urbanism* and *community planning*. In the *smart growth* paradigm of a modern *netcity*, this is a key element in creating new development visions. The aim of the works on the new planning instrumentarium are a search for innovative solutions that would focus on creating effective partnerships, based on a stable consensus, conducive to improving spatial quality.

Both American and European practice (UK, Germany, Scandinavia) provide numerous arguments for the thesis that participatory planning is the only effective way to achieve lasting compromise among the investment-process actors. It also constitutes an indispensable way of successively raising (changing) quality standards by expanding public awareness [15]. In post-socialist countries, this important manifestation of democratic states' maturity is not obvious to everyone. Local communities and local government bodies, in the past two decades [16], have accelerated the experience of the subsequent phases described in the so-called Arnstein's ladder model (i.e. *ladder of citizen participation*) [17], learning about the significant need to implement innovative methods of participatory planning that would be adequate for local social conditions.

URBAN EDUCATION IN GDAŃSK

A new approach to urban and spatial planning in teaching is conditioned by both the functioning of Polish universities and the planning and implementation practice exhibited by the external environment: the local governments and the construction industry [18]. The main problem here is the low level of consistency between the present level of theory and the non-academic reality. In both domains, an important barrier constricting change entails habituation to the thought patterns.

Knowledge represented by the latest trends in *infrastructural urbanism* seldom is favoured by the conservative part of the planning-environment elite (including academic teachers), who often adhere to postmodern architectural aesthetics in terms of the theory, uncritically maintaining modernist principles of separating the disciplines and the issues of urban infrastructure from the design dimension of the urban landscape. This leads to an inability to confirm the usefulness of new knowledge via planning practice outside the academy. It raises feedback from students, building scepticism about the new approach. The process of introducing innovations to urban planning at the FA-GUT, implemented in the past 20 years, can be characterised thus:

Phases one to six:

- One (1989-1995): a break with the attitude of a Le Corbusier urban-planner-demiurge and an approach to shaping the city as a large-scale architecture-sculpture.
- Two (1995-2000): a turn towards the issues of shaping public space and the issues of building quality, based on the phenomenon of public space user activity.
- Three (2000-2005): introduction of the concept of *urban landscape* and opening up to the hybridisation of the disciplines.
- Four (2005-2010): redefinition of urban planning as a discipline related to the design process and to an attitude of an urban planner-moderator and a facilitator working on the basis of a flexible masterplan.
- Five (2010-2015): linking the issue of city renewal with the issue of new urbanisation quality, with regard to alternative (not conservative) currents of contemporary urban thought.
- Six (2015-): development of new instruments, tools and techniques for *netcity* planning, introducing community planning methods.

As innovation in teaching develops to the rhythm described above, planning practice is being modernised at different time intervals. These saccadic changes are associated with an introduction of new standards, in line with those from EU directives. It is not uncommon for planning to be developed through the flow of knowledge, thanks to investors operating with high foreign standards or by expanding the personal experience of decision-makers and their constituents. Recognition of this dimension results in the educational activity of the university needing to be taken outside the academy, to reach both the social sector: activists, district and city councillors, as well as the private sector: developers, the design sector.

Creation of a critical mass for the change of standards on a route marked out as such has been calculated to achieve far-reaching goals, which is to bring the theory closer to planning practice and to achieve real impact on the local spatial policy. It should be remembered that in a strongly sector-separated debate on the future of cities, the practice applied in Poland has been standard - for example as in Germany or the UK - and often is referred to as a *theory*. Figure 1 shows the connections and the flows during co-operation between universities, society and practice which, in turn, leads to emergence of new competencies in urban planning. This scheme, in the form of a model, is based on the authors' experience in introducing participatory planning into academic curriculum at Gdańsk University of Technology.

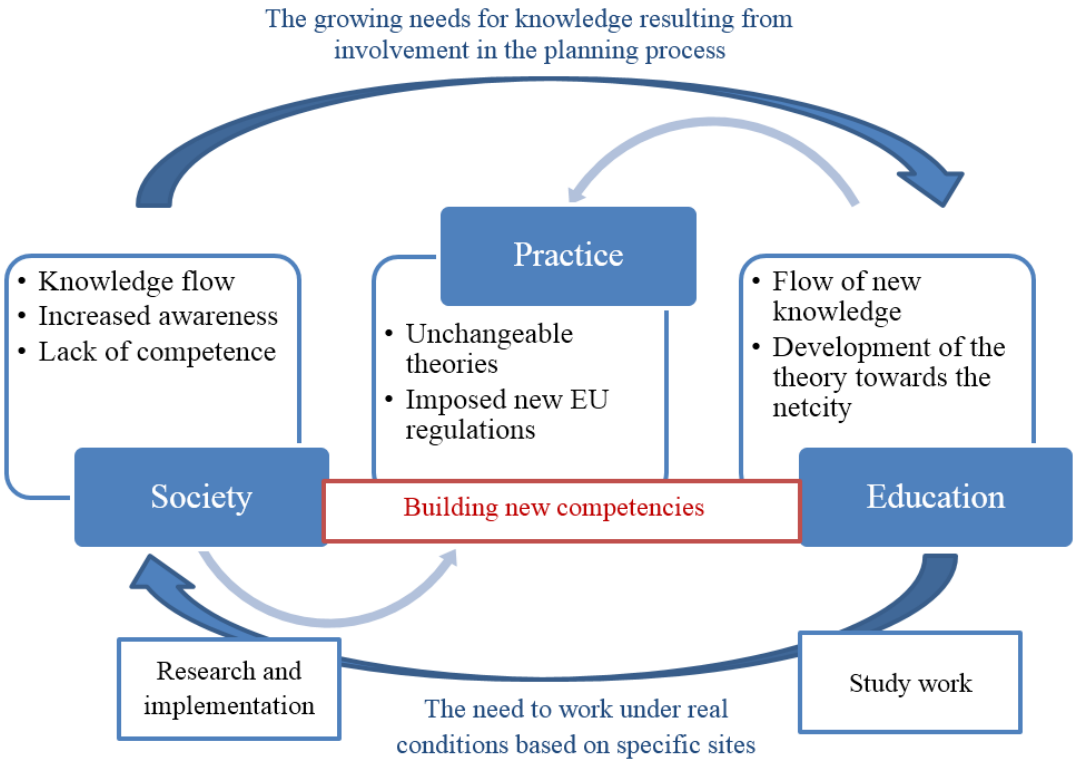

Figure 1: A model of new competence creation in urban-planning education at the FA-GUT.

INFRASTRUCTURAL URBANISM VS PARTICIPATORY PLANNING

The design studio of infrastructural urbanism (IU), run by the team of Martyniuk-Pęczek and Rembarz, was implemented in 2005. Inspiration for changes in the approach to teaching urban planning reflected the experience gained from international co-operation. Previously, as a teaching experiment, this approach was practised through short design tasks, as extra-curricular design workshops, most often in co-operation with German universities (e.g. Essen, Stuttgart, Kassel and Hamburg).

The projects, implemented by the GUT team, were based on the subject of creating/constructing a new large-scale element of urban infrastructure (for example, a street/route/arterial road; a railway/tram - a stop/line; and a water channel - a retention reservoir). The main focus in urban-structure projects was on the quality of public space and urban landscape.

As part of the 14-year work on the subject, two categories of project emerged from numerous workshop study concepts:

- The design problem posed: how to use a public infrastructure investment to obtain the highest urban quality - an infrastructure element as a tool for building higher spatial quality and the image of the place/district.
- Study concepts in consultation with the local community.

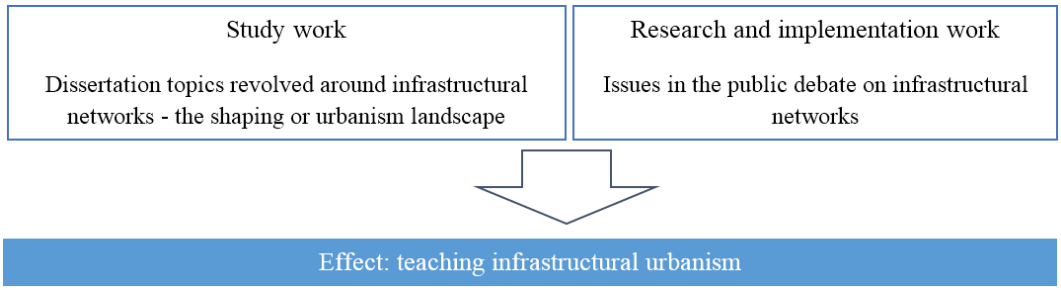

Figure 2: The elements that constitute teaching infrastructural urbanism.

The lessons learned from the introduction of *infrastructure urbanism* into urban-planning education have been vital, in terms of:

- The shaping of topics for design studies around the issues of technical infrastructure.
- Experience, which allowed formulation of semester tasks for undergraduate students of urban-planning studies. Many of them continued their thoughts as part of the Master of Architecture theses and diploma projects.

The next stage involved preparation of a design task for students at semester 5, who implemented a second urban project as part of the first-degree course-programme. At this stage of the development of the approach to the Gdańsk version of *infrastructural urbanism*, the design-based tasks entailed spatial integration of a district or a fragment that has been cut with an element of urban infrastructure, most often in the form of a main street, expressway or railway route. In Table 1 are examples of the implementation of infrastructure urbanism at the FA-GUT, in the form of study work.

Table 1: Examples of infrastructure urbanism implementation at the FA-GUT, in the form of study work.

Academic year	Topic	Topic specification	Class form	Number of students	Co-operation
2006/2007	City under a viaduct	Shaping the public space under a road viaduct	Design studio (15 hrs workshops + 30 hrs design)	30	-
2013	Stop box	Study of the integration of public space and the activation of residents, on the example of Gdynia	Master's thesis	M. Ćwiertnia	-
2014	*On the way Osowa*	Studies in the context of the Pomeranian Metropolitan Railway stops	Master's thesis	M. Necmer	-
2014/2015	Sunrise Boulevard	Studies within the context of the Green Road - cutting residential areas off from green areas	Design studio (15 hrs workshops + 30 hrs design)	30	-
2015/2016	Sunset Boulevard	New housing investments in the context of the Green Road	Design studio (15 hrs workshops + 30 hrs design)	60	Two parallel design studies/ joint reviews
2016	Stapling the city	Studies in the context of the Pomeranian Metropolitan Railway stops	Master's thesis	A. Gałas	-
2016	Geo Etno Park Stolemów	Studies in the context of the Pomeranian Metropolitan Railway stops	Master's thesis	E. Marczewska	-
2017	Gdańsk by bike	A study on the shaping of public and green spaces	Master's thesis	A. Turczyński	-

The effects of the work carried out as part of five diploma theses and three design studies can be characterised as successful studies presenting the essence of the impact infrastructure investments have on the functioning and landscape of a given space. The planning was focused on improving the quality of public space and developing an attractive image, through an innovative urban solution to the problem of existing infrastructure. In the next phase, topics of the project-based tasks, unlike the previous period, were included in the debate on key infrastructure investments for city development. The issue regarding the best solution for the planned urban infrastructure - i.e. treating it as a tool for creating the highest urban quality - became the *problem* question.

Results of the design studio were presented to the city planning services, the hope being that these achievements would be taken into account in the shaping of beneficial design solutions or improving the existing strategy for further public investments. Such linking of a theoretical design-based task with actual discussion on the development of the city helped the students to understand the new approach to urban planning, but also to strengthen their commitment to the topic. In this way, students were offered formulation of their own statements on a known and controversial topic, with the possibility of presenting it in public.

Accordingly, they joined the city-wide debate on development of the surroundings of the newly built metropolitan railway line and a fast route constituting the eastern section of the basic communication framework of Gdańsk. Because the co-operation with municipal planning services, unfortunately, was not effective enough, and therefore not very satisfactory, the need emerged to develop a design studio format by expanding it with elements of community planning.

The strive for development of competence and the need for co-operation with the local community led to co-operation between the FA-GUT and local authorities which, in turn, resulted in creation of a number of study concepts built in consultation with the local community. Table 2 has examples of infrastructure urbanism implementation at the FA-GUT, in the form of study concepts built in consultation with the local community.

Table 2: Examples of infrastructure urbanism implementation at the FA-GUT, in the form of study concepts built in consultation with the local community.

Academic year	Topic	Topic specification	Class form	Number of students	Co-operation
2014	Running through Osowa	Study of public spaces shaping in the Osowa district of Gdańsk	Master's thesis	J. Suter	Workshops with the District Council of Osowa
2017/2018	Re-urbanisation studies on a street axis: Kołobrzeska 2.0	Shaping the urban structures with city-centre features	Design studio (15 hrs workshops + 30 hrs design)	30	Workshops with the District Council of Osowa
2018/2019	City centre for Przymorze Metropolitan Life at Kołobrzeska Street	Shaping the urban structures with city-centre features	Design studio (15 hrs workshops + 30 hrs design)	30	Workshops with the District Council of Osowa
2013/2014	Quo vadis Gdańsk? The residents plan their city…	Shaping the district's development strategy	Design studio (15 hrs workshops + 30 hrs design) 6 workshops for residents x 4 districts	60 + 120 residents + 40 district councillors	Workshops with - NGO GFiS - City of Gdańsk, 4 different district councils - about120 residents

It can be seen in the table above that the last project, *Quo vadis Gdańsk? The residents plan their city…* was the most extensive and effective initiative. This initiative appeared in connection with implementation of the project titled *Quo vadis Gdańsk?* Residents planned their city (known as QV) between 2014 and 2015, owing to the financial support of the Citizens for Democracy programme distributed by the Stefan Batory Foundation, with funds from the European Economic Area. In four different districts of Gdańsk: Orunia, Osowa, Wrzeszcz, Ujeścisko, in co-operation with the local councils consisting of city activists, a series of six participatory planning workshops included in the programme of the Social Planning Academy (SAP) were carried out. The main goal of the project was to strengthen the competence of the social side in participating in the planning.

In 2016, this solution scored third place on the short list of the annual Excellence in Teaching Award (Association of European Schools of Planning - AESOP) devoted to what is known as Innovative Approaches to Interdisciplinarity in Planning Education - Building Capacity to Respond to Interconnected Contemporary Planning Challenges. Appreciation for the complex concept of the Social Planning Academy, which is also a type of *revitalisation living laboratory*, obtained from both professionals, local communities and students, was a huge incentive to continue in the following years this didactic form, in combination with an infrastructural-urbanism approach.

CONCLUSIONS

Teaching new design competencies to future architects requires parallel work devoted to creating a new awareness of the wider environment. The university is not taken out of the local context and the practical verification of the theory via everyday experience. Unfortunately, this is a long-term process, because of the existing limitations (not only financial ones); also, the limited ability of the system to introduce innovations and the high level of reservation regarding implementing theory or even the experience of foreign examples.

The infrastructural urbanism approach, the focus of which is on consideration of the landscape nature of urban infrastructure systems - so-called flowscapes - not only allows integration of the design disciplines, it strengthens the awareness of larger entities, as well. This approach avoids isolated thinking about architecture. It strengthens the perception of the role an object (an architectural task) plays as a link in the planned process of large-scale urban design. Its linkage to the development of participatory planning techniques is necessary to strengthen more efficient planning of a project-design process focused on building consensus.

The Gdańsk experience shows the possibilities required, so as to generate the synergies necessary, by using the feedback effect, i.e. the teaching of students in co-operation with local communities. Quality is created at the level of the local community and university through teaching infrastructural urbanism as part of participatory planning. In this bottom-up process, new potential is being built, the importance of which, with regard to the needs of shaping a netcity, cannot be ignored.

Acceleration of the popularisation of new planning, which infrastructural urbanism in the participatory planning model unquestionably constitutes, should be expected owing to the dissemination of the knowledge and experience built up and gained by the increasing number of implementations. Decision-makers' personal experience (the political and

administrative sphere) seems to be of key importance. The ongoing modernisation of cities and the liberal urbanisation taking place in Poland generate severe effects of fragmentation of the open landscape and the urban space, most often caused by infrastructurally disintegrated urban investments.

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