

## **Modelling the process of teaching engineers, architects and spatial planners in the field of urban design in co-operation with small municipalities**

**Kinga Racon-Leja**

Cracow University of Technology  
Kraków, Poland

**ABSTRACT:** Poland's legislative framework affects collaboration between universities and economic environment. In this article, the author discusses the issue of formulating didactic models in urban design conducted together with small municipalities for architecture and spatial planning students. The lack of premade formats forces trials aimed at formulating teaching methodologies, which becomes an issue of the didactic process and research evaluation. Participation-based education techniques require an awareness of context, social needs, and are to stimulate critical thinking (when conducted in groups) and enhance presentation methods. The presented format leads to the development of varied spatio-urban and multifaceted strategies referred to targeted urban designs, individually continued within BA diploma projects. Public presentations and discussions stimulate the confrontation of ideas and further concept tweaking. The article also evaluates the impact of the module on students and the municipality. This is followed by a discussion aimed at improving and directing the process of urban design education in co-operation with small municipalities.

**Keywords:** Architectural education, urban design, inclusive teaching models, involvement of small municipalities

### **INTRODUCTION**

The last three decades have been a period of changing tendencies in teaching and conducting urban design in Poland. The situation of shaping urban layouts after 1989 has also been subjected to a radical transformation. The process evolved from the excessive accentuating of spatial aspects, through transformations, and the pursuit of new models of action as a reaction to the pressure of the free market, a phase of adopting and copying Western models, to the present, when one can observe the individual pursuit of balance between shaping spatial form, the community and the environment.

The aim of this article is to present a comprehensive educational model of co-operation with small cities, based on modern educational methods and tools, bringing students closer to real-world problems faced by professionals. The legislative framework of the Ministry of Science and Higher Education currently subjects academic entities to the necessity of co-operation with their economic environment. On the other hand, there has been an observable increase in interest in co-operation with universities among small cities. Municipalities open up to the possibility of searching for new, non-standard solutions that can be offered by co-operating with a university. The author has devoted the last couple of years to the formulation of a model of teaching urban design incorporating co-operation with small cities and towns. The cities and towns that were the focus of module assignments included: Miechów, Mogilany, Koźmin Wielkopolski and Rabka-Zdrój. Conclusions were formulated based on analyses, observations of assignment phases, and the possibility of applying didactic tools and outcomes, performed by, among other things, survey studies.

### **BACKGROUND OF THE PROCESS**

The discussion focusing on architectural teaching models concerning urban design has been going on for some years now. In 2016, the AA School of Architecture organised a symposium on the possibilities of developing a methodology of teaching within this field [1]. Some of the issues that have been discussed included the comprehensive understanding of the site and an *inclusive* approach to the topic, with remarkable influence of the stakeholders on the process. From this perspective, Jacoby considers urban design to be *inter-, intra-, multi- and cross-disciplinary*, balancing between the *management of differences* and the *instrumentalisation of conflicts*, implying a much deeper approach to design research, while simultaneously considering the issues of *domesticity, typology, morphology, infrastructure and territory possible* [1]. Still the issue of *inclusivity* and contextual teaching seems to be a part referring to other advanced methodologies, such as Giancarlo de Carlo and his International Laboratory of Architecture and Urban Design ILA&UD (1974-2004) [2].

Short teaching forms, which were discussed at an international symposium at Cracow University of Technology (CUT), Kraków, Poland, in 2013, can also have a strong influence on the development of didactic models [3]. The experience of the author in the coordination and tutorship of international workshops (2009-2019) was among the factors that directed the change in the educational process. The programmes included an intensive course - *Facing Impact of the Second World War: Urban Design in Contemporary European Cities, Case: Oświęcim, Rotterdam and Dresden* (2009-2012), financed using LLP Erasmus grants, with the involvement of CUT, TU Delft, HTW Dresden and Hildesheim [4]. Subsequent workshops involved the following cases of small municipalities including: Schierke, Selb and Äs, Frankfurt (Oder)/Ślubice and Zgorzelec/Goerlitz. The set of participating institutions was expanded to the new partners including TU Dresden, CTU Prague, the University of Mons and Chalmers University of Technology [5][6]. The short programme period required disciplined work and the development of analytical, strategic and design techniques implemented and modified over the course of the semester-long teaching process by the author.

## SUBJECT MATTER

The model of shaping the education process of urban design requires the appropriate selection and preparation of the subject. Small cities, with populations up to 20 thousand inhabitants, are subjects that are highly useful in teaching urban design, particularly in the teaching of younger students (according to the CUT Faculty of Architecture curriculum, urban design is taught to third-year Bachelor course students) and spatial management students. Smaller towns are more determined to co-operate and demonstrate greater involvement in the process. Often lagging in the process of revitalisation, they are ready to take on new challenges. Naturally, they have poor access to qualified specialist staff and professionals, primarily urban planners, something that has become prevalent since the urban planning profession was deregulated in Poland in 2012. The scale of the small city impacts numerous aspects of supervising the design assignment:

- it allows the analyses to cover the entire area of the city, accounting for several essential spatial, circulatory, economic, environmental or socio-demographic elements;
- one can assume a much greater percentage share in terms of social group engagement in the participatory process, which can facilitate a better familiarisation with local conditions and adaptation to those conditions;
- the design, even if it is treated fragmentarily, can be shaped in relation to the entire structure and must balance it throughout the entire layout;
- the proposed changes affect the continuity of spatio-functional elements within the entire city, such as public spaces, the transport systems and green pathways.

One advantage of selecting such subjects is the necessity to observe the potential impact of smaller urban interventions on the entire scale of the city. This problem is crucial, as when working on fragmentary subjects, which one has often done, students were more inclined to treat their actions as selective. As the socio-demographic perspective changes, so does that of architectural and urban-planning measures, particularly in small cities. The flexibility in the approach to design and the ability to form correlations between the spatio-programmatic structure and the broad social, demographic and environmental subject matter are factors that should be reinforced in the education process. As the world is currently affected by a pandemic caused by the Covid-19 virus, the challenges and changes it will bring will require an innovative, but most importantly, an inclusive approach to future efforts.

## TEACHING FORMAT

Experience in supervising workshop teaching forms has resulted in the enhancement of previous teaching models. The educational process was conducted on groups of students of architecture (BA) and spatial management (MA). The assignments they were given were divided into the following stages: urban analysis (a); urban strategy (b); first public presentation (c); urban design proposal (d); and final public presentation (e). The students were given the option to continue the assignment as a Bachelor degree project (f) (Figure 1). In the case of architecture students, the assignment has recently been integrated with classes on urban transport, which provided a significant form of substantive support.

### Urban Analysis (a)

Teaching was conducted in close co-operation with municipal administrations. The municipalities prepared information concerning the site that they planned to revitalise. These were typically market squares as in the case of Rabka-Zdrój, Mogilany or Koźmin Wielkopolski or areas adjacent to bus stations as in the case of Miechów. Students worked in four-to-six-person groups. The scope of the analyses encompassed the entire city (they were drawn to a scale of around 1:5000), and went beyond their city limits in many respects including landscape-related aspects, regional linkages in the field of transport and others. The analysis required gaining a familiarity with place-based specificity, not only in terms of composition, urban evaluation, the placement of public spaces and their continuity, green and recreational areas or circulatory layouts, but also demographic and societal aspects, in addition to current economic and environmental problems [7]. Through integration with the urban transport module, the students enhanced their studies of traffic management, mass transport accessibility, vehicular transport and actual parking problems. The possibility of comparing remote observations with on-site studies (study trips were preferably organised in the third week of the semester), enhanced by interviews with municipal officials and the local community, was an element that enriched the didactic effect.

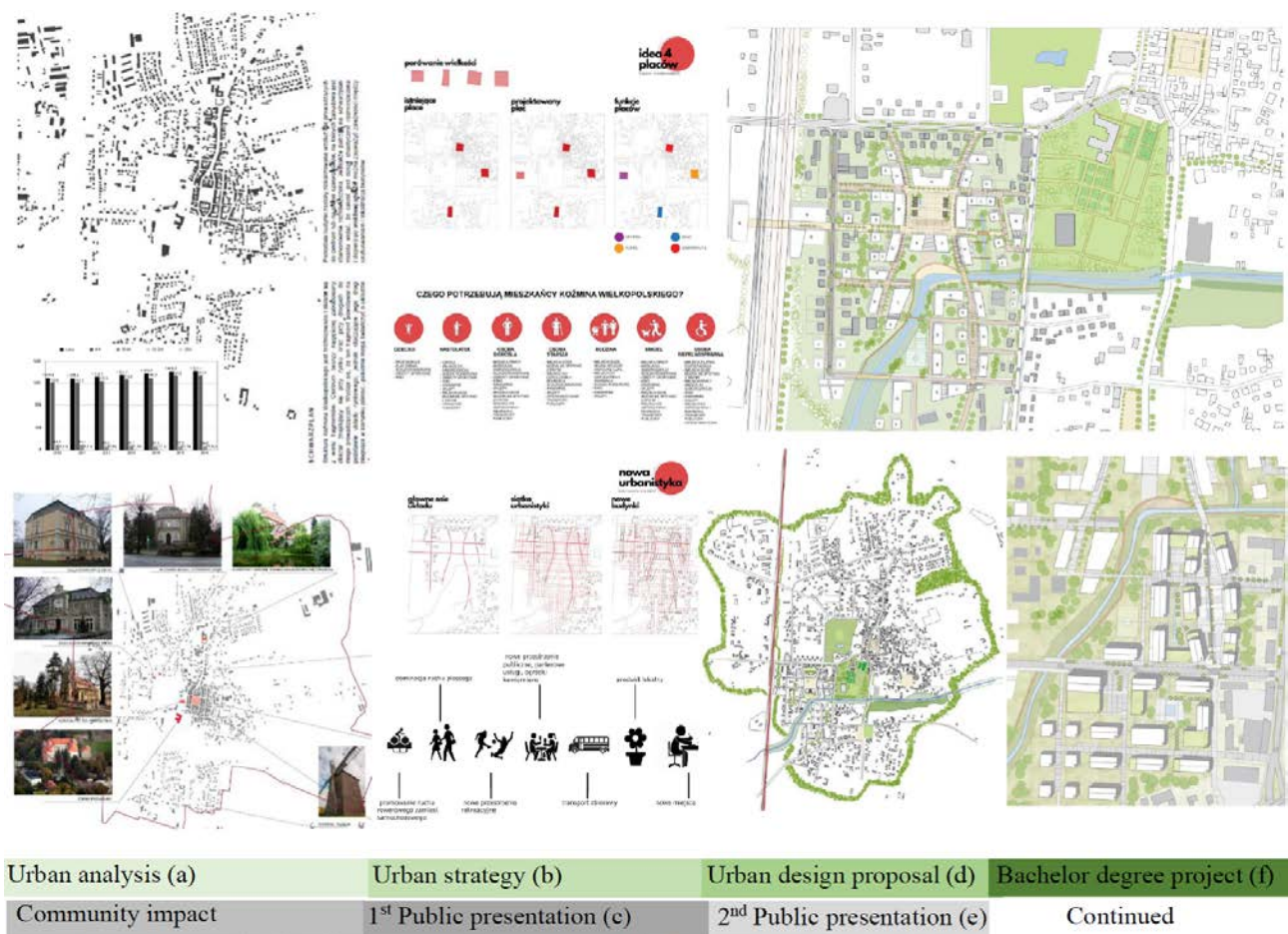


Figure 1: Scheme showing the phases of the urban design education process and their corresponding term project elements. Tutors: M. Gyurkovich (leader), K. Racoń-Leja, D. Poklewski-Kozieł. Students: K. Czesnowska, K. Cichy.

Another element that was important to the process was the fact of pursuing contemporary methods of recording urban analysis in the form of graphical models or urban mapping, which also constituted an essential cognitive and academic element [8][9]. The students were encouraged to feature mental maps in the analyses, which were individual recordings of their perception of space. This stage was concluded by the joint formulation of a SWOT analysis by the group.

### Urban Strategy (b)

During the process, the significance of finding an urban strategy, which was not necessarily included in the traditional process of teaching urban design, was particularly accentuated. During the process of formulating the strategy, analytical conditions constitute the most important element, accentuating the significance of efforts aimed at establishing mutual cause-and-effect relationships. Conceptual proposals should reference a specific reality, ranging from small urban centres that often face the problem of preventing the flight of young people and experience the problem of an aging community. To many small cities, this is a moment when they stand on the cusp of possible depopulation provided they make no effort to improve attractiveness and quality of life. Many do not have a specific vision of their own development. Hence, the importance of expanding their mode of thinking.

Students were directed towards formulating a multi-aspect strategy that accounted for the majority of any observed problems and creating their own proposals of adequate solutions [10]. The strategy was addressed to various groups, residents, accounting for age distribution, but also visitors, tourists or persons who were undergoing education in the city [11]. Various needs were confronted and compared. To clarify measures, the author introduced new tools including all possible forms of toolbox. The students quickly adapted to the new working methods, creating their own conceptual schemes in the form of charts, tables and ideograms. When ideograms were concerned, various forms of activity were introduced, distributing and planning them over different time ranges (of a day, six months or sequentially). At this stage, the students worked in larger groups forcing the students to discuss and defend their own proposals.

When working on strategies, tutors placed an emphasis on creativity and individual pursuits, often extending beyond the expectations of municipalities [12]. Some of the proposals featured attempts at modelling the development of the city and the municipality based on local products, a product of either craftsmanship or agriculture as an element of the promotion and identification of the city. Other proposals focused on programming the development of a branch of the economy, e.g. the tourist industry, local crafts or medical functions including functions for seniors. Matters of ecology were also treated as a design challenge accounting for water deficit or quite the opposite, the danger of flooding, in addition to more widespread environmental threats (smog). In this case, the strategy was an attempt at formulating

systemic environmental solutions on the micro and macro scales. Some of the projects were devoted to the pursuit and study of analogous measures. Theoretical studies were intended to familiarise students with Polish and European cases of revitalisation and attempts at searching for the identity of smaller cities in the context of socio-demographic conditions. This part of the assignment was typically more elaborate in the case of spatial management students.

#### Urban Design Proposal (d)

After their presentations (c), the students divided themselves into smaller, mostly two-person groups. They worked on selected fragments of the city, considerably expanding the original spectrum of measures suggested by the municipality. Wherever possible, tutors tried to convince students to choose different areas, with the intention to connect them together into a single whole, something that was mostly unsuccessful. The design proposal was comprised of a conceptual design drawn to a scale of either 1:2000 or 1:1000 along with a detailed plan (1:500) and cross-sections. The proposal was an expression of the spatio-programmatic answer to the guidelines formulated by the students in their strategies. The proposals explored contextual conditions to a much deeper level than in previous assignments. The students were obligated to demonstrate how their design implemented earlier strategic assumptions. The integration of teaching design with the urban transport module favourably affected the extension of design aspects in this field. It considerably affected the students' awareness of the use of rapid mass transport (in this case commuter rail) and the improvement of regular transport (buses). In terms of individual circulation, traffic calming solutions were proposed accounting for how the distances in small towns favoured pedestrian and bicycle traffic. Design solutions also included the re-design elements of the existing traffic structure, including cross-sections of collector roads and local/local access roads drawn to a scale of 1:200.

#### Bachelor Degree Project (f)

The public presentation of student projects was the final element of work on the module. Some students (ca. 25%), motivated by their work for the city, decided to individually continue the subject. Their projects focused on fragments of the proposed urban layouts, smaller complexes designed on architectural scales with a more detailed design of public spaces. Here, the students performed in-depth theoretical studies on forming social spaces and often returned to the concept of the neighbourhood unit. In terms of architecture, they searched for a contemporary interpretation of local forms. In many cases, these designs modified and improved previous layouts via the bottom-up principle. This process favourably affected the raising of awareness concerning the skills, which the students were developing and the knowledge they were gaining. Each time, the students wanted to once again present these projects to the municipalities.

### PARTICIPATORY MODEL

The element that initiated the process was an initial visit to the city that the students could use to familiarise themselves with expectations concerning their work. During the semester, apart from regular reviews performed by teaching staff, the author also decided to introduce two public presentations. The first summarised the section focusing on urban analyses (a) and urban design strategy (b). The second presented the entirety of design outcomes (d).

The first public presentation was the most impactful on the entire teaching process. The students presented the outcomes of their analyses. The observations they made were often surprising to municipal administrators, highlighting, for instance, distorted proportions in spatial development and within functional and circulatory systems, such as exurbanisation, low-density downtown areas or an overgrowth of circulatory functions. The young architects highlighted the significance of valuable areas that mandated protection, accounting for architectural and urban planning heritage, in addition to green corridors and public spaces. The presentations culminated in displaying proposed urban development strategies, comprehensive functional, spatial, social, economic and environmental programmes laid out in the form of ideas and visions. The strategies, formulated by creative young people, forced the administrators and local communities to think. The presentation was an important element of returning to the key questions about the identification of the city, and the pursuit of its identity in spatial and other terms.

The author wanted to invite the broadest possible spectrum of participants to the discussion, including decision-makers, town hall officials and members of planning departments, in addition to representatives of NGOs and the local community [13][14]. The discussion accompanying both presentations was the most essential element of the module. It allowed the students to see for themselves that urban planning measures should refer to a broader context of actions, wherein one can, and sometimes even should, go beyond the initial intentions of the client. The presentation demonstrated how important it is to show a broad spectrum of good practice cases. The diversity of the projects on display allowed for the presentation of many different solution models. Hence, it was essential to develop individual, unique proposals to avoid the unnecessary copying of ideas and solutions. The presentations forced a confrontation of the proposed assumptions with the potential addressees and required that responsibility be taken for the presented solutions.

Work in groups, which lasted for two-thirds of the semester, was also a part of the participatory process. It forced students to defend their own judgements, account for other opinions in discussions and crystallised individual predispositions of persons who took on leadership roles. The joint evaluation of presentation outcomes by students and teaching staff was also a very important element of the process. It obligated students to finalise their conclusions and modify their proposals so as to adapt them as per the feedback they received.

## PROCESS EVALUATION AND CONCLUSIONS

Upon evaluation of assignment outcomes, it was possible to observe that the participatory process had a positive impact on student engagement and awareness. Their presentation and discussion skills also significantly improved. The students were asked to fill out a survey. As many as 86% admitted that co-operation with the municipality was a motivating factor, while the remaining 14% reported it had no effect. Most students reported high engagement (54%) and mindfulness (59%). Only 13% of the students felt anxious about making design decisions.

Over the course of the process, the teaching staff wanted to introduce the latest techniques and work elements associated with complex task solving, accounting for previously mentioned aspects of inclusiveness in the use and formulation of multi-aspect urban strategies, urban mapping tools, work with a toolbox, reactivating group work through various means, including through work on a shared physical urban model and utilising elements of public presentation as a form of teaching the participatory process. Wherever possible, the process itself accounted for numerous diverse aspects. Tutors asked students to evaluate the use and utility of these elements and, with the results presented in the attached table. Among the methods that the students acknowledged to be new, they primarily pointed to working with the toolbox, formulating strategies and public project presentation (Figure 2a). Among the elements that positively affected their urban design skills, they mentioned work on the strategy and the public presentation (Figure 2b). They also appreciated the significance of working in groups, using the physical model and contact with teaching staff in the form of individual critiques.

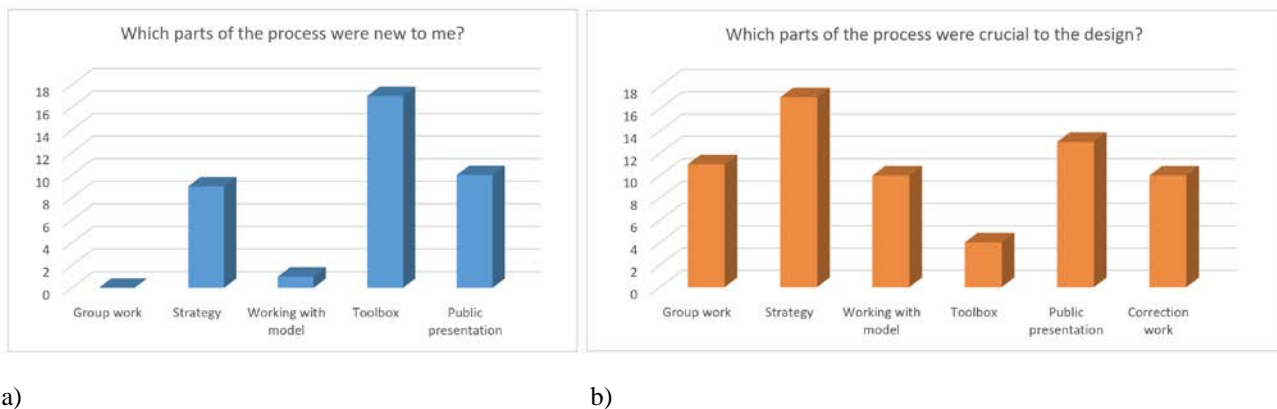


Figure 2: Survey study showing the evaluation of the teaching process by students, 2019 (Source: Author).

The process of teaching urban design requires an expansion of work methods and tools. The subject of small cities turned out to be an appropriate scope of subject matter for teaching students of the Bachelor of Science in Architecture course and spatial management students by teaching them to approach urban design in a holistic manner in relation to all project scales. Co-operation with municipal administrations allowed to provide an experience of design that was rooted in reality and significantly supported the teaching process in all cases. It also forced students to be more mindful and to gain a greater familiarity with contextual conditions.

Difficult and comprehensive discussions were a critical element to the shaping of the young designers' attitudes, giving them courage to present their own visions, and defend them in a situation based in reality, yet still accounting for the margin of a student assignment. To the students, their assignments were an element of shaping the process of critical thinking during design. The actual multi-aspect character and the changes that were effected over the course of the assignment required flexibility in supervising student projects.

The urban development model adopted by the designer/planner had to be confronted with a potentially difficult partner that was unprepared for bold, innovative models. Most critiques collected during presentations can constitute an inspiring factor in making more informed design decisions. Co-operation with the economic environment also shapes certain ethical attitudes, particularly concerning responsibility for one's actions in front of the local community and the awareness of affecting the lives of individual residents.

The matter required the CUT to formalise its co-operation efforts by adopting appropriate procedures, concluding agreements and contracts concerning funding or cost compensation. The matters of transferring authorship rights and copyright to the student projects also required negotiations and approval. The entirety was institutionally coordinated at the FA-CUT [15]. The representatives of municipalities who participated in the presentations reacted positively to the co-operation. The final projects went considerably beyond the initial expectations of their addressees as only minor design interventions had been initially assumed.

According to the author's survey study, the local representatives who participated in the presentations reported that, in their opinion, the elements that were the most useful to the city's future planning efforts were urban design proposals that covered the entire city (59%) and the strategies (50%). The detailed design solutions of specific areas (which municipal administrators had requested), met with the interest of 40% of respondents. Most community representatives

and administrators who represented their towns saw co-operation with the CUT as needed and inspiring (80%), while 40% believed that it could positively affect the city's development.

Educational efforts that feature contact with an actual stakeholder representative, a small urban municipality, can also be treated as *bridging activities* [16]. To the students, the subject matter discussed from this perspective constituted a *soft* introduction to the realities of urban design at the municipal level. As a contributing factor in the exploration of urban design subject matter, it is an introduction to further education, and the possible specialisation of students as a part of subsequent planning areas, while preparing them for work in the realities of a municipality. In a real sense, after the module's conclusion, the students were requested to participate in professional internship programmes within architectural and planning departments of the cities that co-operated with the FA-CUT.

## REFERENCES

1. AA School of Architecture, Symposium: Contemporary Urban Design Education - Part 1 and 2 (2016), 10 January 2020, <https://www.youtube.com/watch?v=USSV-DBdBZU&t=3237s>
2. De Carlo, G., *Gli Spiriti dell'Architettura*, Roma: Editori Riuniti (1992) (in Italian).
3. Franta, A. (Ed), *The Role of the International Student Workshops in the Process of the Education of Architects*. Kraków: Wydawnictwo PK (2016).
4. Bieda, K. and Racoń-Leja, K., Facing Impact of the Second World War: Urban Design in Contemporary European Cities 2009-2012, Basics of the LLP Erasmus Program (2012), 10 January 2020, [www.urbanwarimpacts.eu](http://www.urbanwarimpacts.eu)
5. Racoń-Leja, K., Urban design as a workshop laboratory - Gothenburg-Ringön, SGEM 2018 Albena: *Urban Planning, Architecture & Design, Urban Studies, Planning and Development*, 5, **5.2**, 303-310 (2018).
6. Mensing-de Jong A., Racoń-Leja K. and Zdráhalová, J., *LAB of Inclusive Urbanism as a Format to Educate Urban Designers, Research in Urbanism*. TU Delft (2020) (in print).
7. Wicher, W., *Mapy Urbanistyczne*. In: Bojanowski, K., Lewicki P., Gonzales L., Palej A., Spaziante A. and Wicher, W. (Eds), *Elementy Analizy Urbanistycznej*. Kraków: Wydawnictwo PK, 197-232 (1998) (in Polish).
8. Niezabitowska, E., *Metody i Techniki Badawcze w Architekturze*. Gliwice: Wydawnictwo PŚI (2014).
9. Schoonderbeek, M., *The Microscope as Hammer: Mapping Border Conditions*. In: Schoonderbeek, M. (Ed), *Border Conditions*. Amsterdam: Architecture & Natura Press/August Kemme Foundation, 20-30 (2010).
10. Schneider-Skalska, G., Interdisciplinary education of architects both globally and locally. *World Trans. on Engng. and Technol. Educ.*, 16, **4**, 356-361 (2018).
11. Jagiełło-Kowalczyk, M., *Social Group as a Factor Activating the City, Identity*. In: Gyurkovich, M. and Biere R. (Eds), *Back to the Sense of the City*. 11th VCT International Monograph Book, Barcelona: Centre of Land Policy and Valuations CPV, 439-451 (2016).
12. Avsec S., Ferk Savec V., Creativity and critical thinking in engineering design: the role of interdisciplinary augmentation. *Global J. of Engng. Educ.*, 21, **1**, 30-36 (2019).
13. Mensing-de Jong, A., *Networking Stakeholders*. In: International Building Exhibition Urban Redevelopment Saxony-Anhalt 2010 - Less is Future 19 Cities - 19 Themes, Berlin: Jovis, 452-456 (2010).
14. Czafik, M., Görner, K. and Štefancová, L., Participation as an innovative method in architectural education. *Global J. of Engng. Educ.*, 21, **3**, 227-232 (2019).
15. Paprzyca, K., An innovative model of co-operation between university, local government and business in the Faculty of Architecture at Cracow University of Technology. *World Trans. on Engng. Technol. Educ.*, 15, **4**, 404-409 (2017).
16. Avsec S. and Jagiełło-Kowalczyk, M., A high school bridging course to enhance readiness for architectural education. *World Trans. on Engng. Technol. Educ.*, 17, **3**, 231-236 (2019).

## BIOGRAPHY



Kinga Racoń-Leja is an architect and associate professor, holding the position of Associate Dean in the Faculty of Architecture at Cracow University of Technology (FA-CUT). She received her MA Sc in Architecture at the FA-CUT in 1995, after a part-study programme in Art and Architecture College of the University of Tennessee, Knoxville, USA. She received her doctoral degree at the FA-CUT after a doctoral studies course in 2003, partially conducted at Instituto Universitario di Architettura di Venezia IUAV. In 2020, she received her DSc degree at the CUT. Her research and didactic work concentrate on urban processes. She has published extensively, including the monograph entitled *Miasto i Wojna (City and a War)* (...) (in Polish) and over 40 academic papers. She was a coordinator of the Facing Impact of the Second World War: Urban Design in Contemporary European Cities (2009-2012) international programme, which was awarded the best in Higher

Education in the Erasmus+ in Poland (2014). She conducted over 25 international workshops in urban design, working on teaching methodology and incorporating it into her research.