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# Architektura, Urbanistyka, Architektura Wnętrz

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Wydanie I

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Krzysztof BOROWSKI<sup>1</sup>, Roman PILCH<sup>2</sup>

## URBAN INDAGANDA AS A METHOD OF SPACE INVENTORY

The analysis and synthesis method known as „Urban Indaganda” (IU) is used to inventory, identify, and valorize urban space resources. This proprietary research and teaching method involves characterizing and evaluating the basic elements of urban development. Urban Indaganda encompasses selected urban spaces on a scale of region city district city block plot house detail. The method was inspired by Stanisław August Poniatowski’s „royal geographical event Urban Indaganda of Cities and Regions” and the plans of Stanisław August Poniatowski’s Commission of Good Order (Commissio Boni Ordinis, from 1765). The research and teaching method of the IU and the Indaganda Boards are described. Based on the obtained results, various albums of elements characteristic of a given space and catalogs of forms used or approved for use in new development projects can be developed. The inventory of resources is valuable. An additional element of valuation will allow for the analysis of research results in terms of the necessity and scope of interventions and transformations in the space. The implementation of the Indaganda Boards as part of summer field trips on urban inventory at the Department of Urban Planning at the WAPP is presented.

**Keywords:** Urban Indaganda as a method of space inventory

### 1. INTRODUCTION

The „Urban Indaganda” (IU) method of analysis and synthesis, known as „Urban Indaganda,” is used to inventory, identify, and valorize urban space resources. This proprietary research and teaching method involves characterizing and assessing the fundamental elements of urban development. Urban Indaganda encompasses selected urban spaces on a scale of: region – city – district – city block – plot – house – detail.

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The IU method is recommended for use during Urban Planning Workshop designed for second-year, first-cycle students of Architecture, conducted as summer workshop internships after the fourth semester. The classes are laboratory-based; 40 hours are allocated for the course curriculum; 3 ECTS credits are awarded. According to the applicable study program, the module/subject is described in the course module card applicable at the Faculty of Architecture, Poznan University of Technology (code: A\_K\_1.4\_010).

Course Objectives:

- Familiarization with the conditions and practical problems related to urban planning processes at all scales: region, city, district, quarter, building plot, development, and detail,
- Learning and acquiring the ability to apply the principles of inventorying urban space resources in terms of the shape and relationships within the spatial structure of the city,
- Acquiring pre-urban design skills in identifying and assessing resources, collecting materials and data for urban analysis, defining programmatic and spatial assumptions necessary to create an optimal land development and development concept, taking into account the principles of urban composition and shaping an optimal city image,
- Gaining the ability to recognize and apply model concepts of urban spatial development in relation to local conditions,
- Gaining the ability to creatively view city space and the innovative solutions applied therein in urban planning,
- Gaining the ability to work in groups on a given topic,
- Familiarization with the conditions and contemporary problems related to urban planning and development processes,
- Acquiring skills in distinguishing map types, scaling and reading them, and selecting the right type for specific pre-design, analytical, and design tasks, including those involving GIS (Geographic Information System) resources.
- Acquiring graphic and workshop skills in preparing and developing urban planning materials at the resource identification, analysis, programming, design, and presentation stages.

The testing ground is a living urban organism. Field trips take place in selected cities and towns in the Wielkopolska region. Study trips to other Polish and European cities are also preferred. This allows for a dual curriculum: learning and applying the tools, techniques, and methods of urban inventory, but above all, identifying constructed, functioning, and attractive public spaces with an emphasis on implementation technology, methods, and intensity of use and furnishings. It is also important to recognize the „spirit of place,” the color, style, mood, so-called „urban behavior,” human activity, additional attractions, seasonal and occasional, at different times of day and night. Supplementary elements of the urban inventory include the valuation of space and development, balances of area,

development, use, and population, and the parameterization of space by calculating basic urban indicators: development intensity, population density, residential density, and the weighted average number of storeys (building height).

## 2. DESCRIPTION OF THE RESEARCH AND TEACHING METHOD

The inspiration and basis for the development of the IU method was Stanisław August Poniatowski's „royal geographical event – Urban Indaganda of Cities and Regions.” Stanisław August, as patron of Polish cartography, ordered the creation of a large, synthetic map of Poland in the form of an atlas. The preparation of all maps and their source bases are closely linked to the material contained in Perthees's twelve-volume manuscript, „Geographical and Statistical Description of the Parishes of the Kingdom of Poland.” This work contains nearly 2,500 cards and 2,278 maps of parishes and deaneries, along with concise information. The basis for developing these cards and maps was the 14-item „parish indaganda” survey, distributed (in 1783-1784) to Roman Catholic dioceses. It was a specific measurement and descriptive survey, containing a detailed spatial and economic inventory of parishes and deaneries throughout the country. The plans of Stanisław August Poniatowski's Commission of Good Order (*Commissio Boni Ordinis*, from 1765) were also used as a motivating factor in developing the IU tables. The Commission's primary tasks included preparing accurate measurements and city plans based on standardized urban surveys.

In order to inventory urban space and examine examples of space at various scales, three developed elements of primary importance are considered. These are:

- people – culture, tradition, development
- space – function, form, technology
- environment – physiography, resources, threats

The substantive structure of the Urban Indaganda is a selective urban survey with a compilation format – tabular, ideographic, keyword-based, and parametric, with graphic and color markings, allowing for the valorization and qualification of components and their synthetic description. It is important to present spatial elements and resources hierarchically, from the smallest scale of the region and city, through the scale of the district and city block, to the scale of the largest plot and house. This method is intended to show and illustrate the basic relationships in the creation and functioning of urbanized spaces and the influence of the higher-order urbanization system on the appearance and functioning of lower-order elements according to the principle: what region – such city, what city – such district, what district – such quarter, what quarter – such plots, what plot – such house, what house – such detail.

### 3. URBAN INDAGANDA BOARDS

For the purposes of conducting fieldwork on urban planning, which involves conducting an urban inventory of selected urban spaces, a shortened version of the Urban Indaganda was developed. The IU consists of six sections, assigned to specific resource scales according to the following principles: region, city, district, quarter, plot, house. In total, there are ten Tables with a defined typology and format. Each section consists of several components illustrating the basic characteristics of the urban space under study, including: urban and architectural structure, functional structure, communication structure, composition, and environment. Urban drawings are presented in the form of plans, diagrams, projections, perspective and axonometric views, and cross-sections. The material is enriched with hand-drawn sketches and images, executed using attractive painting and graphic techniques. Monochrome and color sketches on any base of any size and color are allowed, made in graphic techniques with pencil, pen, felt-tip pens, markers or in painting techniques of watercolour wash, watercolor, pastels, etc. Hand-drawn plans and drawings can be scanned and post-processed in computer graphics programs. Each drawing should be accompanied by the following elements: a caption, a compass rose, a numerical scale or linear scale, a legend of the graphic and color symbols used; a concise (keyword) description of the basic elements may be added.

Urban plans, maps, and diagrams should be drawn to a scale appropriate to the size of the study area. The following scales are recommended for each size:

1:50,000 – 1:10,000	settlement structure in the region
1:5,000 – 1:2,000	urban structure of the city
1:2,000 – 1:1,000	spatial structure of the district
1:1,000 – 1:500	development elements of the quarter
1:500	spatial development of the plot
1:200 – 1:100	building plans
1:50 – 1:10	architectural details, small architecture

Due to the limited format of IU Tables, it is permissible to scale the drawing to a size appropriate for the Table frame and provide the scale as a linear scale. Care should be taken to ensure that plans and drawings are not lost in readability when rescaling.

The task should be carried out in the following order:

- Identifying an urbanized area for conducting an Urban Inquiry – it is recommended to select an area from the place of residence (access to source materials, the possibility of verification through personal experience, measurements, and field surveys).
- Urban research – finding and verifying appropriate source materials – maps, backgrounds, plans, photos, descriptions, etc., at the indicated scales, from regional to local.

- Comparative analysis of similar materials – seeking inspiration, methods, and tools for presenting your own materials (industry books, magazines, professional materials – urban designs, competition materials and boards, concepts, studies and analyses for planning studies, spatial development studies and plans).
- Field measurements and inspections, preparing photographic and drawing documentation – perspective and axonometric sketches, maps, plans, cross-sections, etc..
- Verification and comparison of source materials with survey materials.
- Data selection and synthesis – selecting representative materials for a „clean” study.
- Graphic and workshop processing of materials – proofreading and refining sketches, scaling and standardizing maps and plans (linear scales), refining color and graphic markings, developing legends and descriptions,
- Completing the Information Technology Boards – scanning and graphic processing of materials, standardizing graphics, and inserting them into the appropriate frame on the Information Technology Board.

It is recommended that, whenever possible, all drawings, maps, plans, diagrams, etc., be created using freehand, scaled drawing techniques. This should be an original synthesis of source materials combined with survey data.

When conducting remote urban planning fieldwork, it is recommended that each person create their own set of IU boards for the area where they live. When conducting fieldwork during organized group field trips, it is recommended to form inventory groups of several people, with each group creating their own set of IU boards on a given topic. Each team member creates their own set of sketches from the study area and architectural detail sketches.

A detailed description of the implementation of individual IU boards, along with sample plans, drawings, and diagrams, is presented below.

A synthetic development plan for the selected region should be presented; depending on the city’s size, the plan should be at the municipal or county scale. For a large city (e.g., Poznań or similar), the plan covers the so-called city region, i.e., the metropolis along with neighboring municipalities. The plan should present the following basic development elements: hatched boundaries of cities, villages, and settlements; transportation systems (road, water, rail, etc.); basic natural environment systems (rivers, lakes, canals, forests, environmental protection zones) shown as ecological routes and corridors, as well as clusters and points; other important elements characteristic of the region (e.g., hypsometric layout); and functional zones (agricultural, industrial, tourist).

A synthetic development plan for the selected city should be presented. For a metropolis, the plan may cover only the Old Town and downtown districts; for a large and medium-sized city (e.g., Poznań or Gniezno), the plan includes complexes of highly urbanized districts; for a small town, the plan covers the city within its administrative boundaries. The plan should present the following basic development elements: city boundaries and district boundaries, transportation systems (road,

water, rail, etc.), basic natural environment systems (rivers, lakes, canals, parks, green wedges, ecological routes), other important elements characteristic of the city (e.g., hypsometric layout), functional development zones (Old Town, downtown), single-family and multi-family residential zones, industrial zones, recreational and sports zones, valuable natural areas, cultural areas, special areas (e.g., technology park), and other. The plan should provide basic data about the city: area (hectares) and number of inhabitants (thousands).

Two drawings should be submitted – freehand sketches showing panoramic views, perspective or axonometric views characteristic of the city, showing specific zones, places or symbols.

A synthetic development plan for one district of a selected city should be presented. The plan may cover the city's old town or the city center; for a small town, the plan covers the city center or the suburban residential district. The plan should present the following basic elements of the district's development: crystallizing public spaces, boundary strips, transportation systems, basic natural environment systems, other important elements characteristic of the district (e.g., hypsometric layout), functional development zones, single- and multi-family residential zones, service zones, commercial zones, industrial zones, recreational and sports zones, natural zones, cultural zones, special zones (e.g., cemetery, botanical garden, etc.), and other zones. All specified elements should be explained in the legend.

A synthetic development plan for an urban quarter in a selected city district should be presented. The plan covers the entire quarter, including adjacent streets. The plan should depict the following basic elements of the quarter's development: surrounding or internal public spaces, the layout of plots (properties), the quarter's buildings, types of surfaces (asphalt, concrete paving stones, etc.), communication systems (streets, driveways, parking lots, garages), greenery (trees, shrubs, lawns), other important elements characteristic of the quarter (semi-private spaces, e.g., internal courtyards and courtyards, playgrounds, garbage cans, other facilities), functional zones of space and development, residential, service, commercial, and other buildings. All indicated elements should be explained in a legend. Each drawing should present an urban plan with the aforementioned elements, an axonometric view of the quarter, a cross-section of the adjacent street or a cross-section through the courtyards and internal spaces, and a perspective sketch of a characteristic view of the quarter from the exterior or interior.

A spatial development plan for a single plot in the selected urban quarter should be presented. The plan covers the entire plot, including an outline of the access road and the boundaries of adjacent plots. The plan should include the following basic elements of the plot: boundaries (fences), buildings (building outlines), internal circulation, hardscapes, parking spaces, gazebos, shelters (surface types), greenery and small architectural elements (trees, shrubs, lawns, flower beds), and plot-specific features such as a garbage dump, septic tank, well, playground, and others. All specified elements should be explained in the legend. Additionally, all

boundaries and corners, driveways and entrances to the plot, building entrances, and (where possible) infrastructure elements such as water, gas, and sewage connections should be marked. The building's external dimensions and distance from the boundaries should also be provided. Optionally, building lines and protective zones (if applicable) may be marked. The plot development balance sheet should include (in percentage and in m<sup>2</sup>): plot area, building area, paved area, biologically active area.

Hand-drawn sketches of architectural details specific to a given development zone should be provided. These may include specific window and door frames, balconies, bay windows, building corners, chimneys, facade ornaments, stairs, canopies, finials, and other architectural accents.

#### 4. SUMMER WORKSHOPS

For many years, the WAPP Urban Planning Department has been organizing summer field trips in the form of attractive trips abroad, often in collaboration with partner universities. This format was pioneered by Professor Lech Zimowski, PhD, DSc, the long-time Head of the Department of Regional and Urban Spatial Theory and Planning at the Institute of Architecture and Spatial Planning at the Faculty of Civil and Environmental Engineering. The traditions of this Department were taken over by Robert Ast, PhD, DSc, Eng, Arch, and the long-time Head of the WAPP Urban Planning Department, and are currently continued by Krzysztof Borowski, PhD, Eng, Arch, and Professor. Since 1991, I have participated in and later organized dozens of international urban planning internships, including:

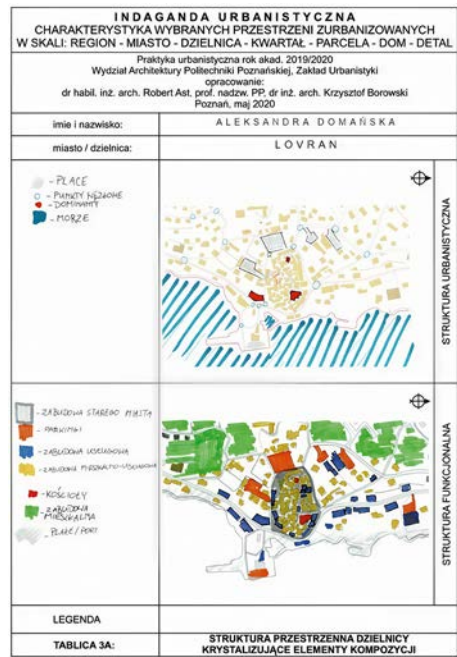
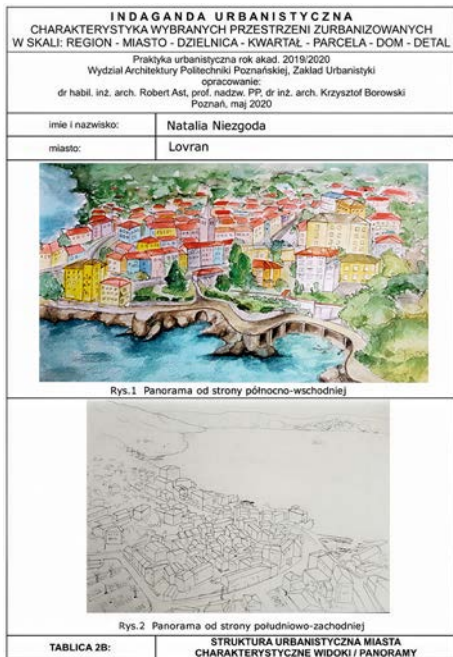
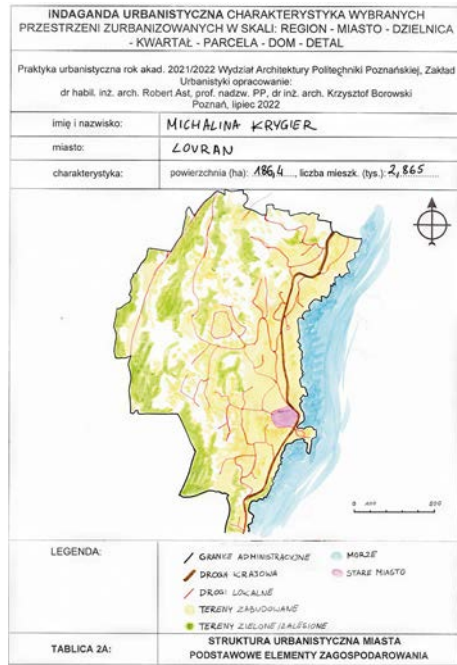
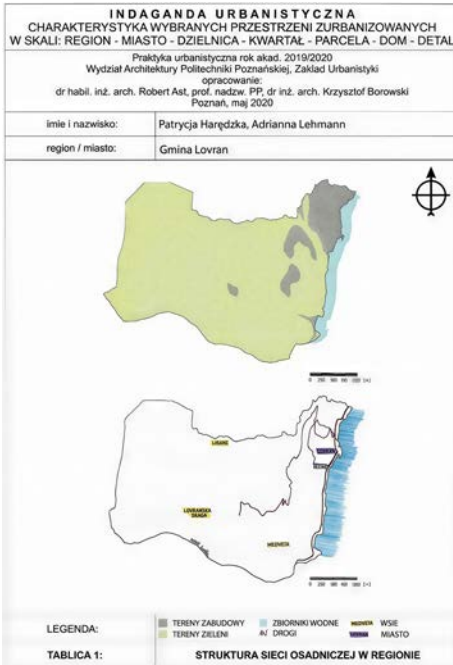
- „Deutsch-Österreichisch-Polnisches Planungsseminar 5. DÖPPS”, Universität Hannover – TU Vienna – TU Poznań. Villach (Austria) 09/1991
- „Deutsch-Österreichisch-Polnisches Planungsseminar 6. DÖPPS”, Universität Hannover – TU Vienna – TU Poznań. Bukowiec (Poland) 07/1992
- „Deutsch-Österreichisch-Polnisches Planungsseminar 7. DÖPPS”, Universität Hannover – TU Vienna – TU Poznań. Munich (Germany) September 1992
- „German-Austrian-Polish Planning and Design 8. DÖPPS”, University of Hannover – TU Vienna – TU Poznań. Hannover-Langenhagen (Germany) September 1993
- „German-Austrian-Polish Planning and Design 9. DÖPPS”, University of Hannover – TU Vienna – TU Poznań. Gniezno (Poland) September 1994
- International Architectural Competition and Workshop „Görlitz-Zgorzelec – EUROOPERA”. TU Braunschweig, Karlsruhe, Dresden, Cracow University of Technology, Wrocław University of Science and Technology, Poznań University of Technology, Karlsruhe (Germany) June 1994
- “Hydrograph I”, Maritime Office in Szczecin, Institute of Architecture and Spatial Planning, Poznań University of Technology, Międzyzdroje June 22-30, 1996



- International workshop “RE-CONSTRUCTION Rotterdam Middelburg. Future Perspectives in the Eyes of Young Architects”. Academy of Architecture and Urban Design, Rotterdam, Arnhem, Groningen. Rotterdam, Middelburg 1996
- “Hydrograf II”, Maritime Office in Szczecin, Institute of Architecture and Spatial Planning, Poznań University of Technology, Międzyzdroje, June 28–July 6, 1997
- German-Austrian-Polish Planning Committee “10. DÖPPS”, University of Hannover – TU Vienna – TU Poznań, Braunau (Austria), September 1997
- “Hydrograf III – s/y “Pogoria” (Capt. K. Baranowski), European Sailing Federation, Institute of Architecture and Spatial Planning, Poznań University of Technology, Delft (Netherlands)–Cherbourg (France), June 1998
- German-Austrian-Polish Planning Committee “11. DÖPPS”, University of Hannover – TU Vienna – TU Poznań. Tagungsort Bünde (Germany) September 28, 1998
- Summer Urban Planning Workshops of the Faculty of Architecture of the Poznań University of Technology, „Revitalization of the Old Market Square in Rawicz”, Rawicz 1999
- „German-Austrian-Polish Planning Workshop 12. DÖPPS”, Universität Hannover – TU Vienna – TU Poznań, Feldkirchen (Austria) 25.09.-3.10.2000
- International Urban Planning Workshop of the UNESCO Forum „Arranging the Space of Regions and Cities. Revitalization of Towns and Settlements Around the Zielonka Forest.” Faculty of Architecture PP, MAB-11 Urban Ecosystems, KUiPP O/PAN Poznań, Murowana Goślina 09.2001
- International Urban Workshops UNESCO Forum „Natural and settlement resources and the development strategy of the Średzka Land”, Faculty of Architecture of the Polish University of Technology, MAB-11 Urban Ecosystems, KUiPP O/PAN Poznań, Środa Wielkopolska – Słupia Wielka 6-11/09/2002
- UNESCO Forum I – Campo Internacional de Trabalho do Património. Estudo e Revitalizacao do Cais Puchadouro, Puchadouro – Ovar em Portugal. De 25 de Maio a 06 Junho de 2002
- UNESCO Forum II – Campo Internacional de Trabalho do Património. Estudo e Revitalizacao do Cais Puchadouro, Puchadouro – Ovar em Portugal. De 17 de Maio a 27 Maio de 2003
- UNESCO Forum III Viseu, Portugal. Campo Internacional de Trabalho do Património. „Estudo e Revitalizacao do Lagoa Santo Andre, Santiago da Cacem, Portugal. Resultados.” Universidade e Património, Instituto Piaget, Camara Municipal de Santiago da Cacem, 09/2004.
- UNESCO Forum IV – Funchal, Portugal. International Training Camp. Project of Inventory and Classification of Patrimonies “Caminho de Ferro do Monte e Estacao do Pombal.” University of Technology and Patrimony, Institute of Technology, Camara Municipal de Funchal in Madeira, September 2005.
- Interregional Urban Workshop ADMIRAŁ I “Inland and Maritime Transport – Ports and Fleet,” Commission on Urban and Spatial Planning of the Polish Academy of Sciences, Poznań, DPT PAN, Świnoujście, April 15-17, 2005.



- International Workshop Design WSG-PAN-UNESCO MAB 11 “Garden City Jurata – Beautiful Peninsula and Hinterland,” DPT PAN Jurata, December 8-11, 2005.
- UNESCO Forum V – Funchal, Portugal. Campo Internacional de Trabalho. Projecto de Inventarizacao e Classificacao de Patrimonio „Caminho de Ferro do Monte e Estacao do Pombal. „Comparative Analyzes and Applications Cable Railways In Portugal and In Poland”, Universidade e Património, Instituto Piaget, Camara Municipal de Funchal in Madeira, 27/04-14/05/2006.
- 3rd International Workshop on Urban and Architectural Design, WSG-PAN-UNESCO MAB 11, Jurata, April 7-9, 2006.
- Interdisciplinary International Workshop ADMIRAŁ II „Roads, Bridges, Crossings, Estuaries – Realities and Disproportions”, Commission on Urban and Spatial Planning, Polish Academy of Sciences, Poznań, Świnoujście, DPT PAN, April 21-23, 2006.
- Interdisciplinary International Workshops ADMIRAŁ III „Coasts, reservoirs, waterways – environment, traffic, recreation”, Commission of Urban and Spatial Planning of the Polish Academy of Sciences Poznań, Świnoujście DPT PAN, 13-15.04.2007. (presented paper)
- International Urban Planning Workshop „Public Zones in Urbanized Space”, Univerza v Ljubljani Fakulteta za Arhitekturo, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Ljubljana (Slovenia) July 2, 2010 – July 11, 2010
- International Urban Planning Workshop „Public Zones in Urbanized Space”, University of Belgrade, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Novy Sad (Vojevodina), Belgrade (Serbia) June 28, 2013 – July 7, 2013
- International Urban Planning Workshop „Public Zones in Urbanized Space”, Univerzitet Crne Gore Arhitektonski Fakultet, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Podgorica (Montenegro), 02/07/2014 – 13/07/2014
- International Workshop „Belgrade Waterfronts”, Faculty of Architecture, University of Belgrade, Faculty of Architecture, Poznan University of Technology, November 21-29, 2014 Belgrade. K. Borowski: Plenary Lecture “City Waterfront – Urban Design Projects”. (invited plenary lecture)
- International urban planning workshop „Public Zones in Urban Space – 1st edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), July 2, 2015 – July 11, 2015
- International urban planning workshop „Public Zones in Urban Space – 2nd edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), July 1, 2016 – July 10, 2016

- International urban planning workshop „Public Zones in Urban Space – 3rd edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 30, 2017 – July 9, 2017
- International workshop urban planning „Public zones in urbanized space – 4th edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban and Spatial Planning, Lovran (Croatia), 30/06/2018 – 09/07/2018
- I International Scientific Seminar and Workshop “Urbanism and Architecture”, Faculty of Architecture, University of Belgrade, Faculty of Architecture, Poznan University of Technology, November 23-30, Belgrade 2018. K. Borowski: Plenary Lecture “Research work and architectural realizations”
- II International Scientific Seminar and Workshop “Podgorica – Poznan Conference Urbanism and Architecture”, Faculty of Architecture, University of Montenegro, Faculty of Architecture, Poznan University of Technology, March 08-17, Podgorica (Montenegro) 2019. K. Borowski: Plenary Lecture “Eco-Energy in Urban Planning”.
- International Urban Planning Workshop „Public Zones in Urban Space – 5th Edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 28, 2019 – July 7, 2019.
- Urban Planning Workshop „Public Zones in Urban Space – 6th Edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 24, 2022 – July 3, 2022.
- Urban Planning Workshop „Public Zones in Urban Space – 7th Edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 30, 2023 – July 9, 2023.
- Urban planning workshop „Public Zones in Urban Space – 8th edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 28, 2024 – July 8, 2024.
- Urban planning workshop „Public Zones in Urban Space – 9th edition”, Faculty of Architecture, Poznań University of Technology, Department of Urban Planning and Spatial Planning, Lovran (Croatia), June 27, 2025 – July 6, 2025.





Sample set of IU boards, Lovran group, 2023

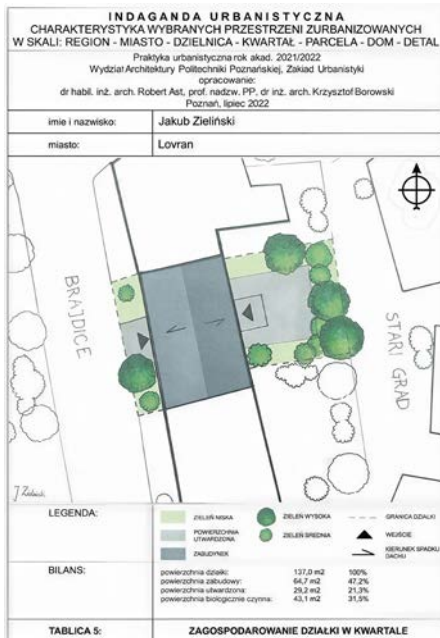


INDAGANDA URBANISTYCZNA CHARAKTERYSTYKA WYBRANYCH PRZESTRZENI ZURBANIZOWANYCH W SKALI: REGION - MIASTO - DZIELNICA - KWARTAL - PARCELA - DOM - DETAL	
Praktyka urbanistyczna rok akad. 2019/2020 Wydział Architektury Politechniki Poznańskiej, Zakład Urbanistyki opracowanie: dr habil. inż. arch. Robert Ast, prof. nadzw. PP, dr inż. arch. Krzysztof Borowski Poznań, maj 2020	
imię i nazwisko:	Oktawia Michalek
miasto / dzielnica:	Lovran
■ Wzrost średniowieczny ■ Tereny zielone ■ Drogi krajowe ■ Drogi wojewódzkie ■ Granice administracyjne miasta	
■ Wzrost średniowieczny ■ Tereny zielone	
LEGENDA	
TABLICA 3B:	STRUKTURA PRZESTRZENNIA DZIELNICY KRYSZTALEJĄCE ELEMENTY KOMPOZYCJI

INDAGANDA URBANISTYCZNA CHARAKTERYSTYKA WYBRANYCH PRZESTRZENI ZURBANIZOWANYCH W SKALI: REGION - MIASTO - DZIELNICA - KWARTAL - PARCELA - DOM - DETAL	
Praktyka urbanistyczna rok akad. 2021/2022 Wydział Architektury Politechniki Poznańskiej, Zakład Urbanistyki opracowanie: dr habil. inż. arch. Robert Ast, prof. nadzw. PP, dr inż. arch. Krzysztof Borowski Poznań, lipiec 2022	
imię i nazwisko:	Nikodem Ostrowski
miasto / dzielnica:	Lovran, Chorwacja
■ DOMINANTY ■ ZIELEŃ ■ UŁOGA ■ PUNKTY UZŁOWE ■ LINIEZNA URBANISTYCZNA ■ OSIE UŁOGOWE ■ PUNKTY UŁOGOWE	
■ ZABUDOWIA STAREGO MIASTA ■ ZABUDOWIA 1-2-KONDYGNACYJNA ■ ZABUDOWIA 3--KONDYGNACYJNA	
LEGENDA	
TABLICA 3C:	STRUKTURA PRZESTRZENNIA DZIELNICY KRYSZTALEJĄCE ELEMENTY KOMPOZYCJI

INDAGANDA URBANISTYCZNA CHARAKTERYSTYKA WYBRANYCH PRZESTRZENI ZURBANIZOWANYCH W SKALI: REGION - MIASTO - DZIELNICA - KWARTAL - PARCELA - DOM - DETAL	
Praktyka urbanistyczna rok akad. 2021/2022 Wydział Architektury Politechniki Poznańskiej, Zakład Urbanistyki opracowanie: dr habil. inż. arch. Robert Ast, prof. nadzw. PP, dr inż. arch. Krzysztof Borowski Poznań, lipiec 2022	
imię i nazwisko:	Joanna Hybiak
miasto:	Lovran – stare miasto
Zabudowa kwartału: ■ mieszkalna ■ mieszkalno-usługowa ■ sakralna ■ zabudowa sąsiadująca ■ działki w kwartale ■ zieleni wyspowa w kwartale ■ plac - płyty betonowe ■ skwery, uliczki - beton ■ droga główna - asfalt ■ droga podrzędna - asfalt	
	
LEGENDA	
TABLICA 4A:	ELEMENTY ZAGOSPODAROWANIA KWARTALU

INDAGANDA URBANISTYCZNA CHARAKTERYSTYKA WYBRANYCH PRZESTRZENI ZURBANIZOWANYCH W SKALI: REGION - MIASTO - DZIELNICA - KWARTAL - PARCELA - DOM - DETAL	
Praktyka urbanistyczna rok akad. 2019/2020 Wydział Architektury Politechniki Poznańskiej, Zakład Urbanistyki opracowanie: dr habil. inż. arch. Robert Ast, prof. nadzw. PP, dr inż. arch. Krzysztof Borowski Poznań, maj 2020	
imię i nazwisko:	Wiktoria Kaszyńska
miasto:	Lovran, Chorwacja
	
	
LEGENDA	
TABLICA 4B:	ELEMENTY ZAGOSPODAROWANIA KWARTALU



## 5. SUMMARY

Urban Indaganda, as a research and teaching method for characterizing selected urban spaces, is general, open, and open-ended – it can be expanded and refined depending on the needs, knowledge, and skills of the authors, and the specific nature of the spaces studied. Research results can be processed using statistical and comparative methods. Based on the obtained results, various albums of elements characteristic of a given space and catalogs of forms used or approved for use in new development projects can be developed. The inventory of resources is valuable. An additional element of valuation will allow for the analysis of research results in terms of the necessity and scope of interventions and transformations in the space. The addition of survey boards can introduce the value of discussion and public consultation. Based on the obtained materials, numerous urban analyses can be conducted, essential for developing revitalization and development programs for a given area or for new urban expansion projects at various scales.

When implementing tasks as part of urban planning fieldwork, the advantage of the IU method is working in the real, concrete conditions of the urban environment. Exploring and exploring a living, active space allows for a deeper understanding of the existing conditions. Personal interactions are also important – experiences, experiences, delights, as well as observations and negative experiences. Recognizing these conditions will allow for better design decisions in the future.

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## INDAGANDA URBANISTYCZNA JAKO METODA INWENTARYZACJI PRZESTRZENI

### Streszczenie

Autorzy do inwentaryzacji i rozpoznania oraz waloryzacji zasobów przestrzeni zurbanizowanej wykorzystują metodę analizy i syntezy, określaną mianem „Indaganda Urbanistyczna” (IU). Jest to autorska metoda badawczo-dydaktyczna polegająca na

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scharakteryzowaniu i ocenie podstawowych elementów zagospodarowania przestrzeni zurbanizowanej. Indaganda urbanistyczna obejmuje wybrane przestrzenie zurbanizowane w skali: region – miasto – dzielnica – kwartał – parcela – dom – detal. Inspiracją do opracowania metody była „królewska impreza geograficzna Stanisława Augusta Poniatowskiego – Indaganda urbanistyczna miast i regionów” oraz plany Komisji Dobrego Porządku (Commissio Boni Ordinis, od 1765 roku) Stanisława Augusta Poniatowskiego. W artykule opisano metodę badawczą IU oraz Tablice Indagandy. Na podstawie uzyskanych rezultatów można opracowywać różnorodne albumy elementów charakterystycznych dla danej przestrzeni i katalogi form stosowanych lub dopuszczonych do stosowania w nowych projektach zagospodarowania. Wartością jest spis zasobów o charakterze inwentaryzacyjnym. Dodatkowy element waloryzacji pozwoli analizować wyniki badań pod kątem konieczności i zakresu interwencji i przemian w przestrzeni. Autorzy przedstawili realizację Tablic Indagandy w ramach organizacji letnich zajęć terenowych z inwentaryzacji urbanistycznej w Zakładzie Urbanistyki WAPP.

**Słowa kluczowe:** Indaganda Urbanistyczna jako metoda inwentaryzacji przestrzeni



Filip PELCZAR<sup>1</sup>, Adam NADOLNY<sup>2</sup>, John LEE<sup>3</sup>

## OASIS OF THE CONTINUITY. THE MODERNIZATION OF THE HISTORICAL BUILDING AT ARDWICK GREEN STREET IN MANCHESTER

This article investigates the adaptive reuse of the abandoned British Army complex in Manchester, a project that foregrounds the principles of continuity—both aesthetic and functional—while engaging in a rigorous dialogue with historical and cultural heritage. The intervention aspires to preserve the architectural integrity of the Ardwick Drill Hall, a Grade II listed structure, while integrating contemporary elements that both respect and reinforce its historical significance. By striking a careful balance between restoration and innovation, the project ensures the site's sustained relevance within an evolving urban landscape. The project adheres to stringent conservation guidelines, retaining significant structures while selectively removing incongruous additions. It emphasises the synthesis of preserved elements with a newly constructed wing, reinforcing the site's urban coherence while offering a contemporary reinterpretation of its architectural identity. The intervention reinterprets the existing spatial hierarchy, ensuring that new functions—primarily cultural and educational—align seamlessly with the historical character of the complex. The material and formal language of the new architectural elements is informed by a meticulous analysis of the site's original fabric, fostering a sense of continuity between the past and present. Sustainability is embedded in the project through the implementation of energy-efficient technologies and the adaptive reuse of existing structures, thereby minimising environmental impact while maintaining the integrity of the historical ensemble. Moreover, the spatial organisation prioritises accessibility, ensuring an inclusive and enduring public realm. By synthesising conservation and contemporary intervention, the project offers a refined approach to urban regeneration—one that safeguards historical and cultural narratives while fostering new modes of engagement. Through its reconciliation of heritage and modernity, it establishes a paradigm for the respectful and sustainable transformation of historically significant sites.

**Keywords:** Manchester, adaptive reuse, continuity, new architecture

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## 1. INTRODUCTION

Victorian architecture of the second half of the nineteenth century is distinguished by its expressiveness and attention to detail, which had a significant impact on civil engineering within the British Empire. This period, associated with the stability and prosperity that accompanied Queen Victoria's reign, left numerous architectural testimonies behind, including Ardwick Drill Hall in Manchester – a British Army reserve centre designed by Lawrence Booth [Levrant, 2020]. Contemporary architecture, often subsumed by rapid and unreflective construction, requires a renewed attention to the historical and cultural values of urban spaces. The adaptation and modernisation of historic buildings are an important part of sustainable urban development strategies, bringing disused spaces back to life and engaging local communities. This article presents the concept of upgrading the Ardwick barracks complex in the spirit of Adaptive Reuse, which involves harmoniously combining the historic architectural fabric with modern design solutions. Such activities not only preserve heritage, but also contribute to the development of communities through education as well as strengthening of a sense of identity and belonging to a place. The project is based on the idea of architecture as a single form or set of forms representing a lasting material continuity, which is recognisable in objects known from the past, those that are currently being implemented or in new projects that are bidding their time [Słuchocka, 2021].

The Oasis of the Continuity project presents the development of a multi-functional cultural centre, set within the walls of abandoned British Army barracks. Taking into account the conservationist's guidelines and respecting the magnificent English history and culture, a complex concept had to be prepared. It involves the preservation and use of valuable buildings, the demolition of insignificant additions, and the addition of a wing to complement the urban fabric at the junction of Downing Street and Ardwick Green Street. The extension is a contemporary continuation of the most valued segment among the entire ensemble of buildings, see Fig. 1.

Unused since 2018, the historic site is listed on the National Heritage List for England (Grade II). The neighbouring property is an undeveloped plot at the junction of Ardwick Green N and Downing Street. The whole site is situated in a prominent location, being close to sprawling residential areas, Manchester Piccadilly Central Station, the University Quarter (Manchester Metropolitan University and The University of Manchester), on one of the main north-south link roads in England (the A6), which is the fourth longest numbered road in the country.



Fig. 1 Front design visualization.

[Source: prepared by the authors]

The area lacks a centre for interaction and social integration for a large group of residents (the Ardwick neighbourhood alone had a population of 21,042 in 2021), and the attractive location of the site together with vacant land could create a place that is easily accessible and meets the cultural and integration needs of the local community.

The proposed solution to the problem is the extension and redevelopment of an existing historic building of high historic, social and aesthetic value, which is a contemporary continuation of the existing context and responds to the needs of the users. The design should follow the rhythm of the existing entrance block to the barracks on the exterior, while simultaneously creating a new, attractive space that offers residents and visitors opportunities for leisure, access to education, and entertainment. Such a venture could bring numerous benefits to both the local community and the environment. A cultural centre would provide a stimulus to the area, attracting residents and tourists, which in turn would support the development of the nearby businesses and shops. It would also be a place that promotes arts and culture, offering a rich programme of events such as exhibitions, concerts, theatre performances and other artistic initiatives. Education could also be an important aspect of the centre's activities. Workshops, lectures and courses organised there would allow residents to develop their interests and skills in culture and arts. The building would also serve as a social space for integration and exchange of ideas, strengthening

bonds between the residents and supporting the active participation in the cultural life of the city. At the same time, the redevelopment of the former British Army building would be an important element of heritage conservation. Giving it a new function would not only preserve its historic value, but also adapt it to the needs of the contemporary community. Sustainability should be a key aspect of the project – the use of green building technologies and energy-efficient solutions would help to protect the environment and create a modern, welcoming space for residents.

Manchester is one of the UK's major cultural and entertainment centres, offering a wide range of activities to suit the diverse interests of residents and tourists alike. The city is home to a number of renowned academic institutions, such as Manchester Metropolitan University and The University of Manchester, and is the birthplace of world-renowned musical acts including Oasis, The Stone Roses, The Smiths, New Order and Hurts. The rich cultural infrastructure includes museums and art galleries, including Manchester Art Gallery, Museum of Science and Industry and Whitworth Art Gallery, as well as theatres and concert halls, such as The Lowry, Royal Exchange Theatre and Bridgewater Hall. Manchester also stands out for its dynamic sports scene, being home to two leading football clubs, Manchester United and Manchester City, whose stadiums, Old Trafford and Etihad Stadium, are among the most recognisable sports venues in the world. In addition, the city offers numerous parks and recreational areas, an extensive network of cafés and restaurants as well as regularly organised cultural events, all of which encourage social integration and highlight its importance as a centre of cultural and social life. All of these elements are testament to Manchester's huge development potential and its important role in the UK's cultural landscape. This is due to the unique demand of the local community for culture and leisure opportunities. Socialising, meeting people with shared passions and interests, is an integral part of residents' lives.

Despite Manchester's many attractions, it is important to provide places that are emblematic of the local community, that recall the history of individual neighbourhoods and provide space to broaden horizons and pursue personal interests. Particularly in the developing neighbourhood, the lack of more intimate places for residents to socialise is notable.

The number of unrenovated and refurbished conservation buildings in England is an indication of the direction to be taken: given today's shortage of land for urban development, it is important to restore monuments and give them new value and functionality. Creating spaces within them that meet the needs of neighbourhood residents, is an excellent solution.

The proposed concept harmoniously combines aesthetic and functional qualities, responding to the key challenges of contemporary architecture. It makes use of disused spaces, highlighting the most salient visual features and introducing a subtle, contemporary interpretation of Victorian buildings. With attention to detail, thoughtful composition and functionality, the new architectonic form contributes to urban order and spatial coherence. The structure of the building has been divided

into several zones: a cultural centre, workshop rooms, an exhibition space, an event hall and an administrative and storage area. In this way, the venue becomes a multifunctional space that responds to the cultural, educational and social needs of its inhabitants.

By combining the preservation of cultural heritage with sustainable development, the cultural centre project can become an example of how the past can be integrated with the future, while caring for the environment and the local community.

## 2. MATERIALS AND METHODS

Industrial and military buildings, once purely functional and often overlooked, have become an integral part of the cultural landscape of modern cities. Their adaptive reuse not only protects the architectural heritage, but also serves as a catalyst for urban regeneration, fostering creativity, economic growth and community engagement [Sulimowska-Ociepka 2021].

The adaptation of Ardwick Drill Hall in Manchester is a compelling case study in architectural conservation, urban regeneration and adaptive reuse. This project demonstrates the transformation of a 19th century military complex into a multi-functional public space, highlighting its historical significance, the challenges of modernisation and the integration of contemporary design within a historic structure. The methodology used in this study includes architectural and urban design analysis, historical research and material studies to assess how the project is to preserve the identity of the existing structure while adapting to new functional requirements.

From a historical research perspective, it was necessary to take a closer look at conservation reports and materials, as well as past information. This provided an insight into the chronology of events shaping the Ardwick district and the location of the developed building. Designed by Lawrence Booth in the Victorian era, the building is a representative example of military architecture, which was successively extended with additions that were less significant from a conservation perspective. By analysing the surviving original elements and conservation guidelines, it is possible to determine which elements should be exposed and which should be demolished. The available report clearly indicates the division into the most important, less important and also those segments without any major historical value. Parts marked in red are treated as those of High heritage significance, justifying that the loss of such elements (through demolition, removal or alteration) could potentially cause a serious negative impact on the special significance of the building. In orange as Considerable heritage significance, in purple Moderate heritage significance, in blue Low heritage significance. Areas in green are marked as No significance /Detrimental elements, which was explained by the fact that the loss of such elements (through demolition, removal or alteration) could potentially have

a neutral or beneficial impact on the special interest of the building. Fig 2 and 3. With these guidelines, and a precise inventory in the BIM model, it was possible to freely eliminate unnecessary elements in the design.



Fig. 2 Ground Floor Significance Plan  
[Source: Stephen Levrant Heritage Architecture Ltd]

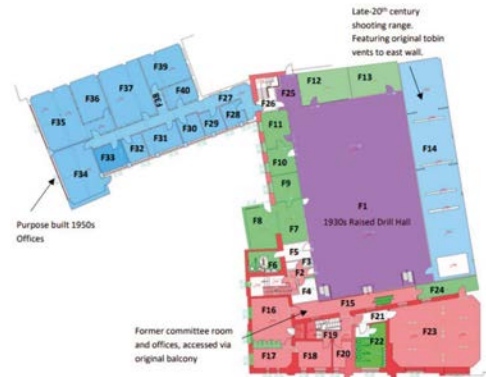


Fig.3 First Floor Significance Plan  
[Source: Stephen Levrant Heritage Architecture Ltd]

Architectural and urban studies carried out at different scales – the city, the district and the building complex itself – allowed for a thorough analysis of the location, its potential and the challenges of adapting the space. They also enabled the assessment of the possibility of harmoniously integrating the new development into the existing urban context. The project is being developed on a corner site, strategically located close to key areas of Manchester, with convenient access to public transport and green spaces. Although the external condition of the building prior to the commencement of works was adequate, the interior required a comprehensive upgrade in terms of functionality and aesthetics. The site also presents an opportunity for expansion with the aim of integrating historic and modern architectural elements in a way that enriches the local townscape and enhances its identity.

The analysis of materials used in the Ardwick Drill Hall, combined with a study of local material solutions and contemporary construction techniques, enabled the development of a concept that harmonizes authenticity with efficiency. Particular attention was paid to the detailing of the façade, which is a continuation of the historic structure designed by Lawrence Booth, creating a coherent dialogue between the past and present. The use of local materials has integrated the building into Manchester's architectural context, while the use of contemporary construction techniques has contributed to its sustainability and energy efficiency, in line with the principles of sustainability.

This interdisciplinary approach highlights the importance of adaptive reuse in shaping contemporary architecture. The Oasis of Continuity project, using the

modernization of the Ardwick Drill Hall as a case study, demonstrates how historic structures can be transformed to meet the needs of the contemporary city while preserving their identity and cultural value.

### 3. ARDWICK DRILL HALL STATUS

Ardwick Drill Hall, designed by Lawrence Booth and completed in 1886, originally served as the headquarters of the 5th (Ardwick) Battalion of the Manchester Volunteer Regiment. The building was officially opened in September 1887 with Prince George, Commander-in-Chief of the armed forces in attendance. With the integration of volunteer forces within the Territorial Army in the 20th century, the building gradually began to lose its functionality, leading to a number of modernisations. In 1930, a decision was made to raise the Drill Hall by ten feet, which enabled the creation of a two-storey space—comprising a new exercise hall and additional office rooms on the lower level. In subsequent years, notably in the 1950s, the facility was expanded to include a new wing with a garage and an administrative space, see Fig. 4.

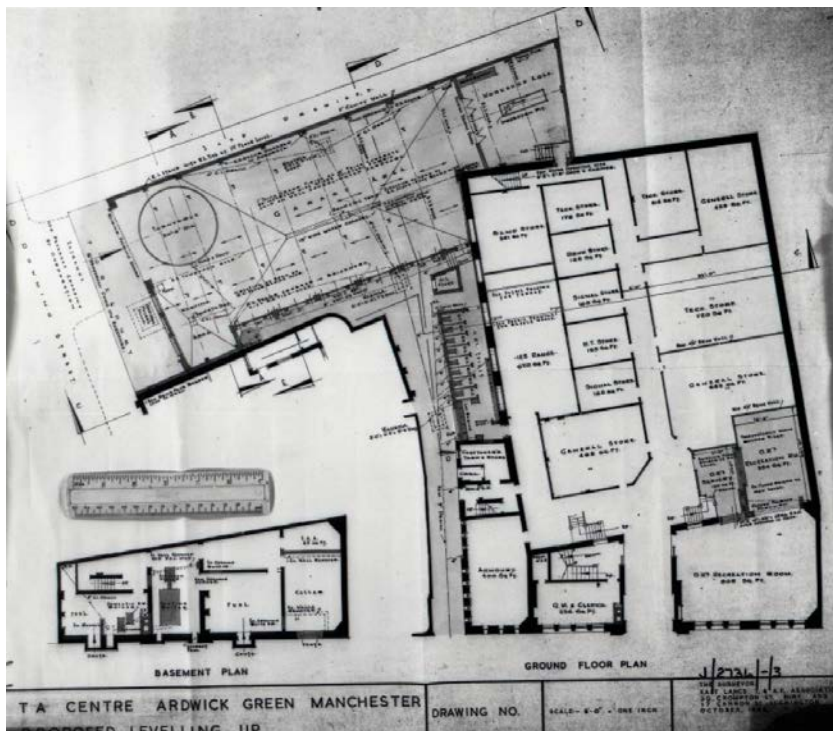


Fig. 4 Reconstruction project of the building from 1956 – ground floor.

[Source: Stephen Levrant Heritage Architecture Ltd]

During the Second World War, the barracks served as a detention centre for deserters and after the war it reverted to being the headquarters of the 8th Battalion of the Manchester Regiment. The building changed its purpose a number of times in the decades that followed, including being the headquarters of Manchester Regiment Territorials from 1967 and Company D (Inkerman) of the 4th Battalion The Duke of Lancaster's Regiment from 2006. Eventually, the barracks were abandoned in 2018 and put up for sale a year later, opening up the possibility of adaptive re-use in the context of the city's contemporary needs.

The current state of the building requires a thorough adaptation of its purpose, as the characteristics of military buildings differ significantly from those of public buildings and especially from cultural buildings. Fig. 5 and 6. According to the conservation guidelines, the building currently contains unnecessary extensions and walls that have no architectural value. In order to reconfigure the function, it is necessary to remove elements of no value, while simultaneously emphasizing, restoring, and highlighting the most significant parts.



Fig. 5 Photograph of the building from Downing Street.

[Source: photo authors]



Fig. 6 Photograph of the Drill Hall interior.

[Source: photo authors]

#### 4. ARRANGEMENT AND EXTENSION

The corner plot, which is an important element of the urban layout of the area, was once built up, but remains unused as a result of the bomb damage of 1940. In order to fill it in harmoniously with the historical architectural context, it was necessary to analyse the rhythms and spatial relationships of the most important element of the establishment, the Castle – the entrance gate.

A study of the composition of the façade became the starting point for the development of the first concepts for the extension. Understanding the proportions and divisions of the façade made it possible to design an architectural complement that

fits in with the style of the existing Victorian structure. The design process, supported by numerous sketches and form studies, focused on maintaining appropriate proportions and coherence with the surrounding buildings.

Thanks to this detailed analysis, it was possible to take into account the historical context and the aesthetic qualities of the building, which was a key aspect of the design. The extension not only complements the existing urban fabric, but also restores architectural continuity to a site affected by wartime destruction.

The final volume is not only an urban complement, but also a contemporary interpretation of the most important element of the post-military, diverse site. Fig. 7. It corresponds subtly with the whole, referring to the non-regional heights, allowing further simplified communication and calming the rhythm of the whole complex. Creative solutions are presented, referring to historical elements such as cornices or characteristic narrow windows.

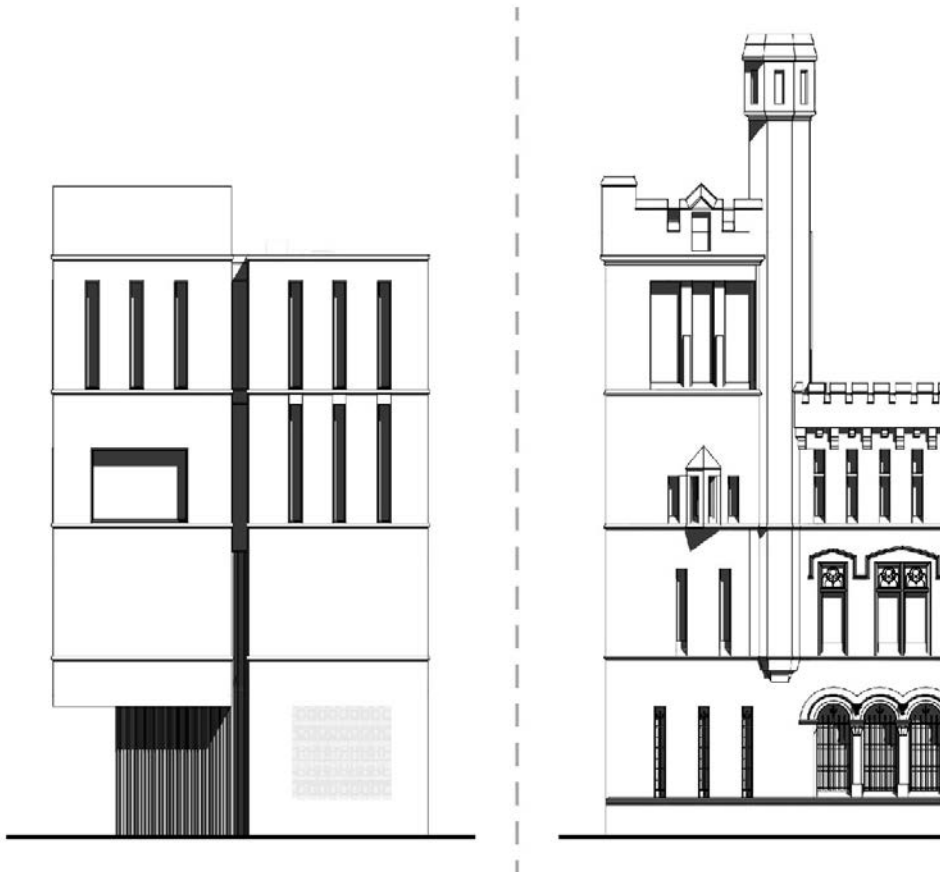


Fig. 7 Comparison of the new elevation with the existing one.

[Source: prepared by the authors]

The shape was also influenced by the idea of a scenic exposure of the tower, and an enticing entrance to the courtyard. Fig. 8 The form is not only a continuation of the siting context, but is also inspired by Manchester's Hollaway Wall. Fig. 9. The 1966 brutalist form, listed on the National Heritage List for England in Grade II, was designed by Hollaway in collaboration with the architect Harry M. Fairhurst on behalf of the University of Manchester Institute of Science and Technology (UMIST). The form was intended to act as a sound barrier. As a result, this particular wall, rather than being incorporated into the site, gained the status of a stand-alone structure.

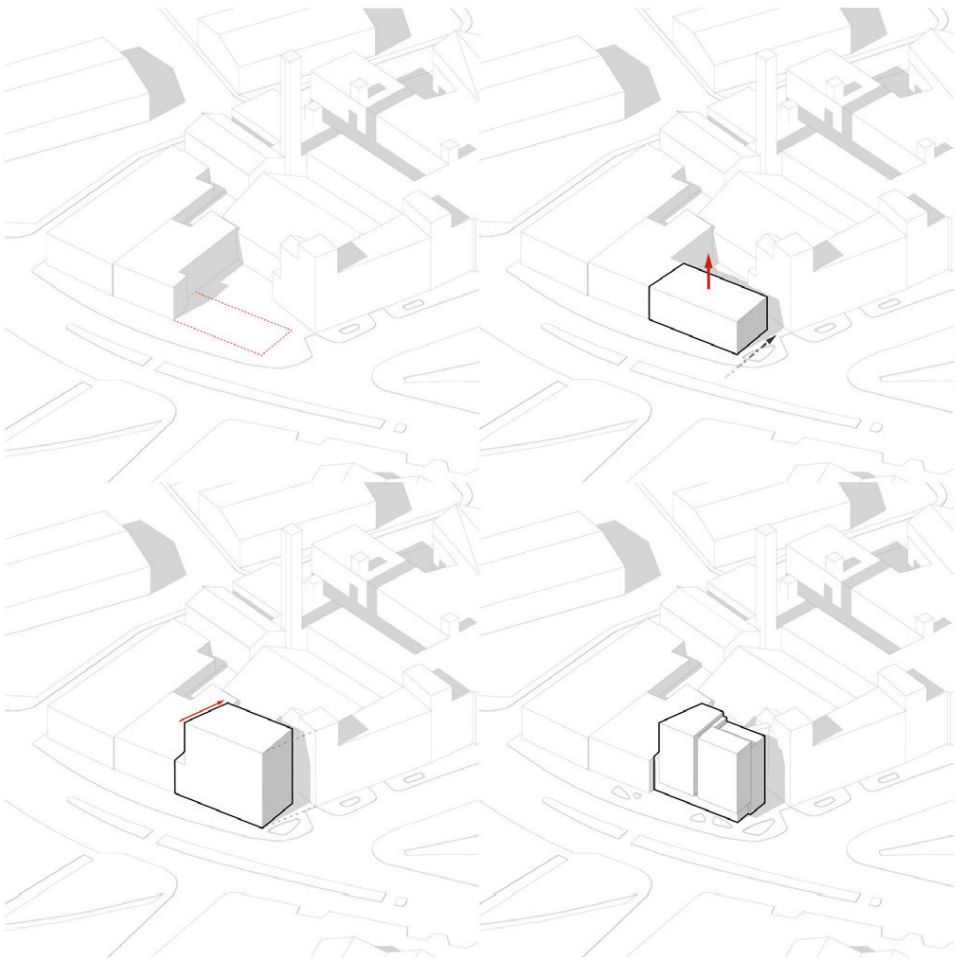


Fig. 8 Form development diagram.

[Source: prepared by the authors]

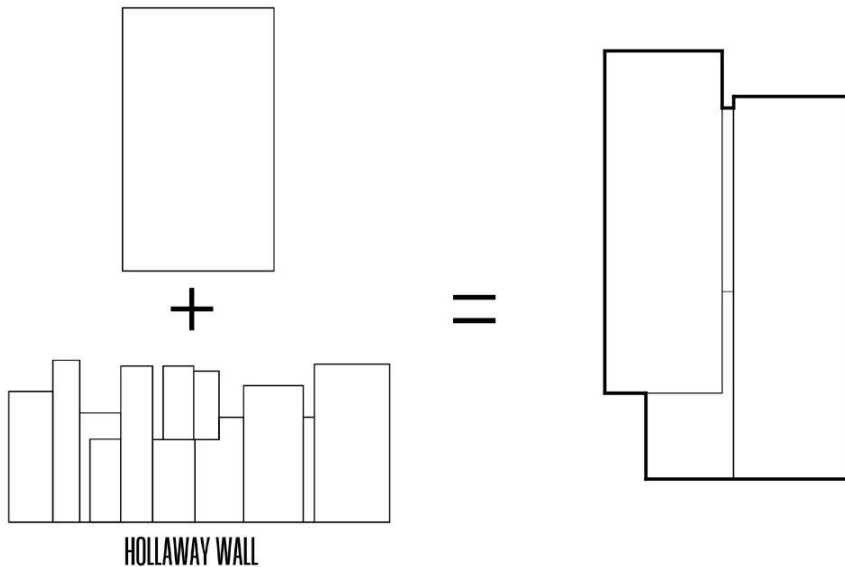


Fig. 9 Hollaway Wall Inspiration Diagram.

[Source: prepared by the authors]

## 5. (RE)PURPOSING

*“Preservation is overtaken by the inevitable corruption of time and function.”* [Koolhaas 1994] In the context of the developed project, this can be understood as an acceptance of the changing nature and an adaptation to modern needs, instead of aiming to preserve the building in its original state. The building has lost its original purpose over time, and in order to give it a second life it is necessary to change its completely original function.

The starting point for the development of the Continuity Oasis project was the Drill Hall report, Ardwick. Heritage Statement: Part 1 Significance Appraisal, prepared by Stephen Levrant Heritage Architecture Ltd, providing a historical outline and conservation guidelines for the selected building. The detailed report presents, among other aspects, the current condition of the building, its history and phases of expansion, plans indicating the building’s significance, as well as the identification of its most essential details. Based on this document, a comprehensive modernisation and extension concept could be developed. These plans for the importance of the building were the source for the preparation of a new functional layout, taking into account the intact elements and the parts whose demolition would make communication easier. The design concept was developed after careful analysis and categorisation of the situation according to Musk Petzet’s book, *Reduce, Reuse, Recycle*, which enabled appropriate design strategies to be selected. [Petzet, Heilmeyer 2012].

The project to revitalise the derelict barracks in the Ardwick district involves transforming the historic complex into a multifunctional cultural centre that responds to the needs of the local community while preserving its architectural heritage. The success of the adaptive reuse of the buildings depends on a carefully considered functional programme that harmonises with their history and breathes new life into the space, engaging and inspiring its users [Chen 2018]. A key consideration is the adaptation of the existing building and the harmonious extension with a new wing, acting as a link between the four core parts of the site: the front building (“Castle”), the exercise hall (“Drill Hall”), the former warehouse and the newly designed Cultural Centre. Each of these zones has been adapted to new functions, taking into account their historical context – the “Castle” houses a workshop and an education area, the “Drill Hall” serves as a cultural events hall, the former warehouse has been converted into administrative facilities and space for staff and visitors, and the new wing includes a recreational area, conference rooms and a library. Fig. 10 and 11. The structure of the complex allows each part to be accessed from the ground floor level – the main entrances to the “Warehouse” and “Cultural Centre” are from Downing Street, the “Castle” from Ardwick Green N Street, while the “Drill Hall” is accessible from both the courtyard and via the “Castle”. In addition to the main entrances, technical doors are also provided, further enhancing the functionality of the building.

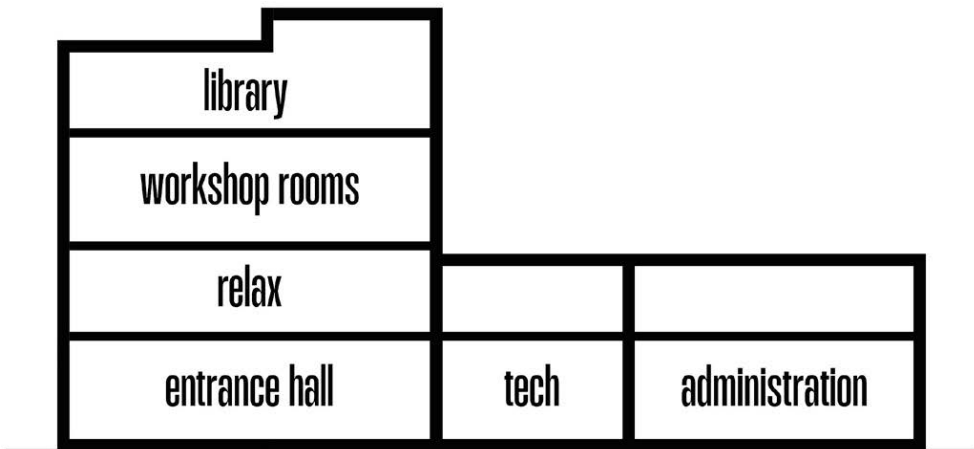


Fig. 10 Function diagram of the Cultural Center.

[Source: prepared by the authors]

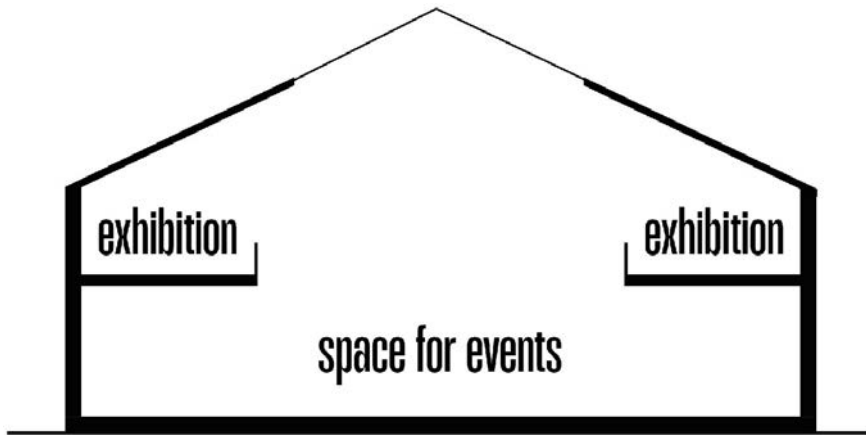


Fig. 11 Drill Hall function diagram.

[Source: prepared by the authors]

An important element of the design was to ensure seamless communication both horizontally and vertically, which was achieved through the use of staircases, lifts and connectors between floors. The front building and the newly designed wing have four accessible floors, the hall and warehouse have two, with the warehouse topped by an accessible roof. In the 'Castle', workshop rooms and bathrooms are arranged on each floor, while the warehouse houses offices, special guest suites, a rehearsal room, a staff kitchen and sanitary facilities. The Drill Hall serves as an open space equipped with essential technical facilities and access to restrooms adapted for individuals with disabilities. Fig 12. The final functional layout, based on the conservation analysis and the needs of the users, ensures stylistic and functional coherence of the complex, allowing the integration of historical and contemporary architectural elements, which contributes to both the preservation of the material heritage and the social activation of the inhabitants of Manchester.

A properly completed building, combining history and modernity, should serve future generations just as the original version did. It is a huge responsibility to create buildings that last, rather than are temporary or add no social value. A good building that lasts for decades can be described as "antifragile" and we should strive to create such buildings today as well, because they can be reused many times in the future. "Antifragility is beyond resilience or robustness. The resilient resists shocks and stays the same; the antifragile gets better." [Taleb 2013] It is this antifragility of the high quality of the age-old architecture that has determined that over time Ardwick Drill Hall may be of even greater value, both socially and aesthetically.

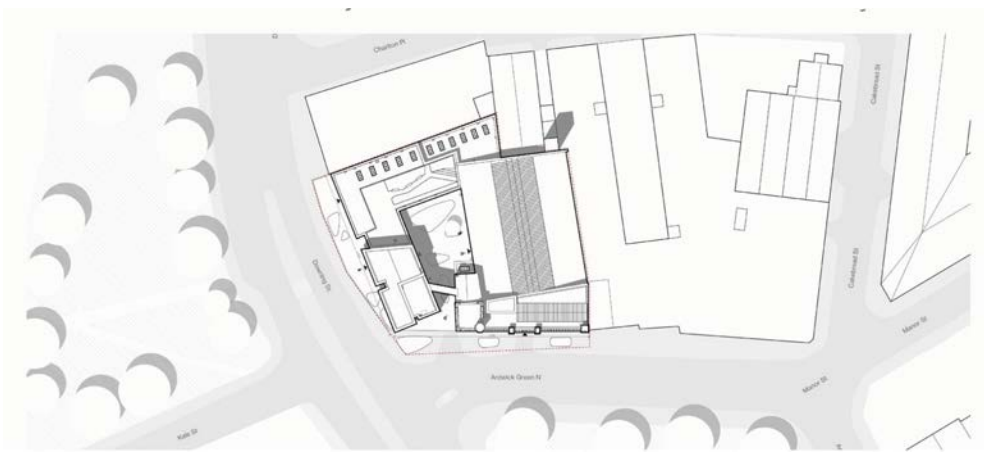


Fig. 12 Functional site plan.

[Source: prepared by the authors]

## 6. CONTEXT WITHIN MATERIALS AND TECHNOLOGIES

Contemporary architectural design requires a conscious selection of façade materials that not only respond to aesthetic and functional requirements, but also take into account ecological aspects and the historical context of the building in question. In the case of the Continuity Oasis, a key consideration was to maintain coherence with the existing buildings while introducing modern material solutions. Figs. 13 and 14 After a detailed analysis and comparison of the available material options, the decision was made to use clinker bricks of the highest quality. This choice was dictated by both its high durability and resistance to weathering, as well as its ability to integrate with the historic character of the building. The final choice was the hand-moulded Columbus brick manufactured by the renowned Danish company Petersen Tegl, whose products are used in prestigious architectural projects around the world.



Fig. 13 Photograph of details of the existing facade. [Source: photo authors]

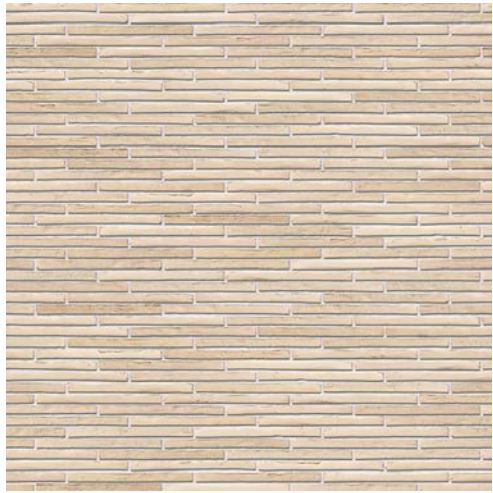


Fig. 14 Catalog photo of Petersen Columbus K31. [Source: petersen-tegl.dk]

The decision to use Columbus brick was based on its unique aesthetic and technical properties. Its distinctive format, inspired by the building techniques of ancient Rome, allows it to make a subtle reference to the historic frontage while giving the façade a modern character. ‘Made from the purest elements imaginable – clay, water and fire – it has an almost infinite lifespan and requires no maintenance. Bricks laid in lime mortar can be taken apart and reused. They can also be crushed and the grains used to make new bricks or to build roads, squares and other structures.’ [Præstegaard, Petersen 2022] Thus, its production process is based on sustainable principles – the raw materials used to make the bricks come from controlled sources, and the production itself is done with minimal water and energy consumption. In this way, the choice of Columbus bricks fits in with the idea of responsible construction, minimising the negative impact on the environment.

To ensure the highest quality of execution, the selection process for the facade materials also included a study visit to the Petersen Tegl factory in Broager, Denmark. During the visit, specialists were consulted in detail, allowing verification of key material parameters such as texture, shade and processing. In addition, the opportunity to observe the full production cycle allowed for a better understanding of the technological processes and their impact on the final product quality. The final selection of the Columbus K31 brick model was a result of a comprehensive comparison of the available variants and their juxtaposition with the façade of the historic Drill Hall building, enabling a harmonious material composition to be achieved.

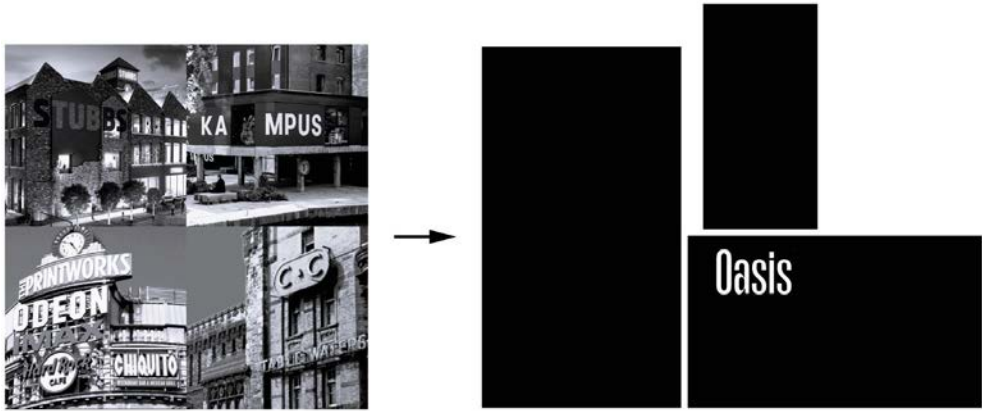


Fig. 15 Scheme of using the sign on the facade.  
[Source: prepared by the authors]

In addition, to enhance the visual and functional aspect of the new wing's façade, black aluminium laths were also used to give the façade a contemporary feel and emphasise its vertical rhythm. The solution refers to the black accent on the facades of many sublime properties in Manchester. A reference to local solutions was also used in the form of the "Oasis" sign on the facades, a common treatment on successful developments in the city. Fig. 15. Equally important elements of the concept are the green roofs and photovoltaic tiles used on the hall, which not only contribute to the energy efficiency of the building, but also fit in with the idea of sustainability by reducing CO<sub>2</sub> emissions and increasing the biologically active area. In this way, the revitalisation of the historic Ardwick Barracks complex not only brings new life to the building, but is also an example of the successful synthesis of tradition with modern technological and ecological solutions.

Such a comprehensive approach to facade design confirms that care in the selection of materials, supported by research, analysis of the historical context and contemporary environmental challenges, is an indispensable element of high-quality contemporary architecture. The use of Columbus K31 bricks in the revitalised building not only fits into the local historical context, but is also a conscious reference to contemporary architectural trends that combine aesthetics with durability and sustainability.

## 7. CONTINUITY AND SUSTAINABILITY

The regeneration project is an example of architecture embedded in the idea of contextualism, in which historical and spatial continuity shapes new architectural interventions. The preservation and adaptation of the existing built fabric not only

minimize the carbon footprint but also emphasize the identity of the place by integrating material heritage with contemporary technological solutions. The use of carefully selected materials of the highest quality, including Columbus K31 brick, reinforces the compositional and cultural coherence of the project, creating a space that resonates with its surroundings and responds to aesthetic and functional needs.

The project respects the principles of sustainability through the use of a number of innovative solutions to reduce energy consumption and environmental impact. Green roofs, in addition to their retention capacity, significantly improve the energy efficiency of the building, reducing the urban heat island effect and supporting local biodiversity. Fig. 16 When combined with photo-voltaic roof tiles generating renewable electricity, the facility significantly reduces the need for conventional energy sources, reducing CO<sub>2</sub> emissions. In addition, thermo-modernisation reduces heat loss, ensuring optimal indoor thermal conditions and reducing the need for heating and air conditioning.

The project takes into account the needs of the local community by offering an open, accessible and multi-functional space, which fosters the integration of residents and reinforces the social value of the development. The Oasis of Continuity emphasises the importance of community development through education while at the same time strengthening the sense of identity and belonging to the place where they live. The creation of a well-considered circulation system that ensures full accessibility for people with disabilities is an important element of inclusive design, making architecture more democratic. Thus, the project becomes an example of how to harmoniously combine the past with the future, aesthetics with functionality, and local heritage with global standards of sustainable design, creating a space that is sustainable, resilient to change and open to the needs of future generations.



Fig. 16 Axonometric visualization of the entire building complex.

[Source: prepared by the authors]

## 8. RESULTS AND DISCUSSION

The adaptation of Ardwick Drill Hall exemplifies an architectural approach based on the principles of continuity, contextualism [Spuybroek, 2009] and sustainability. The historical analysis of the building and its surroundings allowed the development of a design strategy that harmoniously combines the heritage of the past with the demands of the present. The implementation of the project has contributed to the protection of the tangible and intangible heritage of the site, highlighting its importance to the local community and the urban fabric of Manchester.

The Ardwick Drill Hall regeneration project involved both the preservation of the historical building substance and the introduction of modern functional and ecological solutions. Key measures included adapting the space for new social and educational functions, ensuring its continued usefulness. In addition, the use of strategies to minimise the carbon footprint, such as the reuse of the building fabric, improved thermal insulation and the integration of renewable energy sources, allowed the principles of sustainable design to be implemented.

“Old ideas can sometimes use new buildings. New ideas must use old buildings” [Jacobs 1961]. By using an existing building it is possible, despite numerous design complications, to create an open, creative space for people. Fig. 17 Acting within a limited space allows new ways of thinking about the city and its use to be developed. In the social context, the revitalisation of the building aimed to increase the accessibility of the space and bring cultural values to different user groups. The improvement of the traffic system and the application of solutions enabling free access for people with disabilities influenced the inclusiveness of the space. The thoughtful combination of public and recreational functions means that the building can become an important point on the map of the local community, offering development, education, meeting cultural needs and integrating residents.



Fig. 17 Interior visualization.  
[Source: prepared by the authors]

The analysis of the Continuity Oasis project shows that thoughtful adaptation of existing buildings can be an effective response to contemporary urban and environmental challenges. The preservation of the historic urban fabric combined with modern architectural solutions promotes the protection of cultural heritage while supporting the idea of sustainable development. The regeneration model based on adaptation rather than demolition allows for a reduction in carbon emissions and optimisation of resource use, making this project a model to follow in the context of other retrofits of historic buildings.

The conclusions from this project demonstrate the necessity of an interdisciplinary approach in the process of adapting historic buildings. By combining the knowledge resources from the areas of architecture, urban planning, history and sustainable development, it is possible to develop solutions that not only protect the historical value, but also adapt the space to contemporary use requirements. The Oasis of Continuity confirms that revitalisation can be an effective tool in the fight against the degradation of the urban fabric, while at the same time responding to the global challenges of climate change and urbanisation fig 18.



Fig. 18 Downing Street view visualization.  
[Source: prepared by the authors]

## 9. CONCLUSIONS

Contemporary architecture faces a number of challenges related to the limited availability of building land, high property prices and the problem of neglected and abandoned buildings. In the face of these difficulties, effective management of spatial resources, revitalisation of existing buildings and a conscious approach to design that takes into account both historical, social and

environmental aspects become necessary. In the context of contemporary urban challenges, the pursuit of architectural continuity, one of the main tenets of contextualism, becomes crucial. The adaptation and modernisation of historic buildings, as well as their skilful combination with new structures, allows not only the preservation of heritage, but also the creation of spaces that meet contemporary utilitarian requirements.

Designing in the spirit of continuity implies an analysis of the historical, cultural and material context, enabling the integration of new elements into the existing urban fabric. The solutions introduced should be compatible with the character of the place, while responding to social and environmental needs. The revitalisation of sites provides an alternative to new developments, reducing the carbon footprint associated with demolition and reducing the consumption of raw materials. The use of energy-efficient technologies, such as high-quality thermal insulation, green roofs or renewable energy sources, further reinforces the sustainability aspect. The reuse of building materials, such as clinker bricks with high durability and low environmental impact, contributes to reducing carbon emissions and extending the life cycle of buildings.

The social value of revitalisation projects derives not only from improved urban aesthetics, but also from an increased quality of life for residents. The creation of open spaces accessible to all user groups fosters social integration and the development of local bonds, which constitutes a vital element of contemporary urban design [Stone 2020]. The application of solutions ensuring full accessibility for people with disabilities, such as appropriate communication systems, barrier-free access and adapted common spaces, increases the inclusiveness of urban spaces.

Examples of modern developments show that the harmonious combination of history and modernity can be the key to effective design in urban spaces. Modern technologies allow precise reproduction of historical details and the use of materials that relate to the original architecture, which reinforces the aesthetic coherence of the buildings. The selection of the highest quality building materials plays an important role in ensuring the quality and longevity of realisations.

In conclusion, the conscious use of existing buildings and the skilful composition of new architecture in a historical context is not only an answer to current urban problems, but also a strategy to ensure long-term sustainability and quality of urban space. Revitalisation and adaptation of buildings are not only a design challenge, but also an architectural responsibility towards future generations. Integrating cultural, technological and ecological values in the design process makes it possible to create the cities of the future – sustainable, inclusive and respectful of their past.

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## OAZA CIĄGŁOŚCI. MODERNIZACJA HISTORYCZNEGO KOMPLEKSU BUDYNKÓW PRZY ARDWICK GREEN STREET W MANCHESERZE.

### Streszczenie

Artykuł ukazuje ponowne wykorzystanie pod względem urbanistycznym i architektonicznym opuszczonego kompleksu budynku Armii Brytyjskiej w Manchesterze. Projekt, który kładzie nacisk na zasady ciągłości – zarówno estetycznej, jak i funkcjonalnej – jednocześnie prowadząc rygorystyczny dialog z dziedzictwem historycznym i kulturowym. Interwencja ma na celu zachowanie integralności architektonicznej Ardwick Drill Hall, budynku wpisanego na listę zabytków klasy II, przy jednoczesnym wprowadzeniu współczesnych elementów, które zarówno szanują, jak i wzmacniają jego historyczne znaczenie. w dynamicznym krajobrazie miejskim.

Projekt przestrzega rygorystycznych wytycznych dotyczących konserwacji, zachowując istotne struktury przy jednoczesnym selektywnym usuwaniu niepasujących dodatków. Interwencja na nowo definiuje istniejącą hierarchię przestrzenną, zapewniając, że nowe funkcje – głównie kulturalne i edukacyjne – harmonijnie współgrają z historycznym charakterem kompleksu. Materiałowy i formalny język nowych elementów architektonicznych i urbanistycznych opiera się na skrupulatnej analizie oryginalnej struktury miejsca, co sprzyja poczuciu ciągłości między przeszłością a teraźniejszością.

Zrównoważony rozwój jest integralnym elementem projektu dzięki wdrożeniu energooszczędnych technologii oraz adaptacyjnemu ponownemu wykorzystaniu istniejących struktur, co minimalizuje wpływ na środowisko przy jednoczesnym zachowaniu

integralności historycznego zespołu. Ponadto organizacja przestrzenna priorytetowo traktuje dostępność, zapewniając inkluzywną i trwałą przestrzeń publiczną.

Poprzez integrację współczesnej interwencji projektowej możliwe jest zachowanie i wzmocnienie narracji historycznych oraz kulturowych, przy jednoczesnym tworzeniu warunków dla rozwoju nowych form praktyki architektonicznej. Tak rozumiane pogodzenie dziedzictwa z nowoczesnością prowadzi do ustanowienia modelu referencyjnego dla przekształceń obiektów i miejsc o szczególnym znaczeniu historycznym.

**Słowa kluczowe:** Manchester, ponowne wykorzystanie, ciągłość, nowa architektura

Przemysław BISKUPSKI<sup>1</sup>

## PIASKI

This study is part of a comprehensive spatial analysis of the historical area of Poznań, as it developed until the end of the 18th century. At that time, the former city comprised 28 settlement units forming a characteristic wreath surrounding historic Poznań. This article examines the settlement complex located on an island south of the chartered city. This area was known as Piaski.

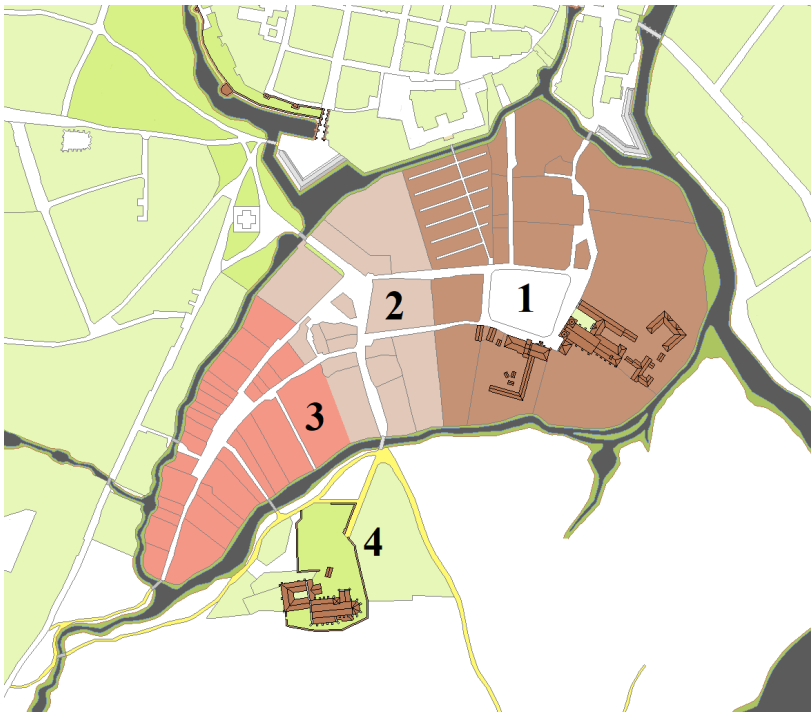
**Keywords:** Gaski, Czapniki, Rybaki

## SANDS (GASKI, CZAPNIKI, RYBAKI)

On one of the islands south of Poznań, the Piaski Islands were located. Historically, this name referred to both the buildings and the island's area. Piaski consisted of three main settlements: Gaski, Czapniki, and Rybaki (ed. J. Topolski, *History of Poznań, Volume I, Part One*, A. Gąsiorowski „Późnośredniowieczna konurbacja poznańska” PWN Warszawa Poznań 1988, pp. 226-228). Together with other settlement structures in Poznań, they formed a characteristic wreath directly surrounding the main chartered city of Poznań. The island was surrounded by three watercourses: the Struga Karmelicka (Kamionka), the Noteć River, and a branch of the Warta River. The Noteć River flowed around Piaski from the west and north, the Struga Karmelicka River flowed around it from the south, and a branch of the Warta River surrounded the island from the east (Fig. 4).

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4. LOCATION OF INDIVIDUAL SETTLEMENTS ON THE ISLAND AND IN THE SETTLEMENT OF PIASKI.

SOURCE: AUTHOR'S COMPILATION

It's worth mentioning that the word „noteć” once meant something additional, connecting, and many watercourses bore this name. Today, „Noteć” refers to a river located in northern Greater Poland, and the word is primarily associated with it.

The spatial shape of the individual settlements located on Piaski was directly subordinated to the island's shape and the communication routes that ran through it (Fig. 4). This arrangement meant that the spatial structure of Rybaki, Czapników, and Gaski was perceived as a single entity, and their boundaries were difficult to define (Fig. 4), so their locations can only be approximated. In the western part was Rybaki (today's area around Rybaki Street) (Fig. 3), in the center was the settlement of Czapniki (today's area around Strzelecka Street) (Fig. 2), while on the eastern side was Gaski (today's area around Bernardyński Market Square) (Fig. 1).



1. BERNARDYŃSKI SQUARE, UNTIL THE END OF THE 18TH CENTURY, THE MAIN AREA OF THE GASKI SETTLEMENT.

SOURCE: PHOTOGRAPHY AUTHOR



2. STRZELECKA STREET, THE CZAPNIKI SETTLEMENT WAS LOCATED IN THIS AREA.

SOURCE: PHOTOGRAPHY AUTHOR



3. RYBAKI STREET, THE MAIN AREA OF THE FORMER RYBAKI SETTLEMENT WAS LOCATED HERE.

SOURCE: PHOTOGRAPHY AUTHOR

The plans indicate that each of these settlements had a distinct square as a center around which the life of these small communities revolved. In Gaski, in particular, in front of the Bernardine Church, there was a much larger square than the others (today's Bernardine Market Square). Horse markets were held there.

Among the settlements discussed, the earliest to appear was Rybaki (ed. J. Topolski, „History of Poznań”, volume I, part one, A. Rogalanka, „Poznań at the threshold of location” PWN Warszawa Poznań 1988, pp. 171-173) [14, pp. 20-39], even before the founding of left-bank Poznań, i.e., before the 13th century. They were among the service settlements owned by Piast rulers residing on Ostrów Tumski. Later, during the foundation period of the town, Rybaki became a jurydyka belonging to the Starost General of Greater Poland. The other two settlements, Gaski and Czapniki, appeared later, most likely in the 14th century, as a result of Poznań's dynamic economic and social development at that time.

The occupational profile of the inhabitants of Rybaki, Gaski, and Czapniki was quite diverse. In Rybaki, as the name suggests, the inhabitants mainly engaged in fishing, and in Czapniki – in headgear making. Meanwhile, the people of Gaski worked in various professions.

A significant portion of Piaski's residents engaged in the so-called poorer crafts and took lower-paying jobs. Many were bunglers, meaning artisans not affiliated with guilds. Additionally, some of the town's townspeople had workshops here. The professional and social mix was highly diversified [14, pp. 7–19].

Three churches and monasteries dominated the entire spatial structure of Piaski: the Bernardine Church and the Church of the Transfiguration of Our Lord in Gaski, and the Corpus Christi Church of the Calced Carmelites in Rybaki, founded and funded by the Polish King Władysław Jagiełło. Although the Corpus Christi Church and monastery were located south of the island, they were vitally important to Rybaki and Czapniki, as can be seen on the map (fig. 4–5).



5. FRAGMENT OF THE PLAN OF LASOTA FROM 1784, WHERE THE ISLAND AND THE SETTLEMENTS OF RYBAKI, CZAPNIKI, AND GASKI ARE VISIBLE.

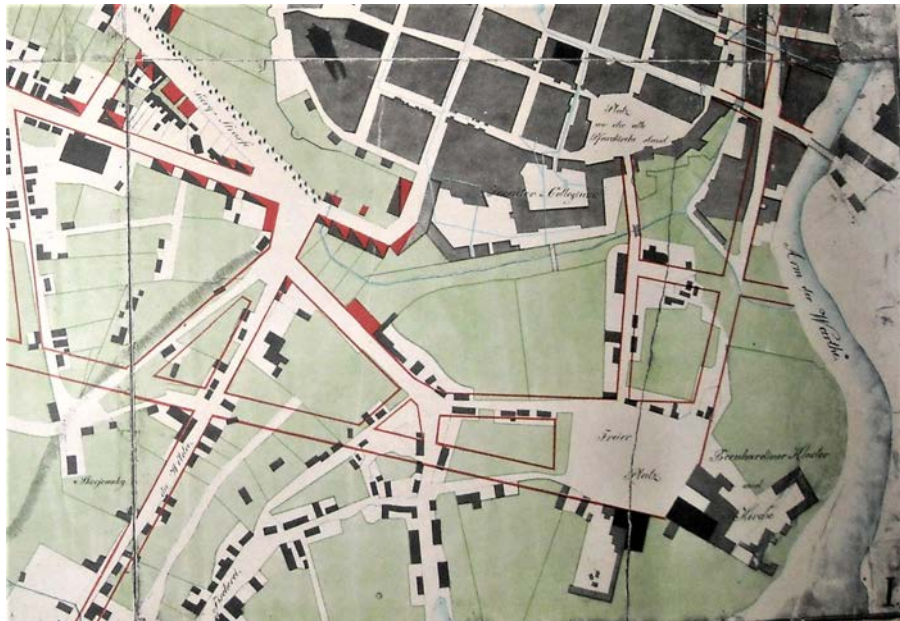
Source: From The Collections Of The National Museum In Poznań (MNP)

Among the buildings other than residential and workshop structures is the Czapnik mill, which was located in the Czapniki settlement by the Noteć stream, near the road leading to the Wrocław Gate of the chartered town. Today, this is Strzelecka Street near Kupiec Poznański Street. The island also contained two additional elements, which were more closely related to the life of the neighboring chartered town than to the settlements discussed here. On the northern side of the island,

at present-day Za Bramką Street, were a small cemetery for Poznań residents, along with the All Saints' Church, and the nearby garden of the Jesuit College, which now houses a park behind Poznań City Hall (figs. 4–5). All the spatial components of the Piaski composition presented here, along with the surrounding natural complexity, created a unique and rich landscape (figs. 4–5)

The status of these small spatial structures was the same – they were all owned by the city of Poznań until the end of the 18th century (ed. J. Topolski „Dzieje Poznania” volume I part one, A. Gąsiorowski, „Późnośredniowieczna konurbacja poznańska”, PWN Warszawa Poznań 1988, p. 227).

In 1797, the new Prussian occupation authorities incorporated the area of these three settlements into Poznań's administrative boundaries, thus losing their distinctive character. Significant compositional and spatial transformations affected Rybaki, Gaski, and Czapniki already at the beginning of the 19th century. The new plan of the Prussian urban planner and architect D. Gilly, implemented after the great fire of 1803, also encompassed the island in question. Instead of a spatial layout embedded in the natural context, a simple orthogonal street network was introduced, ignoring the existing composition and natural forms that formed the rich mosaic of pre-partition Poznań (Fig. 6).



6. FRAGMENT OF THE REGULATORY PLAN FOR DAWID GILLY'S 1803 PLAN. THE PLAN SHOWS A NEW STREET LAYOUT IN RELATION TO THE EXISTING SPATIAL AND NATURAL CONTEXT.

SOURCE: FROM THE COLLECTIONS OF THE UNIVERSITY LIBRARY IN POZNAŃ

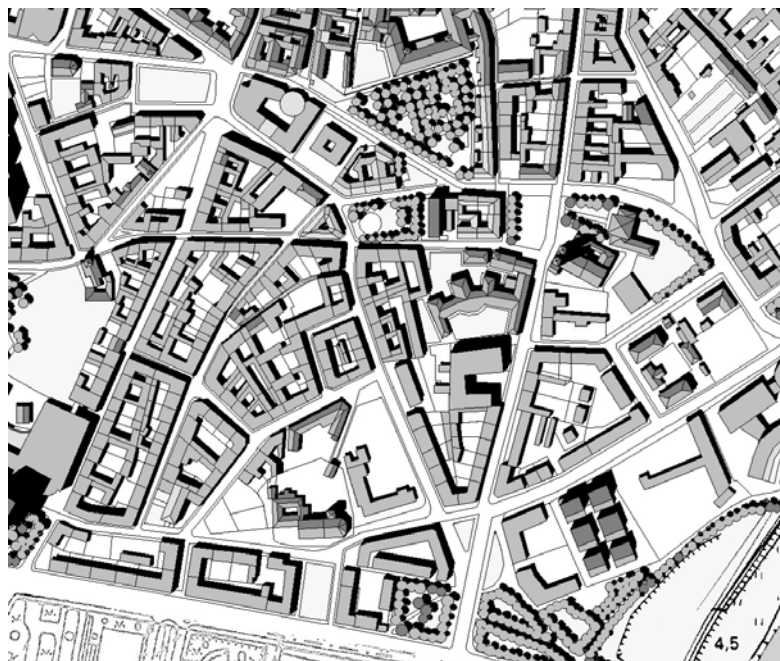
The only historical element that found a place in the new composition was the Bernardine Church with its characteristic towers (Fig. 8).



8. DŁUGA STREET. ONE OF THE MAIN STREETS IN THE 1803 PLAN, INTERSECTING THE FORMER COMPOSITIONAL LAYOUT OF THE PIASKI SETTLEMENT. AT THE END ARE THE TOWERS OF THE BERNARDINE CHURCH. SOURCE: PHOTOGRAPHY AUTHOR

The new development plan, negating the existing context, turned the historic water system into an unnecessary, even obstructive, element.

In the following decades, it was systematically dismantled, and disappeared completely by the end of the 19th century, when the sewer system was constructed. In many places, where rivers once flowed, buildings now stand, and it is difficult to trace their course in the current area. The result of the transformations made in the early 19th century is an unclear and randomly composed space without beginning or end (Fig. 7).



#### 7. CONTEMPORARY DEVELOPMENT OF THE AREA OF THE HISTORIC SETTLEMENT OF PIASKI.

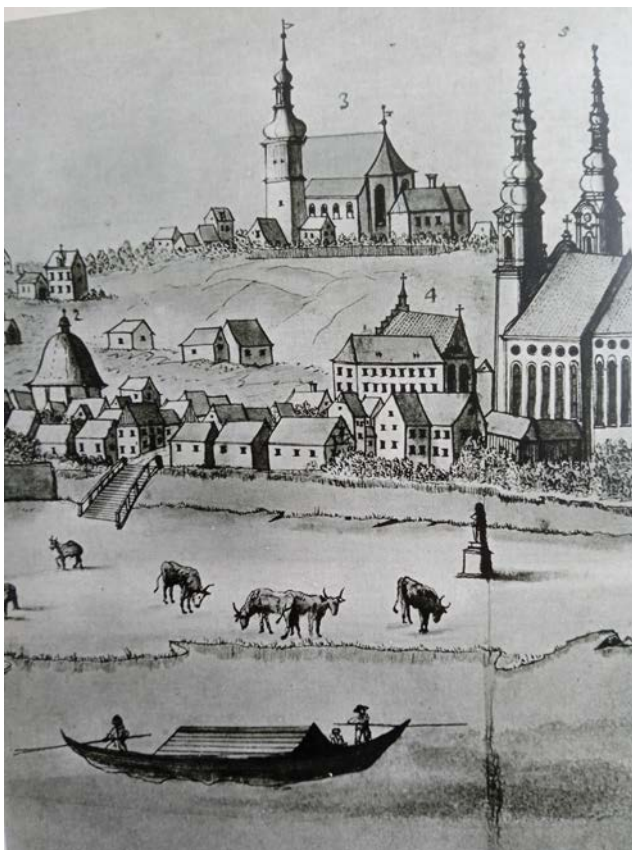
SOURCE: AUTHOR'S COMPILATION

In addition to factors related to new directions in spatial development, political factors must also be considered. By simplifying a complex space, control over the community living in such a place is significantly facilitated (cf. the reconstruction of Paris in the mid-19th century according to the ideas of G.-E. Haussmann). The current appearance of the former Rybaki, Piaski, and Czapniki areas is a direct result of changes introduced in the early 19th century (Figs. 6–7). Contemporary activities in these historic settlements are, unfortunately, a continuation and thus a promotion of 19th-century urban planning, which was of a less than sophisticated quality.

### BUILDINGS

The basic buildings in Rybaki, Piaski, and Czapniki were residential, workshop, and farm buildings arranged in such a way that they formed characteristic courtyards, as in many other settlements in Poznań. Unfortunately, their shape is unknown. It is also unknown whether there were any differences between the buildings located in Rybaki, Gaski, or Czapniki. One can only assume that they differed based on the crafts used. Panoramas of Poznań by F. B. Werner from 1740 (Fig. 9)

and Stragon from 1706 provide some information on their size and shape, despite their imperfections.



9. FRAGMENT OF WERNER'S PANORAMA FROM 1740, SHOWING THE DEVELOPMENT OF PIASKI.

SOURCE: EDITED BY J. TOPOLSKI, „HISTORIES OF POZNAŃ,” VOLUME ONE, PART TWO, K. KUKLIŃSKA, „CREDIT,” STATE SCIENTIFIC PUBLISHING HOUSE, WARSAW, POZNAŃ 1988, ILLUSTRATION NO. 115, PAGES 656-657.

There are also others made in the 18th and 19th centuries, but their quality is of no informative value. Only one building, located on Mostowa Street (the so-called Rybakówka), has survived to this day (Fig. 11).



11. MOSTOWA STREET. THE ONLY BUILDING THAT SURROUNDED FROM THE PRE-PARTITION PERIOD. THE SO-CALLED RYBAKÓWKA.

SOURCE: PHOTOGRAPHY AND AUTHOR'S ARTICLE

Until recently, buildings located on Za Bramką Street still existed, but they were demolished (Fig. 10).



10. ZA BRAMKĄ STREET. THE AREA OF THE GASKI SETTLEMENT. BUILDINGS THAT STILL EXISTED UNTIL RECENTLY. A UNIQUE RICHNESS OF DETAIL.

SOURCE: FROM THE COLLECTIONS OF THE POZNAŃ HISTORY MUSEUM

In photographs from the second half of the 19th century, tenement houses predominate, and the lower buildings make it difficult to determine whether they were built before or after the partitions. There are also several engravings by K. Alberti in 1798 (fig. 12), K.W. Kielisiński in 1840, and J. Minutoli in 1833. However, these mainly depict the Corpus Christi and Bernardine churches; no residential buildings are visible.



12. A GOUACHE BY K. ALBERTI FROM 1798 DEPICTION OF THE CORPUS CHRISTI CHURCH WITH THE SURROUNDING RESIDENTIAL BUILDINGS.

SOURCE: E. PŁOMIŃSKA-KRAWIEC, E. POŁCZYŃSKA „HOFFMANN IN POZNAŃ 1800-1802”, POZNAŃ PUBLISHING HOUSE, POZNAŃ 2004, PAGE 104

Despite such limited iconographic resources, it is possible to fairly generally determine the form and scale of residential buildings. Given the complex social structure of Piaski, with its diverse occupational and affluent background, it can be assumed that the architecture here was also quite diverse. Both brick and wooden buildings likely existed side by side.

The majority of the wooden buildings were of half-timbered frame construction. In many places, there were also mixed buildings – brick and timber. The predominant form was single-story buildings covered with pitched gable roofs, sometimes with hipped roofs and other decorative roof elements such as kaffirs and gables (figs. 9–12). This indicates that many of them also had attics. Workshops and farm buildings located deeper in the property were predominantly single-story, wooden, with half-timbered or log frame construction. The picture of churches and their accompanying monasteries in the Rybak, Gasek, and Czapników study area is much clearer. Their appearance from various angles is depicted in engravings and photographs, mainly from the 19th century. A significant portion of these buildings has survived to this day (figs. 13–14).



13. BERNARDINE SQUARE AND THE BERNARDINE CHURCH AND THE BERNARDINE CHURCH OF THE TRANSFIGURATION OF THE LORD. MAIN AREA OF THE FORMER SETTLEMENT OF GASKA.

SOURCE: PHOTOGRAPHY AUTHOR



14. CORPUS CHRISTI CHURCH WITH THE MONASTERY OF THE TRZEWICZKOW CARMELITS.

SOURCE: PHOTOGRAPHY AUTHOR

In the 18th century, a mill called Czapnik also existed in Piaski. Unfortunately, its shape is unknown. Like the vast majority of Poznań's mills, it was certainly a wooden building with a frame structure, clad with planks, and a pitched gable or hipped roof.

## **RECREATION OF THE LANDSCAPE OF RYBAK, PIASKI, AND CZAPNIKÓW, ALONG WITH THEIR IMMEDIATE SURROUNDINGS**

### **PROPERTY LAYOUT**

The basis for reconstructing the plot shapes of these settlements is a map of the contemporary ownership division of the studied area (Fig. 15).



15. FRAGMENT OF THE PLAN OF THE CONTEMPORARY OWNERSHIP DIVISION, INCLUDING THE AREAS OF HISTORIC GASKÓW, CZAPNIKÓW, AND RYBAK.

SOURCE: AUTHOR'S COMPILATION

A map most likely a regulatory plan for D. Gilly's plan from 1803 (Fig. 6) was used as a comparative source. In addition to new streets, it also shows the former ownership layout, including buildings, and the surrounding water system. To analyze the layout of the property, the inventory plan by Rosler and Gotzheim from 1862 was also used, which precisely defined the shape and size of the plots (Fig. 16).



16. FRAGMENT OF ROSLER'S GOTZHEIM PLAN FROM 1862, SHOWING THE AREA OF THE GASKI, CZAPNIKI, AND RYBAKI SETTLEMENTS.

SOURCE: D. KSIĄŻKIEWICZ BARTKOWIAK „PLANS OF POZNAŃ” 1ST EDITION, WYDAWNICTWO MUEJSKIE, POZNAŃ 2010

Plans from the pre-partition period were also used: I. Lasota's plan from 1784 (Fig. 5) and K. Grund's plan from 1780. Based on these, the lines of contemporary ownership division that survived from the pre-partition period were identified (Fig. 17).



17. FRAGMENT OF THE PLAN OF THE CONTEMPORARY OWNERSHIP DIVISION WITH THE LINES THAT WERE CREATED IN THE PRE-PARTITION PERIOD UNDERLINED IN RED.

SOURCE: AUTHOR'S COMPILATION

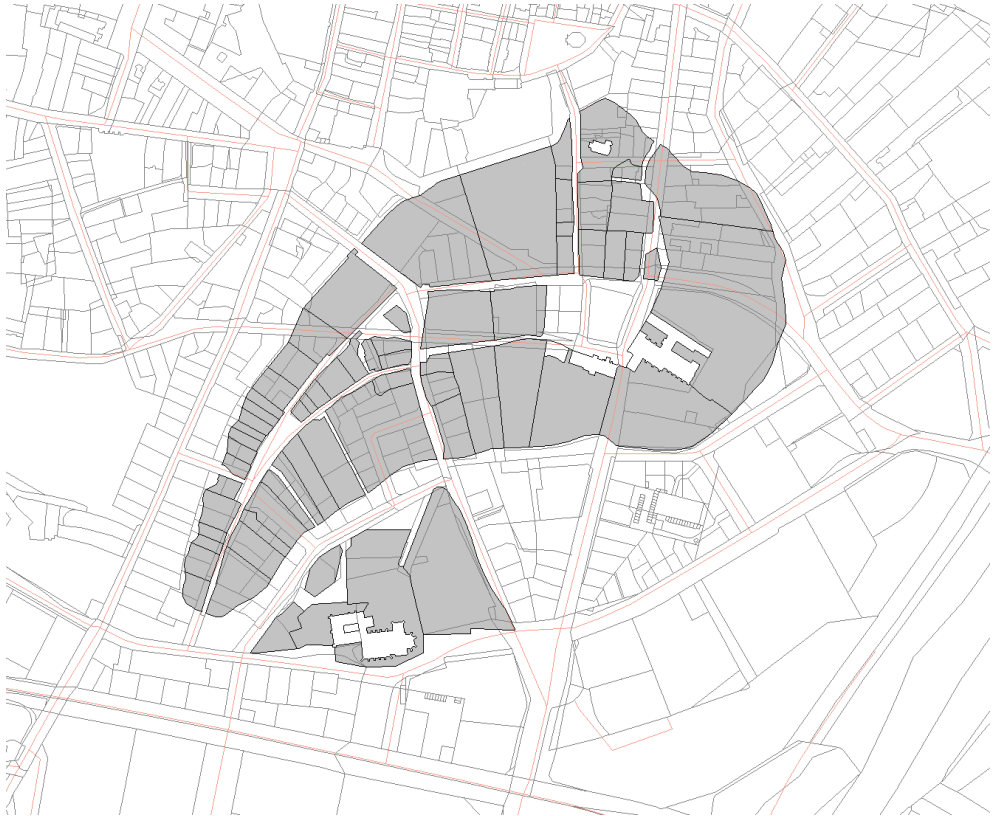
In this analysis, to fully illustrate the layout of the properties of individual settlements located in Piaski, the former water system was also taken into account. This system was recreated in the third chapter devoted to water, and a fragment of it is shown here on the map (Fig. 18).



18. RECREATED 18TH-CENTURY WATER SYSTEM GRAPHED ON  
A CONTEMPORARY OWNERSHIP PLAN.

SOURCE: AUTHOR'S COMPILATION

The water system surrounding the analyzed settlements determined not only the shape of Piaski Island but also the property boundaries. Based on the materials presented here, a map was created showing the layout of the Piaski settlement properties from the pre-partition period (Fig. 19).



19. 18th-CENTURY PLOT LAYOUT ON A CONTEMPORARY OWNERSHIP PLAN.

SOURCE: AUTHOR'S COMPILATION

## BUILDINGS

Among the maps that most likely and fully reflect the building layout of the Piaski settlement from the pre-partition period, the 1803 plan is worth mentioning. As mentioned earlier, it served as a regulatory plan for D. Gilly's plan (Fig. 6). In addition to the ownership division, it also shows the building layout. However, it does not show the entire settlement; a section of the southern part is cropped out. The rest can be seen on the Rosler and Gotzheim plan from 1862. Although it was created much later, it was included here because, as in other settlements located in the so-called lower town zone near the Warta River and its floodplains, the buildings had changed little until the second half of the 19th century. The plan shown below shows the building layout, along with reconstructed 18th-century plots, on a modern ownership plan (Fig. 20).



20. BUILDINGS OF THE PIASKI SETTLEMENT WITH RECONSTRUCTED PLOTS SHOWN ON A PLAN OF CONTEMPORARY OWNERSHIP DIVISION.

SOURCE: AUTHOR'S COMPILATION

## TERRAIN

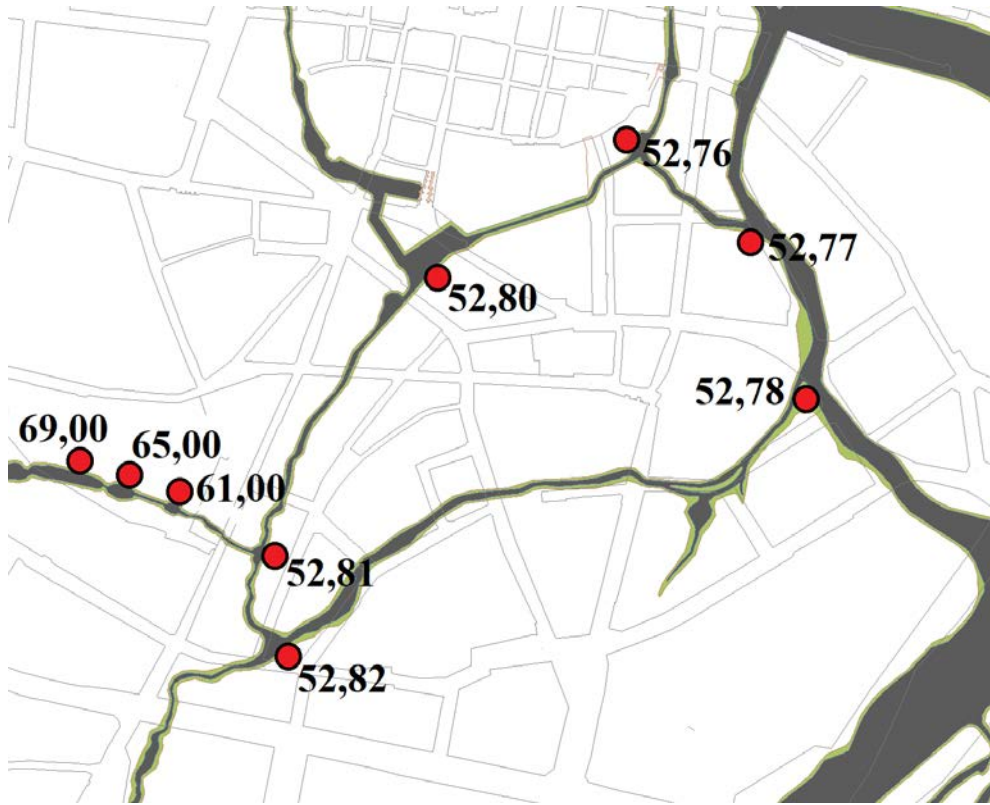
The basis for reconstructing the terrain of the historic 18th-century settlement of Piaski is the current appearance of the study area, recorded as a system of contour lines, along with marked historical buildings and their elevations (Fig. 21).



21. CURRENT TERRAIN OF THE HISTORIC PIASKI AREA. THE ELEVATIONS OF THE HISTORIC BUILDINGS PRESERVED TO THE PRESENT DAY ARE MARKED ON THE PLAN.

SOURCE: AUTHOR'S COMPILATION

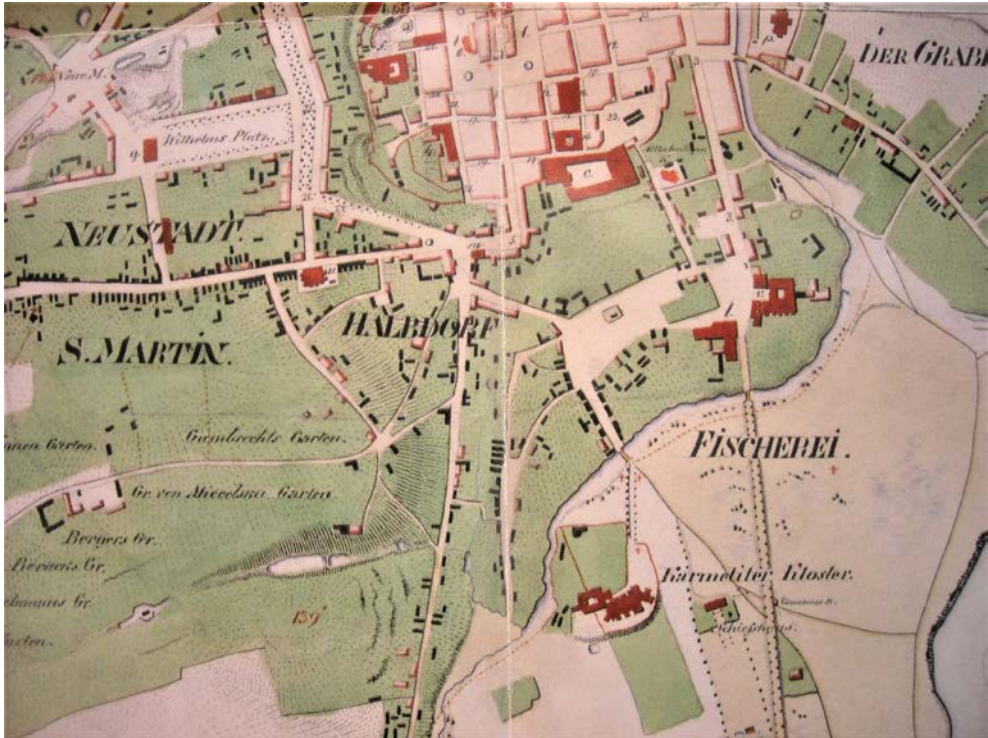
Another essential element of this analysis is the no longer existing water system, along with its elevational coordinates, which historically formed the compositional and spatial framework of Piaski (Fig. 22).



22. WATER SYSTEM WITH Elevational Elevations Surrounding the Settlement of Piaski in the 18th Century.

SOURCE: AUTHOR'S COMPILATION

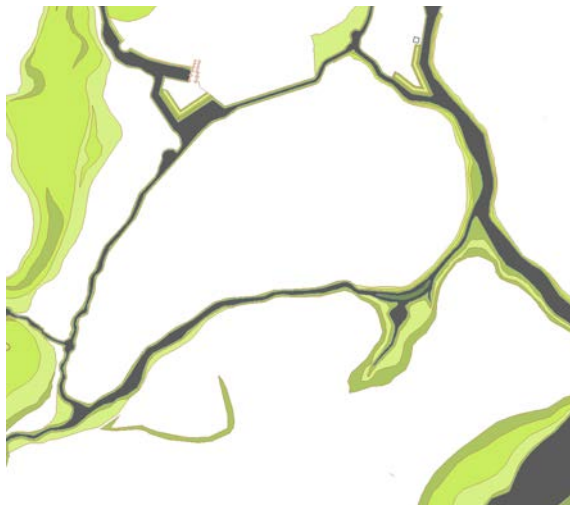
The final item is maps from the turn of the 18th and 19th centuries, illustrating the terrain. Of the many maps, the most relevant is a Prussian map by an unknown author from 1820 (Fig. 23), which quite precisely reflects the existing relief in line form.



23. FRAGMENT OF A PRUSSIAN PLAN FROM 1820, BY AN UNKNOWN AUTHOR. SOURCE D. KSIĄŻKIEWICZ BARTKOWIAK „PLANS OF POZNAŃ” 1ST EDITION, CITY PUBLISHING HOUSE, POZNAŃ 2010

A comparative analysis of the maps presented here allows us to conclude that, aside from the filling of the surrounding watercourses, this area has changed little in shape and elevation. It is largely flat, with a very slight slope eastward to the Warta River. The lack of significant changes in this regard is confirmed by the preserved historical buildings of the Bernardine Church and the Transfiguration of Our Lord, which are entered from the current ground level. Only the Corpus Christi Church is lower than the current ground level by approximately 1 meter. This is because the earthen ramparts of the Prussian fortifications of the Poznań Fortress ran along the southern side, and the entire area south of the church was raised several meters by the scattering of fortification ramparts. This is a trace and remnant of these fortifications.

Taking into account the conditions presented in this analysis, a preliminary determination of the terrain in the 18th century was made (Fig. 24).



24. PRELIMINARY DETERMINATION OF THE TERRAIN OF THE HISTORIC PIASKI AREA.

SOURCE: AUTHOR'S COMPILATION

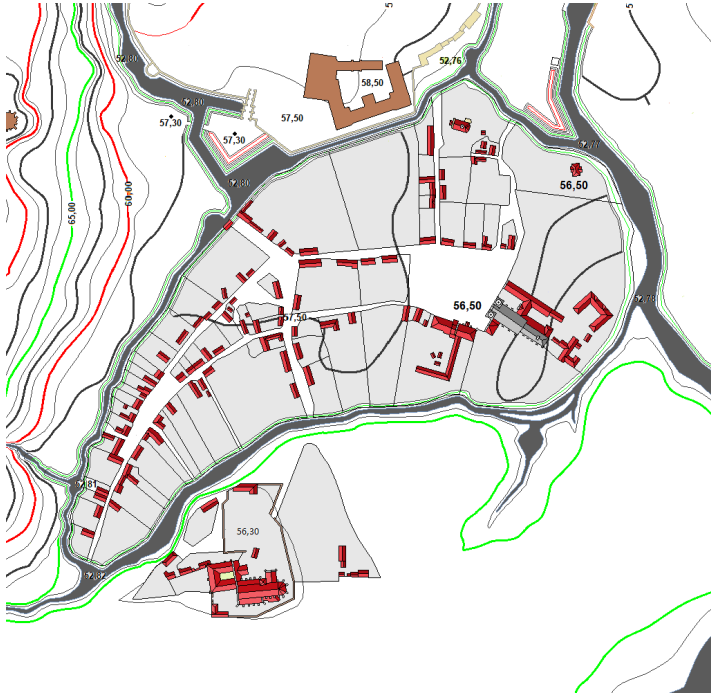
Based on this, a map was prepared showing the probable terrain of the Piaski settlement in the 18th century (Fig. 25).



25. TERRAIN OF THE PIASKI SETTLEMENT AREA IN THE 18TH CENTURY.

SOURCE: AUTHOR'S COMPILATION

For a more complete picture of the settlement, it is worth adding the plots and associated buildings to the terrain (Fig. 26).

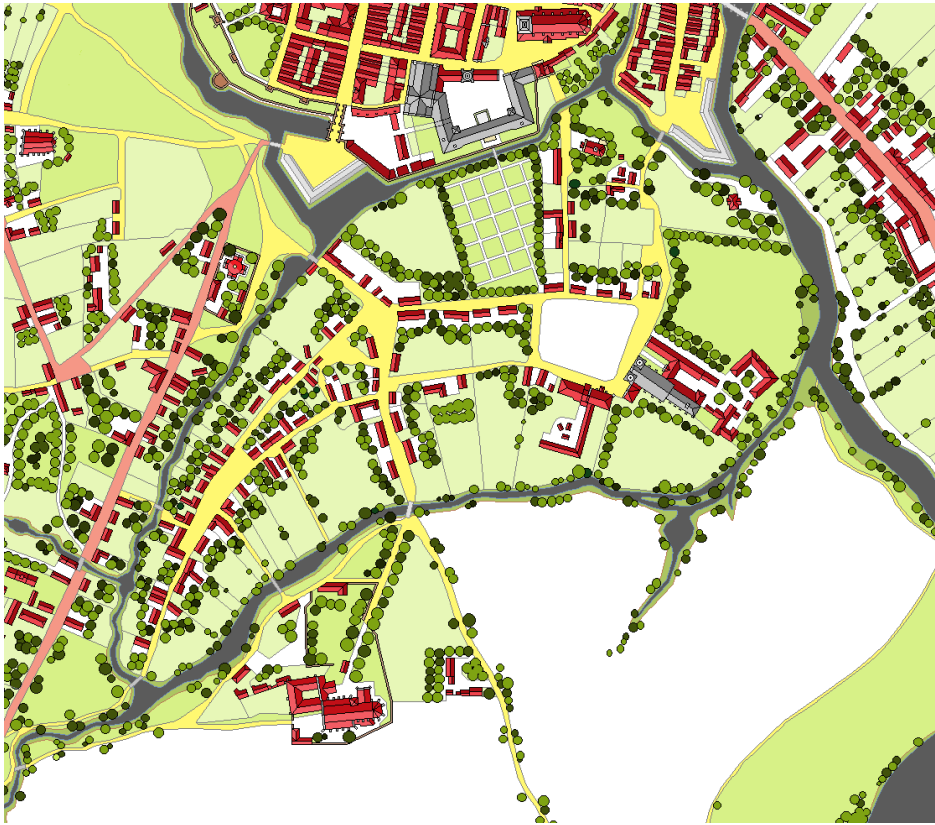


26. TERRAIN LAY WITH BUILDINGS OF THE PIASKI SETTLEMENT.

SOURCE: AUTHOR'S COMPILATION

### GREENERY

In the area of the historic settlement of Piaski, there was no significant or distinctive greenery in public spaces. This is evident in the engravings of J. Minutoli, K.W. Kielisiński, and K. Alberti from the first half of the 19th century. Trees occurred primarily in home gardens and the gardens of monasteries: the Jesuits, the Bernardines, the Bernardine Sisters, and the Calced Carmelites. The only distinguishing feature was the avenue of trees leading to Corpus Christi Church from the north (it still exists today). Among the greenery in public spaces in the Piaski area, noteworthy were the one growing in the Poznań cemetery on what is now Za Braką Street, and the trees and shrubs along the watercourses surrounding the settlement. However, this greenery was not structured and did not occupy any significant area. What was distinctive about the greenery in Piaski was its overall impact, creating a harmonious whole with the buildings and the surrounding water. And this was its undeniable value. The probable layout of the greenery in the Piaski settlement zone is shown on the adjacent plan (Fig. 27).



27. OWNERSHIP DIVISION OF BUILDINGS AND GREENERY IN THE AREA OF THE PIASKI SETTLEMENT.

SOURCE: AUTHOR'S COMPOSITION

Finally, it is worth presenting the results of the analyses conducted here in the form of visualizations, depicting the spatial and natural layout of the island and its context related to the immediate vicinity of the chartered city. This example illustrates how most settlements in the Poznań conurbation, including Piaski, built their individuality and uniqueness thanks to the surrounding nature, and the positive effects achieved in both the internal space and the surrounding landscape (Figs. 28–36).

The visualizations presented here are not, it should be emphasized, a true representation of the analyzed settlement structure of Piaski. The paucity of iconographic material prevents this. The images of the site presented here have been interpreted by the author based on the scholarly works presented in this chapter and the few historical photographs and engravings. The aim of this study was to convey the atmosphere and character of the site to the extent possible, in order to depict the landscape of old Poznań as fully as possible.



28. MAIN AREA OF THE RYBAKI SETTLEMENT, CURRENTLY RYBAKI STREET.  
VIEW FROM THE SOUTH. IN THE DISTANCE THE TOWER OF THE NON-  
EXISTENT COLLEGIATE CHURCH AND PARISH CHURCH IS VISIBLE.

SOURCE: AUTHOR'S COMPILATION



29. MAIN AREA OF THE RYBAKI SETTLEMENT, CURRENTLY RYBAKI STREET.  
VIEW FROM THE SOUTH.

SOURCE: AUTHOR'S COMPILATION



30. MAIN AREA OF THE CZAPNIKI SETTLEMENT, CURRENTLY STRZELECKA STREET. VIEW FROM THE SOUTH TOWARDS THE INCORPORATION TOWN.

SOURCE: AUTHOR'S COMPILATION



31. MAIN AREA OF THE CZAPNIKI SETTLEMENT, VIEW TOWARDS THE WEST. STRAIGHT AHEAD IS A MILL CALLED CZAPNIK, LOCATED ON A STREAM CALLED NOTEĆ.

SOURCE: AUTHOR'S COMPILATION



32. STREET CONNECTING THE SETTLEMENT OF CZAPNIKI WITH OSA GASKI (CURRENTLY ZIELONA STREET). VIEW TOWARDS THE EAST.

SOURCE: AUTHOR'S COMPILATION



33. VIEW OF THE EASTERN PART OF THE GASKI SETTLEMENT. IN THE FOREGROUND IS THE SO-CALLED FISHERMAN'S HOUSE, STILL EXISTING TODAY.

SOURCE: AUTHOR'S COMPILATION



34. A BIRD'S-EYE PANORAMA SHOWING THE ENTIRE PIASKI SITE, VIEW FROM THE EASTERN SIDE.

SOURCE: AUTHOR'S COMPLETION



35. VIEW OF THE ENTIRE SANDS FROM THE WEST. RYBAKI SETTLEMENT IN THE FOREIGN.

SOURCE: AUTHOR'S COMPLETION



36. VIEW OF THE ENTIRE SANDS FROM THE SOUTH.

SOURCE: AUTHOR'S COMPLETION

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## PIASKI

### Streszczenie

Niniejsze opracowanie jest elementem całościowej analizy przestrzennej historycznego obszaru Poznania kształtowanego do końca XVIII wieku. W tamtym czasie w skład dawnego miasta wchodziło 28 jednostek osadniczych tworzących charakterystyczny wianuszek otaczający historyczny Poznań. W tym artykule zajęto się zespołem osadniczym położonym na wyspie znajdującej się na południe od miasta lokacyjnego. Obszar ten nazywany był Piaskami. Na jednej z wysp położonych na południe od Poznania rozlokowane były Piaski. W przeszłości nazwy tej używano dla określenia zarówno zabudowań, jak i obszaru wyspy. W skład Piasków wchodziły trzy główne osady: Gaski, Czapniki i Rybaki (pod red. J. Topolskiego, Dzieje Poznania, tom I, część pierwsza, A. Gąsiorowski „Późnośredniowieczna konurbacja poznańska” PWN Warszawa Poznań 1988 str. 226-228). Wraz z innymi strukturami osadniczymi Poznania tworzyły one charakterystyczny wianuszek bezpośrednio otaczający główne miasto lokacyjne – Poznań. Wyspę otaczały nurty trzech cieków wodnych: Strugi Karmelickiej (Kamionki), Noteci oraz odnogi Warty. Noteć opływała Piaski od zachodu i północy, Struga Karmelicka – od południa, natomiast odnoga Warty otaczała wyspę od wschodu

**Słowa kluczowe:** Gaski, Czapniki, Rybaki



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## SEARCHING FOR GENIUS LOCI

The article discusses research conducted since 2019 by the Club [PHI]. The assumptions of the research method result from aesthetic evolutionism and concern the atavism inherent in the mechanism of evaluating the perceived form. The existential challenges, repeated for many generations of homo sapiens, have improved the human eye. Our ancestors, encountering an unknown form, especially a living one, had to guess the potential effect of the encounter. In critical for survival situations, it was crucial to read both the potency and intentions of the encountered individual. The assessment of each appearing object had to be made immediately, from a distance that still allowed escape if the intentions of the observed individual turned out to be hostile. It is to this that the anatomy of the human eye has adapted in the course of evolution, creating our field of vision as a system of zones. Each zone simultaneously isolates the relevant fragments of the observed form, automatically combined by the interpreting brain into a meaningful whole. This subconscious mechanism of the decomposition of form on the retina allows us to read what the genius loci implanted in space tells us.

**Keywords:** interdependencies in urban interiors, aristotelian form of genius loci, critical perceptual distance

### 1. GENIUS LOCI. THE MORPHOGENETIC THESIS<sup>3</sup>

#### 1.1. A cardinal principle of evolution

Those networks of brain neurons that enable an organisms to survive in critical situations are more frequently genetically transmitted than a neuronal structure that does not ensure survival [Hall 1984, pp. 234-271]. The owner of a “better” brain lives statistically longer and has more opportunities to pass on a good genotype

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<sup>3</sup> In a highly narrow sense, concerning the visual perception of space: morphê [Gr.] – shape, génesis [Gr.] – origin.

to his or her successors. From generation to generation, our species is getting better and better at reading information from the environment and reacting more and more perfectly to threats that arise in it. Experiences of successful attempts at survival are compiled in genetic memory into a “catalogue” of spatial situations and appropriate reactions to them. In this way, as a species, we tuning up the idea of order-harmony in space surrounding. This idea is a mental image – literally spirit – of well ordered environment in which there are no existential threats. The matrix of order “imprinted” in subsequent human generations is the basis for experiencing universal beauty. We constantly improve this complex matrix of harmony [Lorenz 1986, p. 82].

Aesthetic impressions arise in the oldest part of the human brain. This is the genetic legacy of prehistory, when signals important for life were assessed according to the primordial dichotomy: dangerous-safe. In the life prehistory, in times of the expansion of complex organisms onto land, form and its content appeared simply as an indivisible whole, as a specific signal from the environment. Neither verbal communication nor language existed at that time, because the areas of the brain responsible for them had only just begun to develop, growing on the brain stem (which is responsible only for essential, life-sustaining functions) [Hall 1984, p. 239]. This lack of “primordial words” is why today we cannot use any language to explain aesthetic emotions. We can only ask: “why does beauty exist?”. This question concerns the primar mechanisms that trigger this sense of existential safe-ty=harmony=beauty. A certain clue and circumstantial evidence is the fact of the durability and constancy of the “traditional” aesthetics, which for two millennia revolved around the Greek Great Aesthetics Theory (the universal root of all arts [Tatarkiewicz 1982]). This first holistic codification of the laws of aesthetics had from the very beginning an almost closed form, directly embedded in the human way of perception, deeply rooted in brain stem.

## 1.2. The “body” of genius loci

“The soul is to the body what seeing is to the eye”  
– Aristotle

We can feel the “spirit of place” observing the environment. If the information gained does not cause existential anxiety, the observer feels pleasure knowing that everything is going well. From that moment on one feels that life is becoming good and beautiful thanks to the surrounding forms. Like any new experience, they are initially disturbing but eventually turn out to be “good.” This happens because the arrangement of the parts of the form (the tune of its spirit) can be read as “friendly”. Such genius loci then resonates with the genetically rooted intuition of beauty – an acquired idea, shaped in the course of human history and individual life. The key here is the phrase: “the arrangement of the parts of the form”. The

formal order must be somehow directly legible and meet the “expectations” of the eye: “beauty is in the eyes of the beholder”.

## 2. RESEARCH ASSUMPTIONS

### 2.1. Zonal structure of the field of view

The crux of the considerations lies in the anatomical configuration of the eye, which has undergone a series of evolutionary adaptations driven by natural selection, thereby ensuring the survival of the species. The critical distance, also referred to as the residual escape distance [Hall 2001, p. 22, 157], is a pivotal parameter in the study of attentive observation. From this distance, instinctively maintained in the face of a suddenly encountered unknown form (especially a living one), it is necessary to estimate how its important parts could “affect” us in a closer interaction. Evolution has endowed the eye with a zonal character. Each sector of the visual field separates distinct components of the form perceived, which are promptly processed by the brain. Deeply rooted in biogenetic history key shapes (e.g. organic shapes) are embedded in the memory of the retina: evolution has caused the retina had to differentiate into zones corresponding to the structure of these key forms. Currently during perception each zone of the visual field in the eye isolates distinct components of the perceived form, which are immediately processed by the brain. This confrontation of the observed form and the ideal form (form seen and its ideal shape expected by the retina), gives rise to aesthetic experiences. As illustrated in Figure 1 the eye zones and their angles of vision are delineated, along with sections of the environment whose dimensions are determined by the critical distance. Perceptual atavism, defined as a subconsciously maintained distance from the observer to the object of observation, has been estimated to have played a pivotal role in calibrating the anatomy of the human eye to the critical distance during the course of evolution. The surface of the retina corresponds to the field of vision and consists of specialized zones waiting to be filled with images of the appropriate parts of the form being seen. This zonal tool functions as a detector of visual harmony. Each zone functions as an autonomous information channel, systematically collecting visual data that is distinctive to its respective environment. Zones with a narrower angle of vision provide more precise information about the geometry of the form. In contrast, wider zones allow for stereoscopic assessment of the mutual relations of the details of the form and its integrity. The widest peripheral zones are capable of detecting movement and coloration exclusively at the periphery of the field of vision. Physiology itself, without the will of the observer, automatically cuts the observed building into parts and details. [Kozaczko 2005, Malmo 1959]. We subconsciously expect that such multi-channel information will reach us from important zones of the visual field in independent but coherent doses.

## 2.2. How aesthetic automatism works

So if the “disturbing object” is an unknown person (suddenly encountered, for example, in a forest at night), then intuitively we do not approach them at a distance shorter than that which still allows escape in case of a bad turn of events. In the case in question this instinctive critical distance is 3.6 meters [Hall 1984]. Standing at such a distance from an unknown person, we are able to encompass their entire figure and important parts with one glance. (Fig. 1).

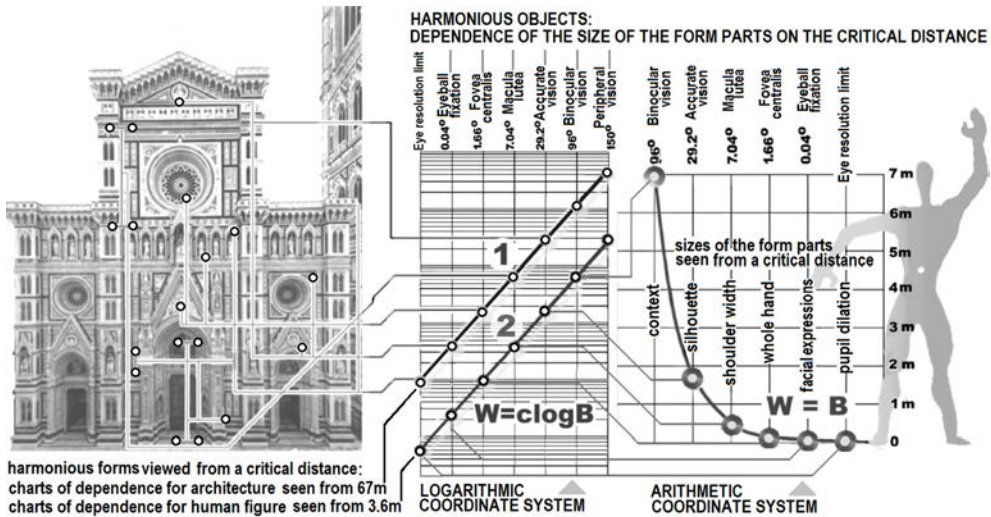


Fig. 1. Harmonious forms are characterized by a peculiar interdependence: the sizes of individual parts create a regular continuum, detectable in the so-called physiological coordinate system (such a system, shown in the center of the drawing, corresponds to the Weber-Fechner law, according to which the aesthetic impression  $W$  is directly proportional to the stimulus of strength  $B$  that causes this impression, namely:  $W = c \cdot \log B$ ). In the right part of the drawing, the dimensions of the human anatomical parts are placed in the usual arithmetic system, which does not reveal any regularities (until recently, the arithmetic interdependence was wrongly assumed, that the impression is directly proportional to the strength of the stimulus:  $W = B$ ). Only and exclusively in the physiological system do these dimensions create a straight line 2. The dimensions of other harmonious forms, observed from a critical distance, create similar straight lines (for example: 1 – harmonious architectural form, e.g. Firenze, S-ta Maria del Fiore – critical distance 67 m; 2 – human figure – distance 3.6 m).

With this one glance, we also encompass – although much less precisely – the spatial context of the situation (the scene of the observed event). It may turn out that the observed person is accompanied – or not – by other potentially dangerous forms. Hence, evolution has expanded the total horizontal field of view to almost

half of the full angle. Our eyes – their respective zones – also allow us to detect movement and dynamics of the observed scene. This is possible thanks to binocular, stereoscopic vision. In the “center of attention” (i.e. the horizontal, internal angle of view of  $96^\circ$ ), the space clippings observed by the two eyes overlap, differing only in parallax. This stereoscopic vision covers a field of view of 8.7 m in diameter from a distance of 3.6 m. At the same time, the surface of the part of the eye called the yellow spot (representing an angle of view of  $7.04^\circ$  and covering a field of view of 43.7 cm in diameter) allows for reading body language. The yellow spot reveals the intentions of the observed person and allows for estimating the anatomical structure and muscular armor. The fovea centralis of the eye (angle of  $1.66^\circ$ , field of view of 10.3 cm) covers the entire hand and the arrangement of the fingers. Opening them or clenching them into a fist reveals an aggressive, friendly or neutral disposition. The resolution of the eye allows for a quick assessment of the stranger’s intentions. From this distance, the pupil enlargement can be clearly seen – for example, its dilation under the influence of adrenaline. Finally, the so-called eyeball fixation (reflex physiological oscillation of the optical axis in the range of  $0.04^\circ$ ) extends the field of maximum resolution to a diameter of 2.5 cm. This allows us to see details of the fingers, the strength of the thumb (opposable finger) – and therefore the whole hand, as well as details of facial expressions (position of the eyelids and tension of the facial muscles). Critical distance is the only distance that allows for a simultaneous assessment of the entire observed figure and all its important details. It is from this distance that the “essence” of the seen form speaks to us. Standing a little closer or a little further away, we are not able to fully “receive” all the important information about the observed object, and its form cannot “act” as a kind of independent entity. We do not see its potency, its embodied spirit.

### 3. PROVING THE THESIS

The Scientific Circle [PHI] has been conducting research since 2019, the aim of which is to verify or falsify the morphogenetic thesis in the field of urban planning and architecture. The morphogenetic thesis states that the measure of order as a measure of vitally important information is rooted in the eye. Self-preservation reflexes are triggered immediately: we compare what we see with the evolutionarily acquired internal idea of a safe situation – the “universal essence of safety”. If the “essence” speaks to us through the noticed features of the environment, then we feel existential harmony, order, beauty. This essence – detected and felt in the shapes of created forms – has been called *genius loci* by tradition.

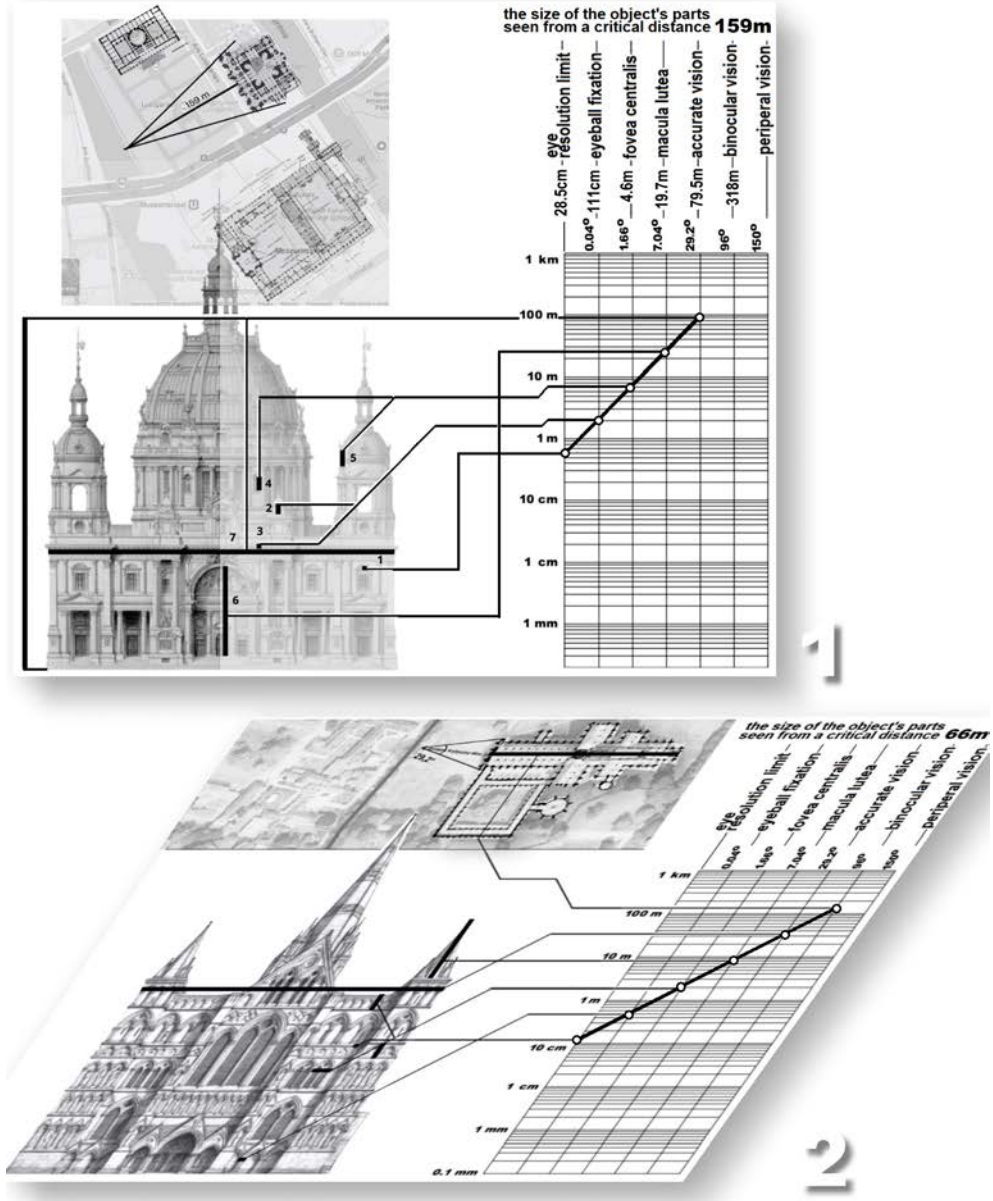


Fig. 2. Initial examination of the object (part 1). Architectural harmony is revealed in the rectilinear forms of the graphs corresponding to the Weber-Fechner law. Card 1. Berlin Cathedral

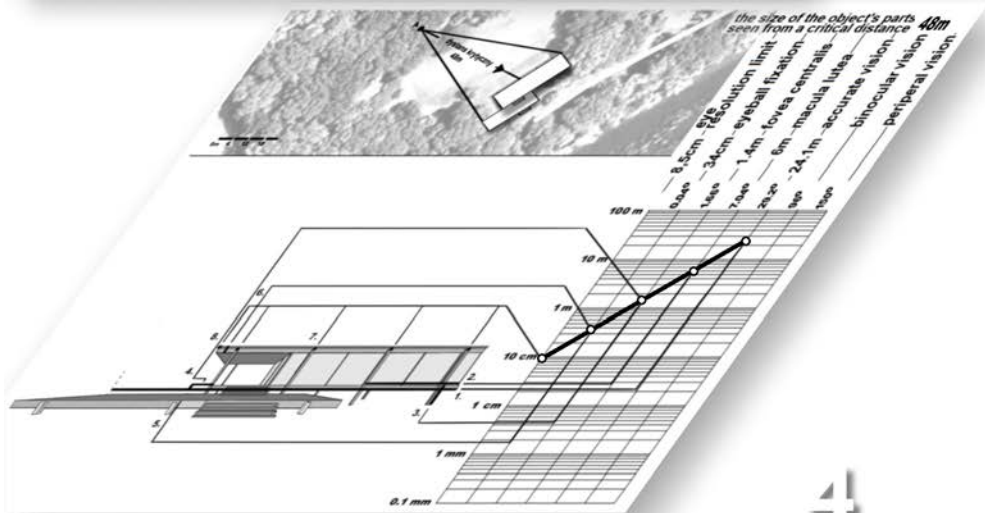
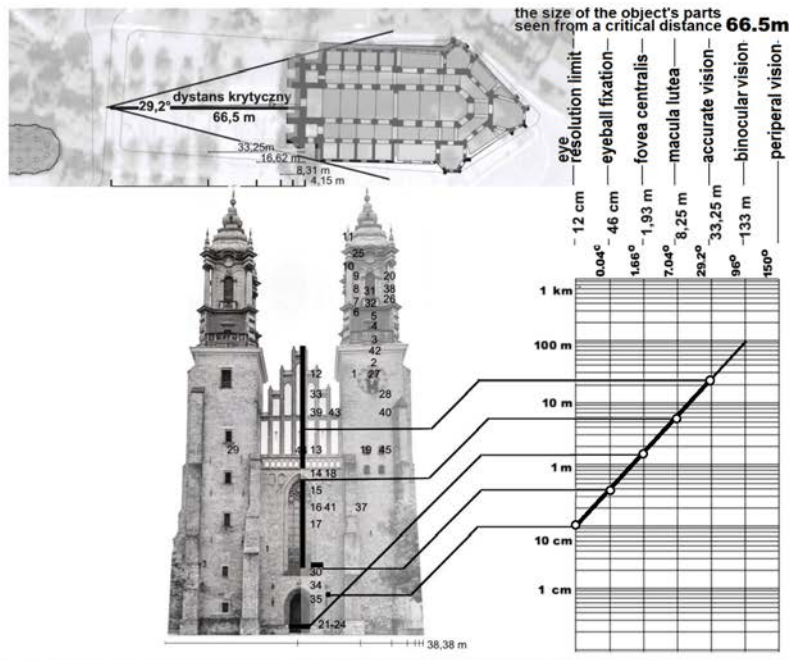


Fig.3. Initial examination of the object (part 2). Card 3. Poznań Cathedral. Card 4. Farnsworth House in Plano (designed by M. van der Rohe)

Individual, properly shaped architectural objects affect the observer placed within their reach in a way that resembles the action of a so-called subjective entity – a kind of idol, ghost that somehow directs actions of those under its

influence. This distant analogy to the primitive good guardian deity still operates in the recesses of our subconscious. The projection of the child's relationship to the parent, referred to by psychoanalysis, is revealed in the relation of the observer and the object. Its appropriate shapes trigger in the perceiver a sense of harmony radiating to the entire situational context. The sense of existential order emerging in the subconscious reaches us suddenly by the architectural order of the surroundings.

The analyses recently carried out by [PHI] (Fig. 2 and 3) supplement the set of studies on individual objects placed in relatively large, open spaces. The harmonies detected in their shapes are revealed when they are observed from a critical distance: the dimensions of the individual parts form rectilinear graphs in a "physiological" coordinate system (cf. Fig. 1). Of course, it should be assumed that the "experimenter effect" could emerge at work here: namely from the forms examined, the dimensions of their parts were extracted that confirm the accepted thesis. However, the very fact of detecting harmony between the somehow main parts of objects confirms the morphogenetic thesis. Forms, all of whose parts fill individual zones in the eye, are perfectly harmonious forms, fully meeting visual expectations. However such formal perfection is difficult to give to architectural forms in which various disruptions and deformations related to broadly understood technology appear (determining the dimensions of the whole and parts of the object from a technical, not visual, perspective). In less perfect forms, deformations constitute information noise of varying intensity, drowning out visual harmony.

### **3.1. In the city space, or the biblical Jonah in the whale's stomach**

Formal harmony in urban structure does not have to be related to a single, distinguished point in space – this only one, determined by the interdependence: the size of the object – the critical distance from this object. Incorporating a building into a compact urban space strengthens the impact of the forms that create urban interior. A striking example of an extremely coherent composition of this type is Piazza San Pietro in Rome. Below is presented an morphogenetical analysis carried out for the most important axis of this square. An observer walking towards the Basilica feels a strong effect of *genius loci* at five of its most important points (Fig. 4 at the top). Starting from the entrance to the square: at point 5, field of the stereoscopic vision in the eye (horizontal angle of  $96^\circ$ ) is filled completely by the entire elliptical part of the square, precisely framed by the vertical edges of the walls of Piazza Papa Pio XII. From point 5 we see the entire layout "as if in the palm of our hand". This beginning of a "liquid" composition is an aesthetic earthquake. And then the tension grows (up to point 1 on a special plateau just before the entrance to the Basilica) – according to Alfred Hitchcock's recipe for the best film script. The details of this urban scenario can be found below, in the last chapter.

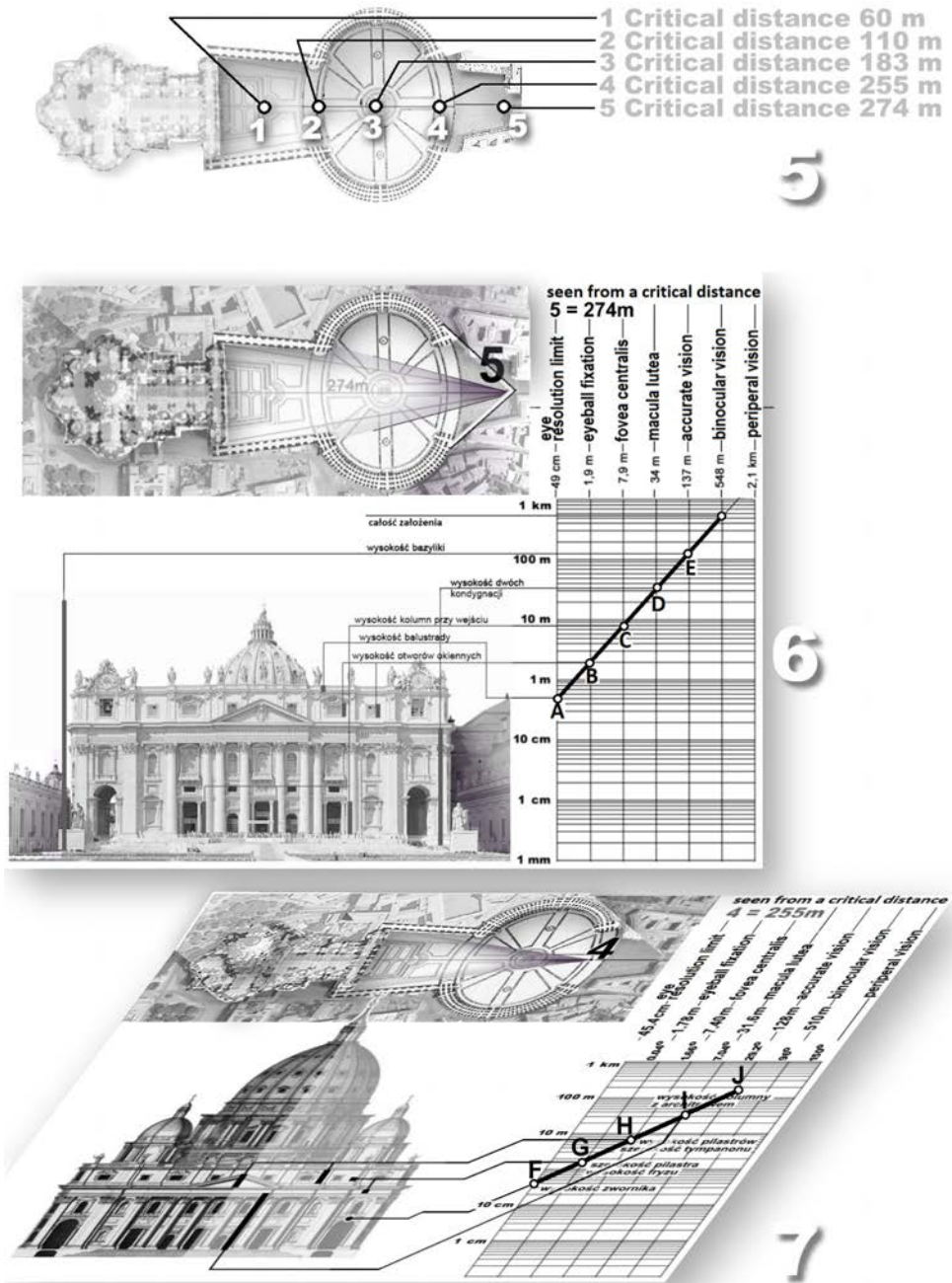


Fig. 4. Genius loci: morphogenetic analysis of the spatiotemporal sequence in front of St. Peter's Basilica in Rome (Part 1).

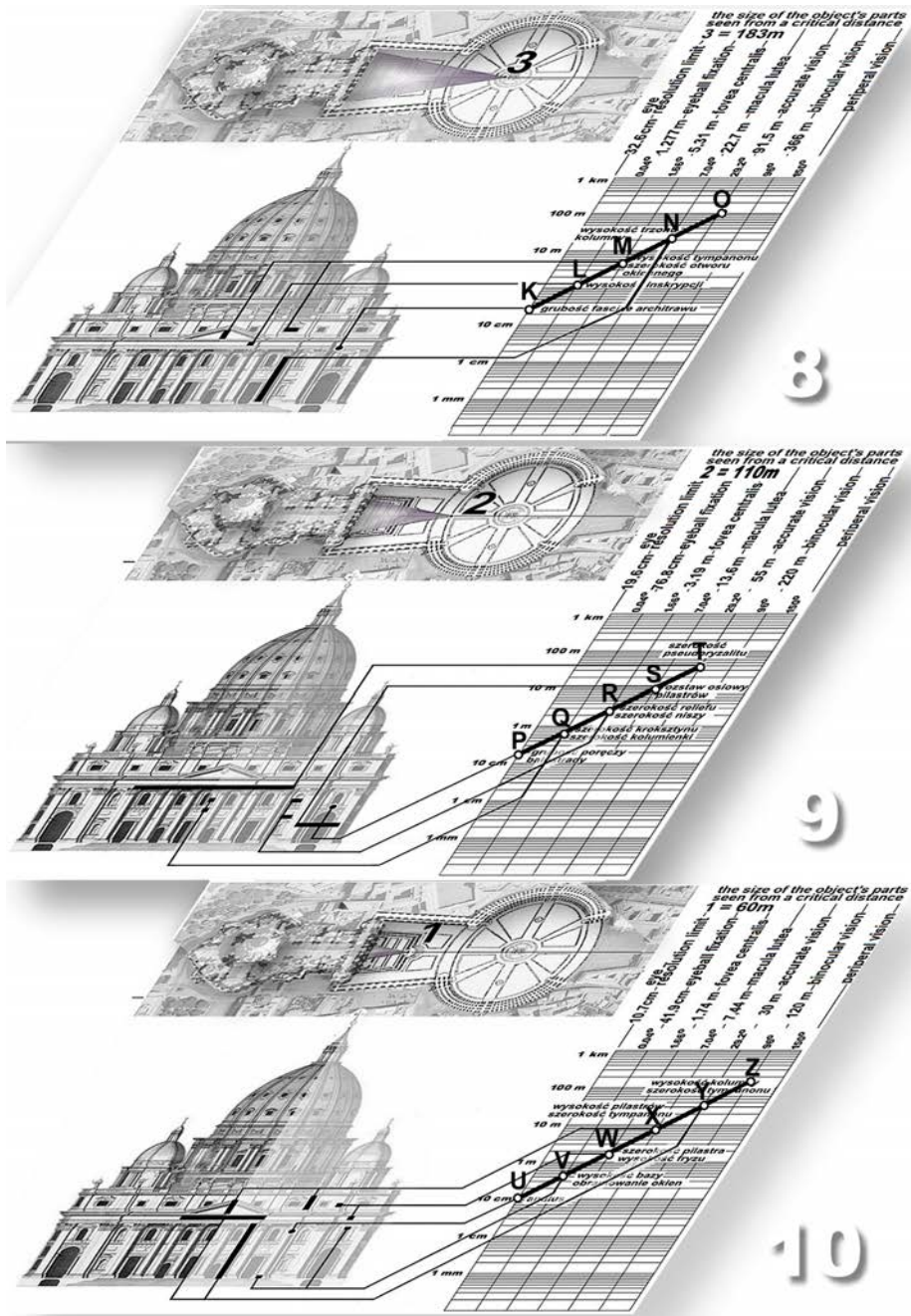


Fig. 5. Genius loci: morphogenetic analysis of the spatiotemporal sequence in front of St. Peter's Basilica in Rome (Part 2)

### **3.2. The time-space sequence in front of St. Peter's in Rome. Details of dimensioning the sequence of urban interiors**

The structure of the visual organ serves as a perceptual filter through which visual data is transmitted [Malmo 1959, Strasburger, Pöppel 2002]. The intuitions of art theorists [Strzemiński 2016, Wölfflin 2015, Żórawski 1943] have been subjected to a specific formatting, conducted from the perspective of proxemics [Hall 2001, Kozaczko 2005, 2012, Lindegger, Pless 2019]. Each of the anatomical and functional zones of the eye (eye resolution limit, eyeball fixation, fovea centralis, macula lutea, accurate vision, binocular vision) isolates appropriate segments from the observed form. The research adopted parameters defined in anthropometric [Batogowska, Słowikowski 1994] and ergonomic [Wykowska 1994] studies. The anatomical zones of the retina, defining the angular segments of the field of vision, were compared in the studies described here with the critical distance of perception, dividing the observed forms into parts “expected by the eye”. The following detailed tables correspond to the charts in Figures 4 and 5. The capital letters denoting individual points on the graphs also denote specific parts of the analyzed objects below:

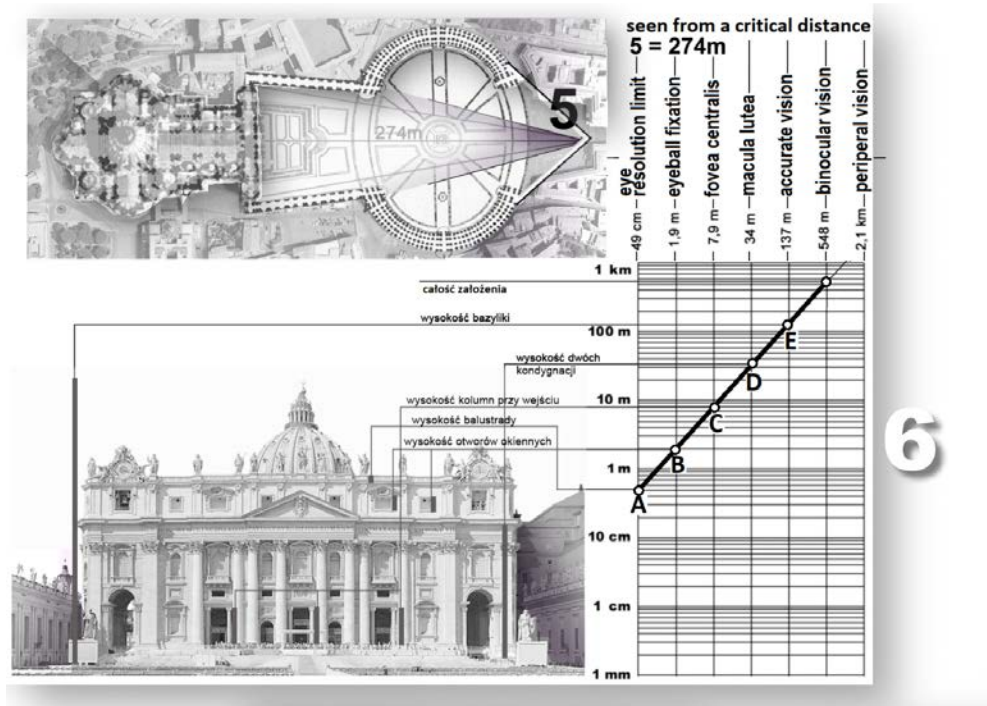


Fig. 4. Card 6. Basilica seen from the entrance to the square. Dimensions of parts of the object. Critical distance 274 m (letter symbols as in the chart):

↓ Field of view zone	angle	the size within the angle as viewed from a critical distance
<b>A</b> Eye resolution limit	$0,01^{\circ}$	49 cm the height of the roof railing
<b>B</b> Eyeball fixation	$0,04^{\circ}$	1,9 m height of the window openings above the architrave
<b>C</b> Fovea centralis	$1,66^{\circ}$	7,9 m height with architrave
<b>D</b> Macula lutea	$7,04^{\circ}$	34 m column height with base and architrave
<b>E</b> Accurate vision	$29,2^{\circ}$	137 m basilica – non-interpolated height (dome non-offsetted)
- Binocular vision	$96^{\circ}$	~ the entire composition, framed by the edges of the side walls of Piazza Papa Pio XII

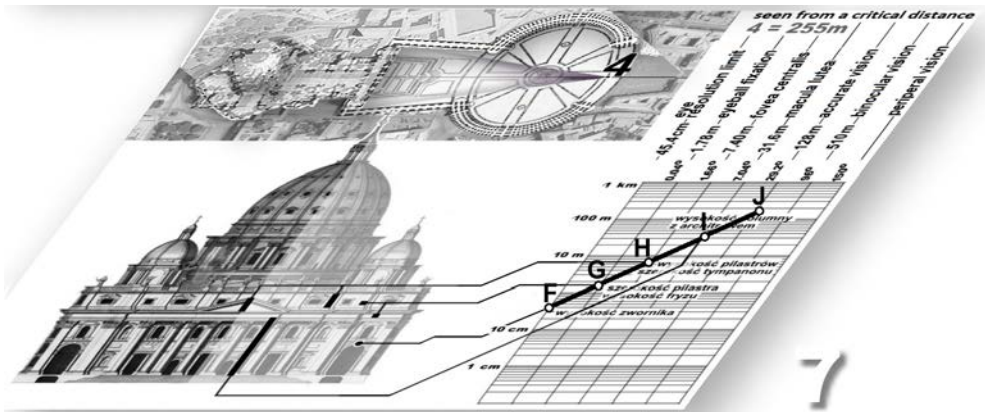


Fig. 4. Card 7. Basilica seen from the farther point on the perimeter of the ellipse of the square. Critical distance 255 m (letter symbols as in the chart):

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance
<b>F</b>	Eye resolution limit	0,01 <sup>0</sup>	45,5 cm height of the keystone of the great arch of the side risalites
<b>G</b>	Eyeball fixation	0,04 <sup>0</sup>	1,79 m width of the pilaster, height of the architrave
<b>H</b>	Fovea centralis	1,66 <sup>0</sup>	7,4 m height of the main frieze pilasters, main tympanum height
<b>I</b>	Macula lutea	7,04 <sup>0</sup>	31,6 m the width of the main tympanum
<b>J</b>	Accurate vision	29,2 <sup>0</sup>	128 m nominal width of the façade

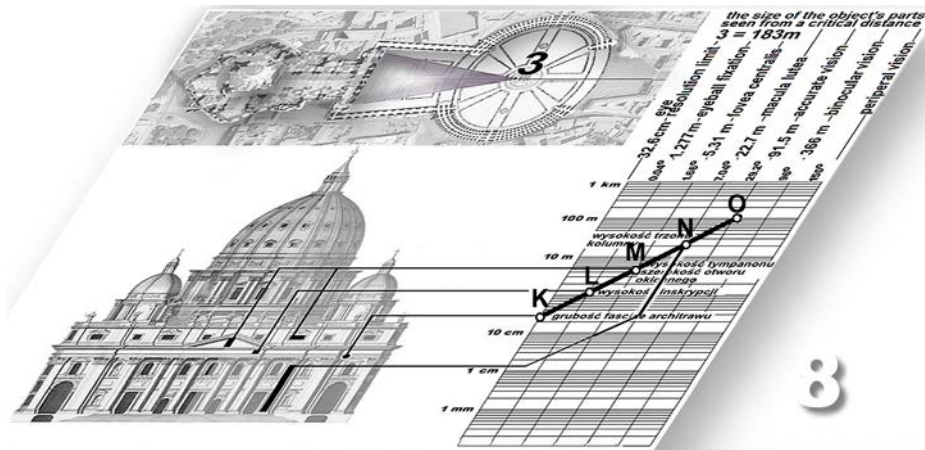


Fig. 5. Card 8. Basilica seen from the center of the elliptical part of the square. Critical distance 183 m (letter symbols as in the chart):

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance
<b>K</b>	Eye resolution limit	$0,01^{\circ}$	32,5 cm thickness of the architrave fasciae
<b>L</b>	Eyeball fixation	$0,04^{\circ}$	1,28 m height of the inscription on the architrave
<b>M</b>	Fovea centralis	$1,66^{\circ}$	5,3 m height of the tympanum field, main frieze window – width
<b>N</b>	Macula lutea	$7,04^{\circ}$	22,7 m column shaft – height, main tympanum – width
<b>O</b>	Accurate vision	$29,2^{\circ}$	91,5 m distance between axes of side risalites, main inlet width
-	Binocular vision	$96^{\circ}$	366 m distance from the entrance of St. Peters square to the façade

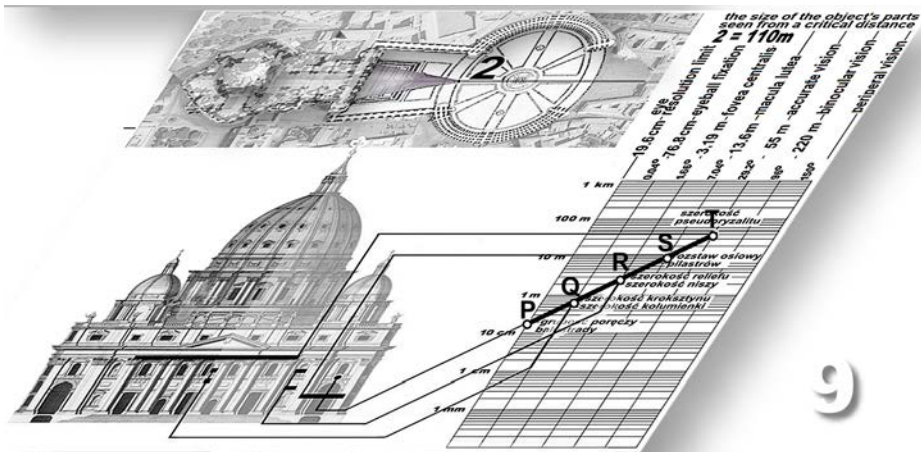


Fig. 5. Card 9. Basilica seen from the closer point on the perimeter of the ellipse of the square. Critical distance 110 m (letter symbols as in the chart):

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
P	Eye resolution limit	0,01 <sup>0</sup>	19,6 cm	thickness of the railing beam
Q	Eyeball fixation	0,04 <sup>0</sup>	76,8 cm	width of the supraport corbel, aediculae column – width
R	Fovea centralis	1,66 <sup>0</sup>	3,2 m	relief in the supraport – width, aedícula – width
S	Macula lutea	7,04 <sup>0</sup>	13,6 m	side risalit module
T	Accurate vision	29,2 <sup>0</sup>	55 m	width of the main risalit, height of the facade
-	Binocular vision	96 <sup>0</sup>	220 m	context: width of the ellipse of the square

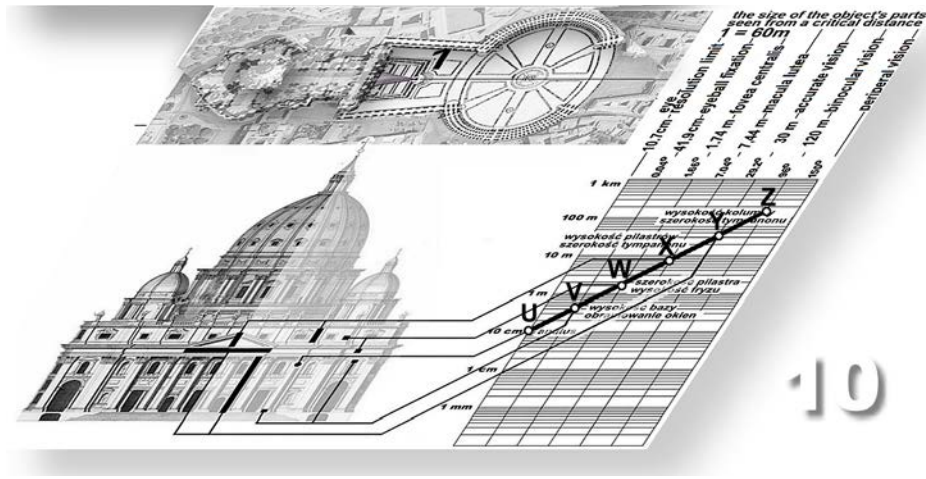


Fig. 5. Card 10. Basilica seen from the axis of the landing of the elliptical stairs. Critical distance 60 m (letter symbols as in the chart):

↓ Field of view zone	angle	the size within the angle as viewed from a critical distance
U	Eye resolution limit	0,01° 10,7 cm anuli
V	Eyeball fixation	0,04° 41,9 cm base height, window frames (aediciae details)
W	Fovea centralis	1,66° 1,74 m width of the frieze pilaster, height of the architrave frieze
X	Macula lutea	7,04° 7,4 m height of the main frieze pilasters, height of the tympanum
Y	Accurate vision	29,2° 30 m tympanum width, column height
Z	Binocular vision	96° 120 m nominal width of the façade

### 3.3. Conclusion

Urban cases discussed above are the part of the research material collected and analyzed by the [PHI] Science Club since 2019. At the current stage of the research, it can be assumed that the assumptions and the proposed morphogenetic thesis are appropriate. As we can see, the measure of order, inherent in the eye subconsciously triggers a sense of harmony, deeply rooted in the unique features of a place. We subconsciously compare what we see with an evolutionarily acquired internal idea – the “universal essence of safety.” This essence embedded in us “appeals to us irresistibly” – in some sense being the same as a Jaspersian idea of an incarnate deity. Therefore, if the seen meets the expected, a feeling of all-encompassing harmony arises in the observer’s consciousness – an analogon of the religious feelings stemming from being in protective power of the Absolute. Genius loci – the good spirit of a place resides in harmonious space. The examples analyzed show that the protective genius loci is a projection of “good” form, projected into the surroundings by the eye and hand of a city designer skilled in shaping urban space.

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Berlin Cathedral, [https://www.google.com/maps/place/Katedra+Berli%C5%84ska/@52.519064,13.3985031,17z/data=!3m2!4b1!5s0x47a851def7ef9763:0xfa6f9f3631793267!4m6!3m5!1s0x47a851def3c2d14b:0x780e68d5b02f8afc!8m2!3d52.5190608!4d13.401078!16zL20vMDJoN3Nf?hl=PL&entry=tu&g\\_ep=EgoyMDI1MDYyMy4yIkkXMDSoASAFQAw%3D%3D](https://www.google.com/maps/place/Katedra+Berli%C5%84ska/@52.519064,13.3985031,17z/data=!3m2!4b1!5s0x47a851def7ef9763:0xfa6f9f3631793267!4m6!3m5!1s0x47a851def3c2d14b:0x780e68d5b02f8afc!8m2!3d52.5190608!4d13.401078!16zL20vMDJoN3Nf?hl=PL&entry=tu&g_ep=EgoyMDI1MDYyMy4yIkkXMDSoASAFQAw%3D%3D) (dostęp: 26.06.2025, 14:58).

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<https://plansmanage.com/far>

## W POSZUKIWANIU GENIUS LOCI

### Streszczenie

W artykule omówiono badania prowadzone od 2019 roku przez Klub [PHI]. Założenia metody badawczej wynikają z ewolucjonizmu estetycznego i dotyczą atawizmu tkwiącego w mechanizmie oceny postrzeganej formy. Powtarzane przez wiele pokoleń homo sapiens wyzwania egzystencjalne udoskonalily ludzkie oko. Nasi przodkowie, napotyając nieznaną formę, zwłaszcza żywą, musieli odgadnąć potencjalny efekt spotkania. W sytuacjach krytycznych dla przetrwania kluczowe było odczytanie zarówno potencji, jak i intencji napotkanego osobnika. Oceny każdego pojawiającego się obiektu należało dokonać natychmiast, z odległości, która nadal pozwalała na ucieczkę, gdyby intencje obserwowanego osobnika okazały się wrogie. Do tego właśnie dostosowała się w toku ewolucji anatomia ludzkiego oka, tworząc nasze pole widzenia jako system stref. Każda strefa jednocześnie izoluje odpowiednie fragmenty obserwowanej formy, automatycznie łączone przez interpretujący mózg w sensowną całość. Ten podświadomy mechanizm rozkładu formy na siatkówce pozwala nam odczytać to, co mówi nam genius loci wszczepiony w przestrzeń. Metoda badawcza polega na zestawieniu wielkości stref (części) badanych form z anatomiczną strukturą pola widzenia.

**Słowa kluczowe:** współzależności we wnętrzach miejskich, arystotelesowska forma genius loci, krytyczny dystans percepcyjny

Katarzyna SŁUCHOCKA<sup>1</sup>, Yulia IVASHKO<sup>2</sup>, Natalia MARCZYŃSKA<sup>3</sup>

## THE COMPOSITION OF THE URBAN ORGANISM: EMPATHETIC CITY – INTUITIVE CITY

The aim of this work is to show the structure of a city perceived as a living organism, responding to the specific needs of particular generation groups, based on rhythmic activities and creating a well-functioning composition. The entire discussion is based on observational, comparative and heuristic methods, as well as emotional perception (direct contact and perceptual reaction). The article is an attempt to initiate a discussion and outline the problem of complexity of an intuitive, empathetic city, in which we can see analogies to a living organism as well as to a composition enclosed in the context of a work of art. This, as a consequence, may contribute to a better understanding and definition of the needs and development processes of contemporary urban spaces.

**Keywords:** composition, city, living organism, rhythm, structure

### 1. INTRODUCTION

We can perceive a city as a living, dynamic organism which, like the human body, has its own functions, structure and character. It is not just a collection of buildings and streets, but a space which, according to Vitruvius' triad, should be *utilitas*, *firmitas* and *venustas*. It is these qualities that inspire our affection, respect and sense of security. Thanks to them, we should feel in the city as if we were in a well-organised organism, a separate entity with its own place and identity. The city reflects the lives and emotions of the people who inhabit it, and the rhythm of the city is its pulse, measured by the pace of life set by its residents, their daily activities, traffic, events and cycles of functioning of the space. The rhythm of the city, apart from its connection with the specific way of life and behaviour of its inhabitants, is closely related to urban composition,

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referring to various aspects of urban planning and organisation. It concerns both the intensity of everyday life and the harmony between various urban elements, such as buildings, streets, parks and public spaces. The importance of ‘identifying accelerations or slowdowns, sometimes stagnation, in the dynamics of urban space transformation, taking into account its full territorial dimension’ is emphasised by K. Heffner, K. Gasidło and A. Klasik, referring to a study by J. Runge,<sup>4</sup> which “considers the concept of the rhythm of the city in complex settlement structures, where it draws attention to the importance of the mismatch between functional, spatial and socio-cultural changes and urban development, when the rhythm is a derivative of supra-local conditions or characteristics of the local economic and socio-cultural space. All this can lead to disharmony in development and a deepening of the state of imbalance.” [Heffner, Gasidło i Klasik 2023: 16]. Harmony is key to creating a functional and friendly space, which means that buildings, streets, parks and other facilities should be designed in a way that promotes their interaction. For example, well-planned public spaces can encourage social gatherings and interactions, while adequate transport infrastructure can facilitate movement around the city. The ability to perform many functions that are important to people in public spaces ‘has a comparable effect on the level of activity’ [Gehl 2009:79], while the level of activity in everyday life refers to how residents interact with urban space and how various factors, such as transport, services, recreation and culture, influence their experiences. The way people move around the city, their habits and how they spend their time create a unique rhythm of urban life, which is growing, driven by communication and globalisation, and the identity of the city ‘is reflected in the way its residents speak, in the way they move around it’ [Sudjic 2017: 105]. Urban space remains connected to people, and the dynamics, actions and instincts of residents translate into its energy. The modern city does not slow down; on the contrary, it rushes forward, often at the expense of deeper contact with space and with oneself. This can lead to frustration, alienation and a lack of deeper interpersonal contact, implying increasing anonymity and a loss of social identity and sense of place. Therefore, observing and implementing effective solutions related to the functioning of urban structures can contribute to improving their quality of functioning, deepening the sense of identity and, consequently, improving the quality of life of residents.

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<sup>4</sup> J. Runge’s study, *Complex settlement system – traditional economic region – socio-cultural space*, provides an extensive discourse on the phenomenon of complex settlement systems, delving into the intricacies of developmental progress and regression in terms of the diversity of directions and trends of change.

## 2. STATE OF RESEARCH / THE ISSUE OF THE CITY AS AN ORGANISM IN LITERATURE

Generally speaking, when discussing the characteristics of a modern city, it can be said that its diversity and variety are largely noticeable. We are dealing with industrial, historical, tourist, financial and academic cities, which, despite similar elements (streets, squares, neighbourhoods), differ from each other in terms of identity, rhythm and function. Contemporary cities are becoming increasingly globalised, often becoming anonymous and uniform, which can cause a sense of lack of belonging and identity. Like the human body, the city struggles with “civilisation diseases”, ages and develops. References to the human body are a popular theme in literature, and in this context, inspirations drawn from the science of the human body, such as the ideas of Harvey or R. Sennett, are interesting, emphasising that a city, like the circulatory and respiratory systems, must have an efficient flow system — communication, movement, energy. The connection with the respiratory and circulatory systems influenced the emergence of new views on public health, which architects implemented in their designs during the Enlightenment. ‘They wanted to create a city where people could move and breathe freely, a city made up of arteries and veins through which people flowed like healthy blood cells’ [Sennett 1996, p. 207]. This had a significant impact on changing expectations and plans related to urban planning. In the context of comparing functioning in architectural space to human life, P. Zumthor expresses himself as follows: ‘Architecture has its own area of existence. It remains in an exceptionally physical relationship with life,’ it is ‘the setting and backdrop for passing life, a sensitive vessel for the rhythm of footsteps on the floor, for concentration at work, for the silence of sleep’ [Zumthor 2020, p. 12]. The words of T. Ganti are also interesting: ‘treating the city as an organism is entirely justified, because this entity, as a functional whole (system), fulfils all the necessary conditions or has the characteristics that a living organism must fulfil (possess)’ [Ganti 1986:21]. They point to considerations regarding the analogy between the structure of a city and an organism, and the mutual resonance between the two. The topic of comparing the structure of a city to the human body is also raised by K. Słuchocka, who points out the similarities: ‘Humans as a species are very similar to each other, but they are separate, individual phenomena. The city was created in their image, which is why it is treated as living tissue and can develop harmoniously and in accordance with its identity, each time constituting, despite many similarities, an autonomous phenomenon’ [Słuchocka 2021: 31]. J. Łapińska also comments on the relationship between the city and the organism: ‘Urban space is created in relation to the body. The dynamism of the city is created by its inhabitants, their life energy and life-sustaining instincts.’ [Łapińska 2017, p. 154], or J. Parysek, attempting to analyse similar features

in refining the definition of the organicist concept of the city [Parysek 2010: 43]. This concept is discussed in D. Masłowski's study, who writes: "Adopting the organicist concept of the city, apart from purely scientific and substantive values, brings with it the possibility of a more accurate understanding of the structure and essence of the city's functioning. Furthermore, it allows for better planning and adaptation of its infrastructure to the needs and expectations of the majority, and, as a result of a long process, even the entire population." [Masłowski 2010: 73]. It seems reasonable to use references to the city as a unit to the organism and to take into account in our considerations the functioning of both on similar, systemic principles, bearing in mind their variability in the context of development, time, technology and the consequences that these factors entail. Looking at all these factors differently, we can assume that we are dealing with successive cycles. In addition, the human organism can be considered an organised composition in terms of its structure and functional capabilities from a spatial and functional point of view, as noted by B. Jałowiecki [Jałowiecki 2018]. We can also refer to the assumption of D. Grzonka, who compares the composition of a city to a network based on visual points – nodes designed to facilitate location and information transfer [Grzonka 2017: 11]. At this point, it is worth referring to the reflections of Kurt Lewin, who coined the term: hodological space – the space of possible movement [Lewin 1934] in which "preferred paths are determined, representing a compromise between several zones, such as 'short distance', 'safety', 'minimum work', 'maximum experience', etc." [Norberg-Schulz 2000: 22]. Yi-Fu Tuan presents an interesting point of view, treating a place in space as a pause in the process of movement of people and animals who do so for specific purposes. 'Such a stop makes a given neighbourhood a centre of value' [Tuan 1987: 175]. Movements occurring in cities, as well as in other spatial systems, have relatively "fixed and easily definable directions. They are characterised by repeatability at specific intervals, e.g. during the year (spring-summer season, autumn-winter season), week (weekend period, working days period), etc. This applies not only to the directions of these movements, but also to their specific intensity" [Gulczyński 1990:25]. Constant movement and change also refer to the broadly understood 'transience and permanence' that Baranowski asks about in his monograph 'Can a city live, and thus be transient, and at the same time remain unchanged, or must it first die in order to live? Experience shows that the city is a place where transience and permanence coexist; neighbourhoods and places that are frequented and bustling with life are bordered by enclaves of poverty that are frozen in hopelessness and decay.' [Baranowski 2009: 23], giving the impression of a constant drive towards healing and full efficiency, restoring neglected structures to full life so that they can once again fulfil their designated roles.

### 3. AN INTUITIVE CITY – A LIVING CITY

Both the human body and urban structures are examples of complex systems the functioning of which is based on the principles of integration, specialisation and communication. This analogy, although symbolic, allows for a deeper understanding of biological survival mechanisms and the design of effective systems. The complexity and adaptability of these structures testify to their remarkable effectiveness, both on a biological and social scale. The structure itself is also important in terms of its nature and quality, which translates into functional intuition related to practical operation.

Treating both structures, human and urban, as organisms, it can be seen that in both cases they are ‘forced’ to operate in a strictly defined manner – they must precisely coordinate all processes in time. For the organism to function properly, biologically important features must proceed without disruption and must not conflict with other equally important processes. Specific coordination allows events to be predicted and organised, and thus to function efficiently. Beneficial coordination will largely be determined by repeatability preceded by trial and error, which, if effective, will pave the way for further activities when repeated many times. These can develop into a rhythmic system of functioning associated with processes that repeat over time and shape particular social and spatial areas. For example, Jerzy Parysek and Lidia Mierzejewska distinguish certain specific rhythms of city functioning, such as: 24-hour, daily, weekly, monthly, annual and random rhythms. They are assigned to them by relevant entities, municipal entities (energy, gas, heating, water supply, sewage, communication, public transport, etc.), security, health, life and property protection units, commercial and service establishments, offices, nurseries, kindergartens, schools of various types, workplaces, sports and recreation facilities, municipal service facilities, recreation facilities, etc. [Parysek, Mierzejewska 2013]. They thus draw attention to the conditioning of the indicated rhythms by ‘the calendar and activities that have been in place for many years, the existence of which also determines the temporal organisation’. [Masłowski 2010:79].

#### 3.1 Rhythm in the functioning of the human body and the urban organism

The repeatability of specific activities can be systematised through the identification of similar groups, e.g. weekly, quarterly, annual rhythms (cycles), daily rhythms, night-time rhythms, considering them in terms of comparing the functioning of the human body and the urban organism. All of them exist in a dependent manner, and the consequences of the events that occur (necessary or inevitable changes, emergencies, etc.) determine the appropriate response. The interdependence of their occurrence links groups of rhythms into a closed cycle (Tables 1a, 1b).

Table 1a. General classification of the body's rhythms in relation to humans

No	Rhythm	Examples	Characteristics
1.	day	daily activities related to work, study, recreation	high-level activities guaranteeing a sense of calm, satisfaction, confidence and balance in daily life; building emotional bonds, cooperation, high energy, physical and mental engagement;
2.	night	time of regeneration	regulating and calming processes, preparing for daily activities; calming down activity;
3.	24-hour	24-hour operating cycle	an alternating pattern of interdependent activities; noticeable consequences resulting from the influence of both rhythms on each other;
4.	weekly	mutually complementary activities, spread over individual days of the week	a pattern of behaviour and activity aimed at fulfilling long-term responsibilities requiring action according to a schedule based on daily, night-time and round-the-clock rhythms;
5.	quarterly	activities related to the changing seasons	a pattern of behaviour and activity aimed at fulfilling long-term responsibilities in accordance with specific atmospheric and environmental conditions, taking into account daily, night-time, 24-hour and weekly rhythms related to external independent factors;
6.	annual	a sequence linking all individual activities into a closed, repeatable 12-month cycle	implementation of long-term objectives based on specific sub-rhythms that take into account the specific nature of the activities assigned to them.

(Source: Katarzyna Słuchocka)

Table 1b. General classification of the body's rhythms in relation to the city

No	Rhythm	Examples	Characteristics
1.	daily	daily activities related to work, study, recreation	Activities related to supporting effective communication, ensuring the provision of appropriate infrastructure enabling the implementation of daily activities, promoting social contacts, service, educational and health-promoting functions, providing a sense of security and comfort of use;
2.	night	Time of regeneration	measures responsible for regulating night-time mode; appropriately adapted residential, service and public utility infrastructure (acoustics, choice of materials, location in relation to needs and values), reduction of traffic concentration, regulation of lighting, preparation for daytime activities;
3.	24-hour	24-hour operating cycle	alternating pattern of interdependent activities; necessary interaction of both individual rhythms to support 24-hour functions; regulation of the level and intensity of activity in adjacent zones; adaptation of the building infrastructure to a 24-hour operating mode (regulation: energy, communication, classification of functions and assigned objects)
4.	weekly	mutually complementary activities, spread over individual days of the week	logistic spatial planning – tailored to complement various functions (activities of various social and professional groups, etc.) related to housing and spatial needs; functioning based on daily, night-time and round-the-clock rhythms – a coupled mechanism of city functioning (facilities, transport, economic facilities, complementary infrastructure)
5.	quarterly	activities related to the changing seasons	adaptation of construction, technical, economic, communication, service, education and workplace infrastructure in accordance with the order of behaviour and activities related to the fulfilment of long-term obligations by residents in accordance with the assumptions of the annual rhythm; taking into account the daily, nightly, 24-hour and weekly rhythms related to external atmospheric and environmental factors;

No	Rhythm	Examples	Characteristics
6.	annual	a sequence linking all individual activities into a closed, repeatable 12-month cycle	long-term planning – adaptation of construction, technical and economic infrastructure, transport, facilities for services, education and workplaces in accordance with the order of behaviour and activities related to the needs and fulfilment of obligations by residents on a 12-month basis; planning that takes into account daily, nightly, 24-hour and weekly rhythms related to external atmospheric and environmental factors; reference to and coordination of works and projects related to the principles of regenerativity, accessibility and inclusiveness.

(Source: Katarzyna Słuchocka)

Considering the general classification of the body's rhythms in relation to humans and cities, one can see analogous connections between elements attributed to the sphere of human behaviour and factors related to design work on building infrastructure. The annual rhythm contains individual fractions of rhythms from shorter time intervals and, as in the case of humans, forms the basis of the order of existence, shaped day by day, with a specific repetitiveness – from daily to twelve-monthly. The city, as a well-thought-out, harmonious composition, should function in such a way as to complement the intertwining needs of humans and their environment – providing shelter from the cold, rain and excessive sun, offering spaces for sleep, work, entertainment and learning, as well as facilitating communication. Due to changing needs related to social and technological development, and above all to awareness, people indicate – and sometimes even force – the need to adapt external infrastructure to their standard of living. Environmental guidelines resulting from the implementation of environmental protection requirements – such as the use of appropriate materials, their recycling or the reduction of losses and costs – are in line with applicable standards and regulations, influencing the continuous transformation of the context in which we operate. The response to emerging needs is development that takes place in rhythmic temporal progress. Building on historical and cultural heritage, previous technical achievements, etc., influences the shape and quality of space, and 'rational consumption of goods and services and an appropriate level of recycling, i.e. reuse and recovery of raw materials, reduces the impact of adverse urban metabolites (pollutants)' [Masłowski 2010: 80].

### 3.2 Generational groups – relationships and needs in urban spaces

Another group characterised by activities in different rhythms are generational groups. Directly resulting from successive developmental cycles, they form communities defined by needs and ways of functioning in time and space. The relationships between them are at different levels of activity and variability, which is related to life trends (political situation, economic situation, standard of living, sense of security), cultural conditions, social activity, common attitudes and social hierarchy, professional activity and bonds. The basis is coexistence, and in particular educational cooperation, building bridges between generations, developing awareness, accompanying change.

What is important is the specific fact of repeatability (rhythmicity) and inevitable changes that carry with them the legacy of the past, which can be used in the future. The variability of the organism determines development, and development as a factor of movement drives – and even obliges – action.

In an urban organism whose development and shaping are based on the principles of inclusiveness and regenerativity, one can see a template borrowed from the natural environment, of which humans are an integral part. Every need has its justification, and in response to it, existing resources are used first, launching remedial programmes. The basis for remedial responses is the definition of the problem, which is based on awareness and knowledge of the functioning of the entire organism, the characteristics of its components and their mutual influence on each other.

For example, generational groups at the opposite ends of the spectrum, despite their significant differences, also have common needs. For example, two selected extreme groups were analysed, including pre-school and school children and elderly people who are professionally inactive (Tab. 2).

Table 2 Needs and collaborative activities for school-age children and elderly individuals who are professionally inactive

No.	Generation	Characteristics of activity / needs	Examples of possible joint activities/everyday activities related to play, learning and leisure;	Characteristics of activity / needs	Generation
1.	Children	play – physical activity	<u>playgrounds / parks / outdoor gyms / exercise rooms in enclosed facilities;</u> – physical activities both indoors and outdoors; – rehabilitation activities; – walks; infrastructure adapted to the needs of both groups;	social activities – physical activity	The silent generation

2.	Children	education	<u>kindergartens, schools, libraries, community centres – therapeutic activities:</u> – workshops involving both groups; – learning how to use digital tools; – foreign language learning; – art and music workshops; – joint preparation and consumption of meals; diverse infrastructure adapted to the needs of both groups;	education	The silent generation
3.	Children	leisure	<u>green areas: gardens, parks:</u> – growing plants together; – caring for animals; – reading together; – participating in performances, shows, concerts;	leisure	The silent generation

Considering the extremely diverse generational groups and their needs and possible activities, they can be viewed in terms of common dependencies which, by complementing each other, bring benefits to each of them. They contribute to strengthening physical activity, mental development, the development and maintenance of social contacts, and prevent social withdrawal.

In an urban environment, responses to identified needs are expressed through appropriately designed infrastructure, adapted for comfortable use, in this case by children and the elderly. The application of accessibility and inclusiveness principles is a fundamental factor in achieving these goals. It is also important to keep up with technological progress, industrial development and the possibilities of using material amenities. The words of Jacek Purchla seem relevant here: ‘Cities, as mirrors of civilisation, are not only the result of centuries of accumulation resulting from the intermingling of cultures, ideas and values, but also the “product” of complex social processes.’ [Purchla 2024:184].

Taking into account the needs and possible activities of generational groups of children and seniors additionally influences the development of awareness, strengthens education, and increases motivation. Similar relationships can be observed in urban structures. Correlations in the field of psychology and social conditions are the driving force behind activities in the areas of space, architecture and urban planning. Both groups require the adaptation of building infrastructure in the context of pursuing innovative solutions that meet the needs of specific users. Mutual needs, understood as shared functions, imply their adaptation with a focus on achieving the expected results. The flow

of information, exchange of experiences and multi-disciplinary cooperation represent a comprehensive approach that allows for the creation of universal, user-friendly and effective solutions for everyone. The structure and functioning of a city based on planning and active architectural design processes can contribute to the effective communication of urban spaces and the efficient management of spatial resources, offering comfort of use, including safety, functional and communication facilities, in accordance with the principles of accessibility and inclusiveness, as well as respect for the natural environment. A holistic approach will imply the healthy and efficient functioning of both structural groups, which are fully co-dependent: human organisms within the urban organism (Graph 1).

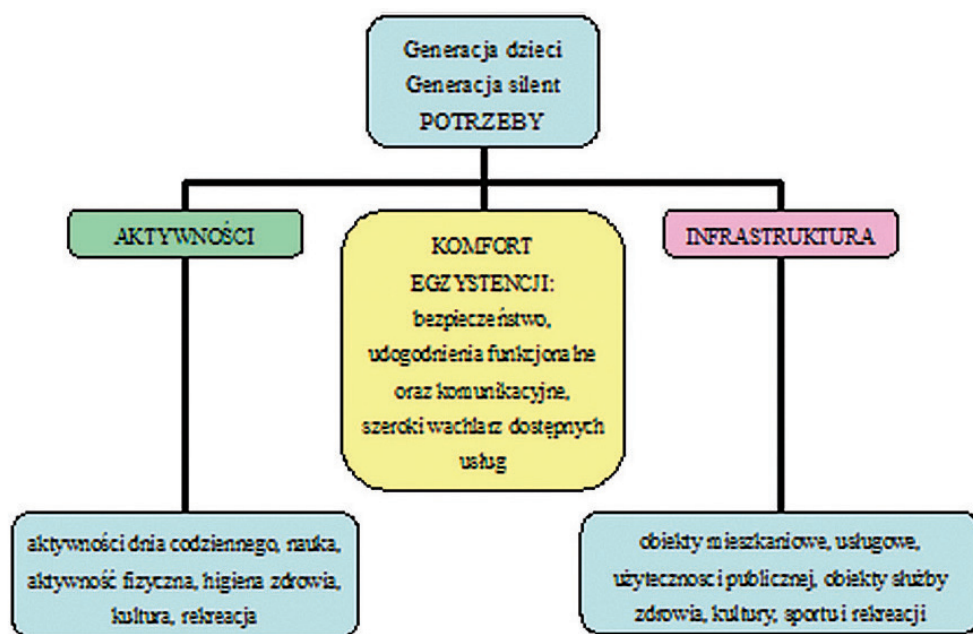


Fig. 1. Summary of the common needs of the children's generation and the silent generation in terms of activities and infrastructure.

A significant set of common elements, i.e. the comfort of existence considered in terms of the possibility of living a dignified life in dignified conditions, is contained in universal solutions that are friendly and effective for everyone, regardless of differences in age, culture, level of education or access to technology. Thus, a properly defined concept of comfort of existence will be a factor of mutual motivation and drive. It can also lead to greater understanding and tolerance, as well as effective identification of problems and definition of needs in the context of design and planning related to the composition of the city.

#### 4. CLOSED COMPOSITION – COMPONENTS OF A COMPASSIONATE CITY

The favourable coordination of all functions that make up the complex operation of the body will largely be determined by their repeatability.

The characteristic repetitiveness manifested in urban space through periodically intensifying trends, choices of direction and setting of goals serves corrective processes. Good information management and the ability to analyse previously applied solutions also serve this purpose. Implementing new ones in their place promotes development trends and raises operating standards (updated processes). ‘When analysing a city, including the multitude of elements that make up this whole, the vast array of diverse relationships connecting the components of the city and connecting these components with their surroundings (the immediate and more distant external zone), as well as the functioning of the city as a human living environment, we have the right, it seems, to treat the city as a system.’ [Masłowski 2010:72]. This type of composition, based on mutual relations, connections between individual zones, and systemic dependencies, seems to be an independent organism in many aspects. In this respect, the composition of individual cities is, in a sense, a closed composition – understood in terms of the structural composition of an artistic work, e.g. a painting, to which nothing can be added or taken away without disturbing the perfection of the arrangement. Similarly, the composition of a city, which encompasses all the elements necessary for its efficient and comfortable functioning, can be compared to an artistic composition, which is an order of components that implies understanding of the content and good reception of the whole.

city ↔ organism ↔ closed composition

Following D. Masłowski’s words once again, it can be said that “the city as a separate entity gains something resembling consciousness – which arises and is shaped by local authorities and communities, but also, like the human organism, acquires certain habits, learns appropriate behaviours, but is also exposed to stagnation in the event of poor management by its administrators and the entire community, and even to regression associated with problems and wrong decisions” [Masłowski 2010:73]. Defining its character, which includes its colour, level of traffic, changes or the leading configuration of functions, shapes the identity of the city. The human organism can be described in a similar way in terms of physical and mental activity, behaviour and style of dress, affiliation with a particular community or group, the realisation of life stages in accordance with a chosen ideology, and, in the case of a city, a development strategy. When talking about the composition of a city, it should be understood as a set of

elements of the urban layout, but also as a set of so-called sympathetic elements, which constitute an additional dimension perceived beyond the physical possibility of experiencing space. These include, for example, a set of colours representing a given city or district (green areas, built-up areas – colours of buildings, etc.), smells that create the right atmosphere, sounds generated by traffic intensity and weather conditions related to the space. Sympathetic elements, perceived by users through their senses, constitute a set of indicators that can draw attention due to their deviation from the accepted standards associated with a given space. Sympathetic elements can stimulate activity that implies appropriate reactions leading to the mobilisation of the body. This, in turn, is related to the body's ability to maintain a stable internal environment despite changing external conditions.

sympathetic elements ↔ components of the urban system ↔ sensory response

When analysing a selected city, where “we breathe the atmosphere of the place, hear the sounds that belong to it, feel how they are reflected by the invisible houses behind us” [Rasmussen 1999, p. 40], we can accept the perceived state, but also feel it as something foreign to us. This phenomenon can be described as the **adaptive reuse of space**, which should be understood as the willingness and ability to accept the existing conditions offered by a given space (urban composition) or to take action to adapt a given space (urban composition) to one's own needs or those of the entire community.

adaptive reuse of space ↔ development proces

Reversible adaptation of a place encompasses a range of processes, including revitalisation, revaluation and regeneration. These processes are collectively aimed at implementing remedial and preventive measures. This list includes such activities as the strengthening of adaptive, restorative and integrative capacities in terms of aesthetics, the comfort of use, economic and social situation (revitalisation), the restoration of historical resources to their former appearance and utility value (revaluation), the active rebuilding of ecosystems, the strengthening of the health of natural environments and the adaptation to climate change. Activities undertaken for the benefit of the socio-economic-ecological system are those which are designed to improve conditions for the future of our existence and ourselves. The necessity of such activities is clear in the face of the accelerating degradation of the environment and social and economic systems, just as it is necessary to change patterns of thinking and behaviour. The underlying principle of these activities is to enhance awareness and sensitivity regarding the state of our surrounding reality. This may potentially result in an increased commitment to the restoration and improvement of public spaces and all ecosystems.

## 5. EMPATHIC CITY – HUMANITARIAN/ACCESSIBLE CITY'

Homo sapiens possess the capacity for adaptation to prevailing circumstances, the recognition of necessities and the resolution of issues. It is evident that empathy plays a pivotal role in these processes. The concept of empathy is multifaceted and understood in two primary ways. Firstly, it is perceived as 'the ability to understand the roles played by other people, and as the ability to see social situations and one's own actions from one's own perspective and that of others, and the ability to coordinate these two perspectives simultaneously' [Kliś 2012:150]. With a particular emphasis on the structural and functional characteristics of the city, a certain analogy with human behaviour becomes apparent. In the context of human relations, empathy facilitates understanding, fosters identification with others, enables the recognition of motivations, and encourages effective dialogue at both the interpersonal and societal levels. This paper posits that by situating empathy as the foundational keystone, it will engender positive conduct and culminate in efficacious resolutions. This construct fosters a depiction of individuals who, guided by empathy, can collaboratively engender the optimal conditions for existence. It is posited that they are able to adopt a mediatorial role, facilitating processes of mitigation, conflict resolution and effective, progressive functioning, both individually and collectively. Such reactions have been shown to occur in instances of direct interpersonal contact, a form of interaction that enables learning, feeling and reacting. This reaction may include positive responses that are conducive to the resolution of difficult issues, disputes and even the counteraction of conflicts.

empathy ↔ reaction ↔ cooperation / action for one's benefit

Thus, within the structure of the city, we can find components similar to empathy, which is classified as a sympathetic component. These are systemic capabilities that enable change, adaptation to the right development strategy, and flexible (soft) systems in the sense of adaptation to the changing conditions and needs of the city. They play an important role in the phenomenon of reversible adaptation of a place, implying progressive activities in the city in relation to the composition – residents and context – in which they live. They are helpful in implementing specific tasks and courses of action, in adapting to newly emerging external requirements. They are also important in the processes of monitoring progress using pre-defined indicators, in the processes of synchronisation and harmonisation of the tools and procedures used. The process of identifying issues that are important to the community and shaping the building infrastructure to support their daily activities – work, study, entertainment, etc. – is the beginning of changes that directly affect

users and the environment. It entails activities that initiate development in the areas of perception, experience, response and action in space in order to improve or change its character, to make it better. These activities, resulting, among other things, from empathy, generate further needs and indicate possible directions for cooperation for the benefit of users and space. The establishment of guidelines pertaining to accessibility is imperative in the creation of an environment that caters to the requirements of all user groups. This is achieved through the definition and reinforcement of established rules, thereby ensuring the accessibility of the environment. Concurrently, the facilitation of transformation is essential in accommodating emerging needs, trends and new tools. This is accomplished through the opening up and paving of the way for the transformation to continue in line with the aforementioned factors. Urban regenerative transformation, as theorised by Jerzy Hausner in his study [Hausner 2023], occurs across multiple levels in a concurrent manner. As well as bio-organic, economic and political regeneration, social regeneration is also a significant component of the overall regeneration process. Indeed, social regeneration is predicated on the notion of empathy, which enables the identification of needs and the opportunities to meet them. The activities that have been initiated (e.g. associations and community actions) contribute to the development of the organisational and structural potential of the city. This, in turn, can serve as an indicator of the direction in which the necessary work should be undertaken. It is evident that grassroots initiatives, stemming from the discernible necessities and indications of individual units, possess the capacity to effect alterations in comprehensive structures within urban areas. This phenomenon is referred to as urban feedback adaptation. The smallest link can be considered a successful building block in the context of urban activities, provided that it identifies a conducive foundation for understanding, acceptance and discussion. This foundation must be supported by tolerance and openness in order to facilitate the emergence of empathetic urban activities. Hausner (2024:190) asserts that there is an imperative to formulate a ‘new concept of thinking about urbanity’, which is to strive for the most effective form of organising urban life, particularly in the context of the city as a heritage, which constitutes a rich base in terms of artefacts, experiences and knowledge. As Rewers (n.d.) posits, ‘urban space is the subject of interdisciplinary research creating an unlimited number of intertwining perspectives and research levels, because it is segmented by national memory and integrated by transnational imagination.’ As Rewers (2005: 208) notes, it is important to emphasise that the potential for change to occur gradually and for this to be attributed to social groups, indicates the following dynamic changes in the urban organism, in which man – an element of identity in the closed composition of the city – is its supreme value.

## 6. CONCLUSIONS

### 1. The city as an organism

The concept of the city as an organism facilitates a more profound comprehension of its intricate structure and functions. This paradigm enables the formulation of more sustainable, well-designed and functional urban spaces.

### 2. Rhythm and cyclicity

A plethora of research has demonstrated that both the human organism and the city operate in rhythms: daily, nightly, weekly, seasonal, and annual. Arguably, the repetitiveness of these rhythms is crucial for harmonious social and spatial development.

### 3. The application of empathy in urban design

A city that is designed with empathy is one that caters to the diverse needs of its inhabitants, thereby facilitating their comprehensive engagement in societal activities. Consequently, the capacity to empathise with the requirements of others is enhanced, which in turn can be reflected in the configuration of urban spaces.

### 4. Closed composition

The city is designed to achieve internal coherence – each of its elements should interact with others in a rhythmic, balanced cycle, responding to the needs of users and the environment.

A city is considered a closed composition when it is in perfect order. Such a city is a structure based on mutual systemic dependencies, whereby each part functions in relation to the whole, and changes in one area must be integrated into the rhythm of the entire system.

### 5. Feedback adaptation of place

The mechanism by which users influence space, and conversely, space influences their behaviour, is referred to as ‘feedback adaptation of place’. This concept necessitates an ongoing dialogue between the designer and the community, encompassing both the functional and the emotional/sensory dimensions of the built environment.

### 6. A city that is inclusive and regenerative

The notion of sustainable urban development necessitates the integration of tenets pertaining to inclusivity, regenerativity and adaptability, thereby enabling responses to climate, social and technological transformations. When meticulously conceptualised, infrastructure has the potential to foster intergenerational collaboration and fortify urban identity.

### 7. Revitalisation, revaluation and regeneration processes

The integration of these processes with the concept of the ‘city as a living organism’ is imperative. This should not only entail the recreation of forms, but also address the social, environmental and functional ‘diseases’ afflicting the urban fabric.

8. **The city of the future is conceived as an empathetic, regenerative and systemically organised entity.** It is designed on the basis of biological, social and

environmental knowledge, incorporating cyclicity, emotionality and a holistic approach to space.

## 7. SUMMARY

This work presents the city as a complex, dynamic system that functions on the basis of rhythmic, interrelated processes and common mechanisms of functioning, in a manner analogous to the human organism. The relationships between areas of activity and identified needs shape their present and future forms in both the city and the living organism. This paper sets out the hypothesis that an analysis of the urban structure can be usefully undertaken through the prism of biological analogy and artistic composition. It argues that such an analysis should focus on aspects such as the rhythm of functioning, regeneration, communication, adaptation and integration of functions in the appropriate order.

The city is presented as a living organism – it is responsive, learning, capable of change. In this paradigm, empathy is shown to play a special role as a factor that binds social and spatial activities together, enabling the design of an accessible, inclusive and humane city. Empathy may also be defined as the capacity of a city to respond to the needs of its inhabitants, functioning as a mechanism that supports the harmonious development of urban space. The concept of an empathetic city entails ensuring the safety and comfort of its residents, while also fostering social integration and environmental regeneration. The repetitive rhythms of daily life and intergenerational relationships, such as those between children and seniors, and their implications for the shape of urban space, play a significant role in the city's functioning.

A comparative approach, when employed in conjunction with an analysis of the rhythms of the functioning of the organism and the city, facilitates a more profound comprehension of the mechanisms that govern urban space. The city, as a closed composition, becomes a reflection of social needs, values and relationships, and that its development is a response to changing external and internal conditions. Furthermore, the city is composed of physical and 'sympathetic' elements, perceived by users sensually and emotionally, and that it is thus a system of interdependent elements, capable of transformation and adaptation.

This article seeks to add to the ongoing discourse on the future of cities as distinct, closed compositions and organisms that respond to the evolving needs and challenges of the modern world. The observational, comparative and emotional methods employed in this study indicate the profound relationship between humans and urban space – a well-conceived composition. Further research in this area has the potential to establish a robust foundation for the development of comprehensive models that inform the planning and design of urban spaces.

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1. An overview of the shared requirements of the children's generation and the silent generation with respect to activities and infrastructure, author K. Słuchocka.

### TABLES

1. Table 1a. General classification of the body's rhythms in relation to humans.
2. Table 1b. General classification of the body's rhythms in relation to the city.
3. Table 2. Needs and collaborative activities for school-age children and elderly individuals who are professionally inactive.

## KOMPOZYCJA ORGANIZMU MIEJSKIEGO. MIASTO EMPATYCZNE – MIASTO INTUICYJNE

### Streszczenie

Celem pracy jest ukazanie struktury miasta postrzeganego jako organizm żywy odpowiadający na celowane potrzeby konkretnych grup pokolenio-wych, oparty na rytmicznych działaniach i tworzący dobrze funkcjonującą kompozycję. Całość dywagacji osadzona została w ramach zastosowanej metody obserwacyjnej, porównawczej, heurystycznej, także emocjonalnym odbiorze (bezpośredni kontakt i reakcja percepcyjna). Artykuł jest próbą podjęcia dyskusji i nakreślenia problemu złożoności miasta intuicyjnego, empatycznego, w którym zauważyć możemy analogie do organizmu żywego, jak i do kompozycji zamkniętej w kontekście dzieła artystycznego, co w konsekwencji, może przyczynić się do lepszego zrozumienia i definiowania potrzeb oraz procesów rozwojowych współczesnych przestrzeni miejskich.

**Słowa kluczowe:** kompozycja, miasto, organizm żywy, rytm, struktura



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## URBAN AND ARCHITECTURAL STRUCTURE: COHERENCE AND ORDER SPACE. THE EXAMPLE OF POZNAŃ

Uncontrolled urban growth and the increasing spatial disorder of modern cities are widespread phenomena. Given the evident problems associated with the diminishing clarity of urban centers and threats to their efficient functioning, it is essential to preserve the urban and architectural structures that maintain spatial balance. The problem lies in the loss of clarity of composition, as well as the contrasts in building scale and the excessive diversity of architectural forms. Given these trends, the need to protect urban and architectural structures that determine spatial balance and order seems justified. These are most often historical complexes composed of buildings of exceptional architectural value. Such structures serve as “strong forms” – not only symbolically significant but also critical in shaping and organizing the urban fabric. They provide a distinct urban character and play a key role in defining the identity of cities. Investments in these areas are inherently complex and carry significant risks. They demand thorough preparation, in-depth analysis, and interdisciplinary research involving experts from various fields. The introduction of excessively avant-garde solutions can undermine existing values and damage the city’s image, sometimes with long-lasting consequences. In such cases, it is advisable to adhere to the principle of continuity – skillfully integrating the past with the present while thoughtfully anticipating the future impacts of today’s decisions.

**Keywords:** urban and architectural structures, transformations of urban space, spatial order

### 1. INTRODUCTION

The freedom to shape the spatial form of contemporary cities is steadily increasing, while their complexity continues to grow. Urban structures are often created

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without clear rules, defining features, or recognizable boundaries. This lack of coherence is compounded by the degradation of existing systems, the neglect of established values, and the introduction of buildings that feel alien to their surroundings. In an era saturated with information, spatial legibility becomes increasingly difficult. As Sumień observed, “There is a noticeable spatial anarchy and a progressive crisis in the broadly understood form of the city, as well as the functional and organizational conflicts that result from them” [Sumień 1989]. New developments frequently dominate or overwhelm historical environments, both in scale and visual impact. Aesthetic considerations in planning are being pushed aside in favor of economic and technical priorities. The art of composing space – once central to urban design – is now regarded as outdated and is gradually being marginalized. Efforts to pursue spatial homogeneity and coherence are often dismissed as futile in the face of rapid urban change.

As a result, fundamental qualities of urban space are disappearing: the hierarchy of meanings, spatial closure and balance, sequential spatial experiences, and the principle of harmony. Original relationships between elements of the urban structure are increasingly lost under the pressure of various influences. What emerges is a process of urban entropy, marked by blurred boundaries, fragmentation, and the erosion or replacement of core components of the urban fabric [Karpiński 1986]. Development efforts now tend to focus on isolated sites with little regard for broader urban context. A dominant trend is the pursuit of “showcase architecture” designed to generate media attention. Such buildings aim to shock, becoming instantly recognizable and widely discussed. As one architect noted: “There is something to show and something to see, something to talk about” [D. Perrault in conversation with B. Paszowski, in: *Dokąd...* 2005, p. 49]. Bonenberg adds: “Fashionable architecture does not have to be functional, durable, or logical. Above all, it should attract attention, be well-known, and widely discussed. Its advantages are shaped by online opinion. Traditional, professional evaluation criteria are no longer relevant” [Bonenberg 2014, p. 97].

Visionary architectural proposals are often misunderstood by the public. Increasingly, it is the structure itself – detached from context, function, or technology – that becomes the dominant feature of architecture. On the other hand, avant-garde projects that break existing conventions and stereotypes are appreciated. Formally bold structures enrich the cityscape and, in some cases, increase its attractiveness. Urban spaces are expected to provide aesthetic experiences of the highest order. That is why layouts with very spectacular solutions are created. Their main task is to seduce, attract, and shock [Baudrillard 2005]. Actions of this type raise doubts. It seems that the problem in this case is not the restriction of architects’ artistic freedom. It is important to follow the rules that should apply in an urban environment. It is important to be aware of order and clear relationships between elements at the level of general urban planning decisions. “Architecture that screams is good for one or two buildings in a city. A city cannot consist solely of iconic

buildings, because then they would all lose their meaning” [G. Murcut in conversation with B. Andersen, in: *Dokąd...* 2005, p. 43]. According to J. Gyurkovich, “the urban structures of contemporary cities are too complex spatial organisms due to their complexity, vastness, and multitude of elements to maintain the unambiguous clarity of layout that characterized the historic city centers of European cities and which they have retained to this day. The clarity arose from the consistent language of the spatial forms that shaped the city’s structures and the precise definition of their component boundaries.” [Gyurkovich 1999, p. 50]. According to J. Rykwert, “the contemporary city is excessively fragmented, full of contrasts and frictions and therefore it must have many faces – one is not enough” [Rykwert 2013, p.25]. In response to increasingly noticeable problems, calls are emerging to bring order to cities descending into chaos. Many of these refer to classical principles of spatial design that utilize historically proven elements.

## 2. URBAN AND ARCHITECTURAL STRUCTURES

Urban space consists of structures that integrate urban planning concepts, architectural complexes, individual buildings, green areas, and transport and technical infrastructure. These layouts are the result of interdependencies that have developed over centuries. Particularly noteworthy are those functioning as overarching systems. They stand out from their surroundings in terms of location, type of development, and program. These include historical formations such as old town centers, market squares, parks, and main streets. They define the distinctiveness, originality, and unique character of the urban fabric. Such systems represent so-called strong forms – structures resistant to transformation. As elementary compositions, spatial sequences, and crystallizing elements, they form the structural framework of urban layouts [Buszkiewicz 1990].

In light of the trends outlined above, one of the key conditions for the proper functioning of cities is the protection of structures that serve as points of reference – essential for maintaining spatial and functional balance in the broadest sense. These foundational elements ensure the legibility of urban environments. They shape the diversity, aesthetic quality, and directions of development. Urban and architectural structures play a vital role in reinforcing identity and shaping the image of urban centers. Initiatives in this area vary and are tailored to local needs. A common strategy for building identity involves creating so-called spatial distinctions – highlighting places characterized by valuable and unique architecture. Such efforts aim to communicate the city’s “personality,” understood as the sum of its distinguishing features [Stanowicka-Traczyk 2008]. Urban and architectural structures are becoming increasingly important components of city marketing strategies. This is particularly relevant in the context of growing competition between cities. These trends are linked to the development of individual urban centers which, in their efforts

to attract investors and tourists – as well as to meet the expectations of their residents – strive to build and promote their brand. To this end, attractive, far-reaching, and memorable concepts are created that become identifiable to users. Their presence is also significant in the context of sustainable development. Amid growing cultural and social diversity, these structures serve as spaces of tolerance and co-existence – places where different values can intersect. In the face of ongoing transformations – globalization, gentrification, suburbanization, and hybridization – it is essential to preserve clear urban layouts that enable harmonious development. In processes of urban transformation, these structures serve as valuable planning tools with important compositional, functional, and social roles.

The aim of the author’s research is to determine the role of selected architectural and urban structures in the development process and transformation of urban space. The analyses conducted focus on Poznań. It features numerous such developments with exceptional values and a significant impact on their surroundings. The content of this article is a comparative inquiry – it provides a closer look at the environment, identifies current problems accompanying the investment processes in selected zones, and provides a critical voice in the discussion on the directions and principles of urban planning.

### **3. PROBLEMS, INTERFERENCES AND THREATS**

Urban development is inevitably accompanied by spatial and functional changes, particularly through the addition of new elements to existing structures. Challenges arise when investment processes target sensitive areas – such as historic centers or compositionally complete layouts of high urban and architectural value. The key question is how to introduce contemporary forms into the urban fabric without compromising what is already valuable. Architectural and investor proposals are often met with critical scrutiny, and in many cases, such skepticism is well-founded. Negative assessments during the conceptual phase can help prevent implementations that would degrade important urban or architectural compositions. It is essential to remain aware of the long-term consequences of poor planning or design decisions. Such missteps are not only difficult to reverse, but worse, they can initiate a chain reaction of subsequent errors – the so-called domino effect. Poznań offers numerous examples that illustrate these kinds of issues and their broader impact on the urban landscape.

The presented material is a continuation of the author’s research contained in a monograph on the role of urban and architectural structures in the transformation of contemporary cities. Another source of inspiration for the discussion was the analysis of the results of architectural competitions concerning the most important urban zones – Ostrów Tumski, the Old Market Square and the area around Freedom Square and Karola Marcinkowskiego Avenue.

## OSTRÓW TUMSKI

The planned development of the northern part of Ostrów Tumski has generated significant controversy. Ostrów Tumski holds profound symbolic importance, connected not only to the history of Poznań but also to the origins of Polish statehood. The area is dominated by sacred architecture, characterized by strong, monumental forms. It serves both as a site of religious worship and as a major tourist attraction. According to plans prepared by the Municipal Urban Planning Studio, a new district with nine-story residential buildings is to be constructed in the immediate vicinity of Ostrów Tumski. A development of this scale would introduce a clear spatial dissonance, negatively affecting the visual prominence of one of Poznań's most valuable urban and architectural complexes. It would contribute to the devaluation of a part of the city that holds critical historical and cultural significance. The potential damage caused by an ill-considered investment of this kind would be irreparable. Concerns extend beyond the scale of the proposed development to its modernist character, which appears incompatible with the site's context. In this particular case, it seems more appropriate to introduce a structure that reflects the traditional downtown typology – specifically, quarter-block development schemes.

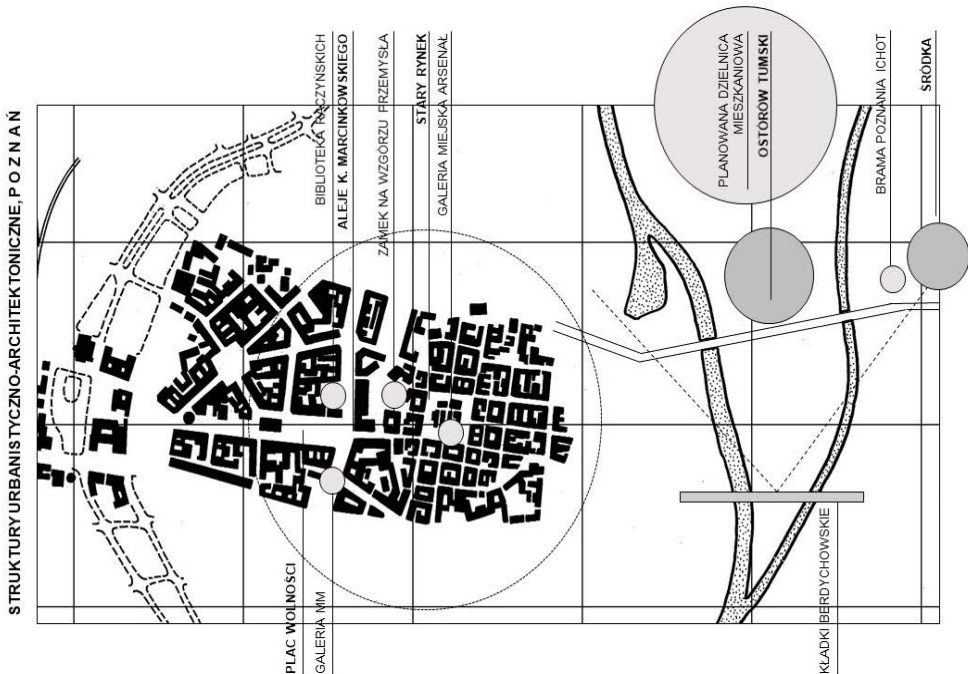


Fig. 1. Poznań, selected urban and architectural structures (drawing: author)

To enhance architectural quality and avoid monotony or uniformity, architectural competitions should be organized. These competitions ought to be conducted under jointly established guidelines, based on a catalog of solutions that reflect the site's unique character. The case of Ostrów Tumski is exceptional due to the area's extraordinary role in shaping the identity of the city and the necessity of preserving the symbolic dimension of this historically and culturally significant space. The Interactive Center for the History of Ostrów Tumski, known as the Gate of Poznań (designed by D Artis), has been a source of controversy since its inception. The building elicits strong and divided opinions due to its minimalist, even ascetic form. For many, such an approach is unacceptable in the context of the surrounding historical environment; for others, it represents a bold and successful attempt to revitalize urban space through contemporary architecture. Situated opposite the cathedral on the far bank of the Cybina River, the building's location has contributed positively to the revitalization of tourism – not only in Ostrów Tumski but, more importantly, in Śródka, a historically significant yet long-neglected part of the city. This once-declining area has been given new life and has become a prominent destination on Poznań's tourist map. The concept of introducing a structure that deliberately contrasts with its context draws inspiration from the Guggenheim Museum in Bilbao. However, the impact in Poznań is not as spectacular as in F. Gehry's iconic project. Beyond the architectural value of the building itself, the organization of the entire complex is also noteworthy. Particularly commendable are the access solutions and the internal circulation layout. The building is designed to establish visual connections with the urban complex of Ostrów Tumski and, most importantly, with the cathedral. In doing so, the designers aimed to symbolically underscore the relationship between the past and the present.

When considering investment activities in the Ostrów Tumski area, it is worth highlighting one more project. Although not directly part of the historic site, its unique location allows it to be perceived as an extension of the area. This is the recently opened Berdychowskie Footbridges, designed by architect J. Gurawski and his team. These pedestrian and bicycle bridges connect the banks of the Warta and Cybina rivers, serving not only as important transit routes but also as vantage points from which to admire the landscape of Ostrów Tumski. From the south, the footbridges create a kind of landscape frame, within which the cathedral and its surrounding buildings are visually inscribed. The construction of these riverside connections has had a highly positive impact on the vitality of this part of the city. It has revitalized the park area located in the former Warta riverbed as well as Kontener-art, a popular venue and meeting place for artistic events. The footbridges also complement the Wartostrada bicycle route running along the riverbanks, which has been under development for several years.

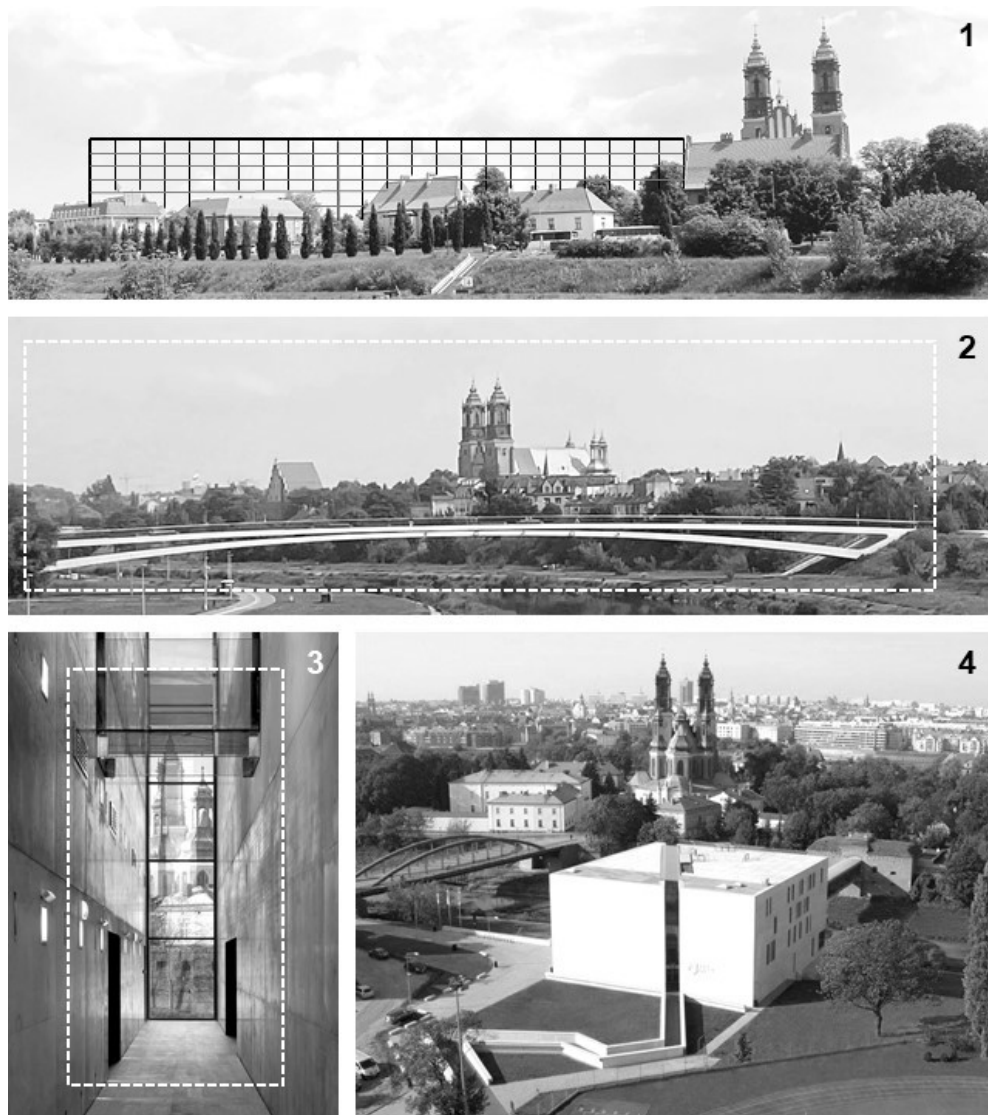


Fig. 2. Poznań: 1 – Ostrów Tumski with the outline of the planned residential development in the background (photo, drawing: author), 2 – View of the cathedral and the Berdychowskie Footbridges (photo: author), 3, 4 – Poznań Gate designed by D Artis (photo: author, (drawing source: <https://www.vedag.pl/referencje/206-poznan-ichot>))

### OLD MARKET SQUARE

For centuries, the Old Market Square has been Poznań's most important public space. Rebuilt after wartime damage, the Old Town complex – designed by

architect Z. Zieliński – forms a coherent and complete composition. The only architectural outlier within this layout is the Arsen Municipal Gallery building, located within the market square block (designed by architects J. Cieřliński, Z. Lutomski, and R. Pawulanka). Due to the lack of detailed information about the historic cloth hall that once stood there, a modernist structure was chosen. In the mid-1950s, this was a bold and innovative decision. Since its construction, the building has remained controversial. For some, it represents a positive dialogue between history and the present; for others, it is an architectural and aesthetic misstep.

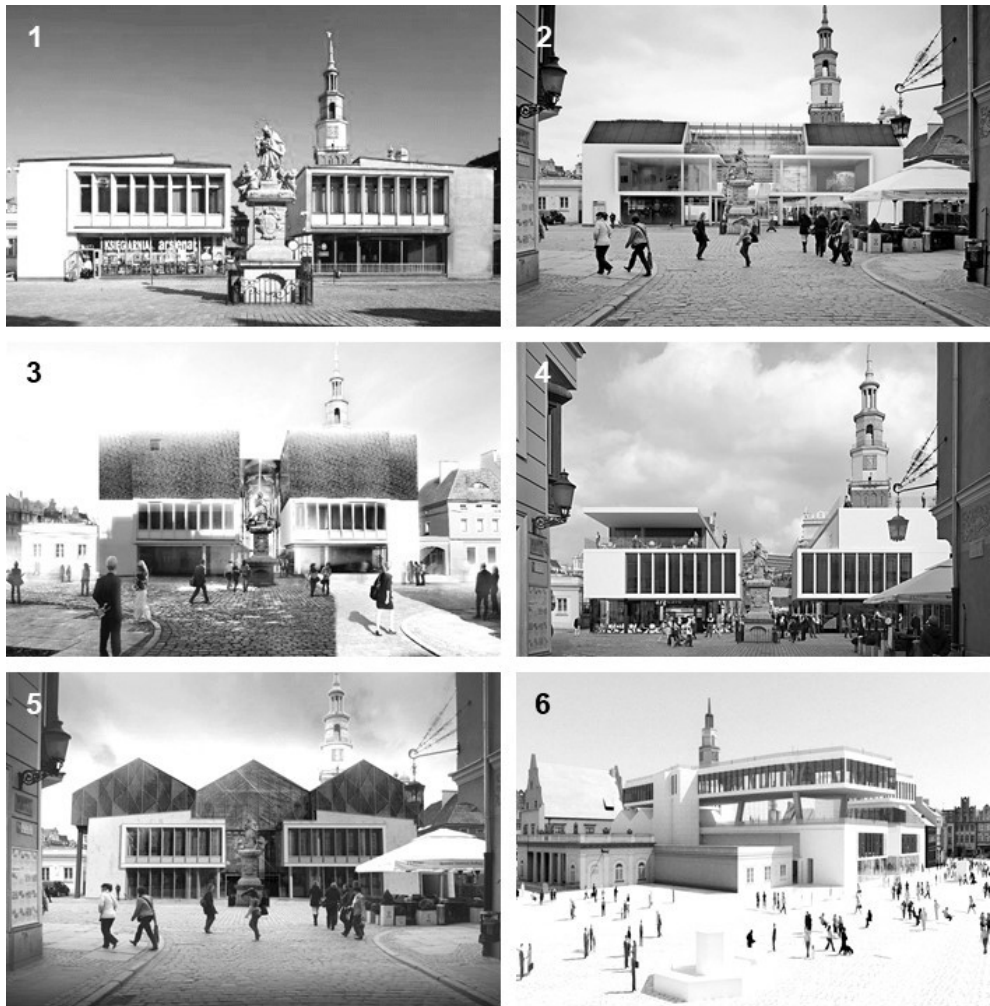


Fig. 3. Poznań, Old Market Square, Arsen Municipal Gallery: 1 – existing state (photo: author), 2–6 – expansion concepts (source: <https://architektura.info>)

Criticism and the desire to enhance the image of this representative urban space prompted a competition to redesign the Arsenal building a few years ago. However, the results proved disappointing. The architects' proposals sparked even stronger emotions and negative assessments than the existing structure. Most concepts intensified the existing spatial chaos, often incorporating fashionable details alien to the site. Many designs featured excessive dynamism and exaggerated articulation, leading to an unfavorable change in scale and a consequent lack of harmony with the surroundings. In seeking originality, the architects prioritized distinction over continuity. Ultimately, the decision was made to abandon the reconstruction. This episode underscored the difficulty and risk involved in supplementing historic urban structures with new architectural forms. Attempts to remedy past mistakes do not always succeed and are not always feasible.

In this context, one might ask: is it preferable to imitate history and create a so-called retroversion in such specific urban areas? The reconstruction of Przemysł Castle presents a case somewhat similar to that of the Arsenal. The lack of detailed archival data cast doubt on the accuracy of the adopted architectural guidelines. Nonetheless, the castle reconstruction committee decided to pursue a historicist version of the building. Designers participating in the competition were required to adhere to these guidelines, relying on research hypotheses that were often unconfirmed by concrete evidence. As a result, the proposals represented more of an imaginative vision of what might have been rather than a faithful restoration of what actually was. Many submissions – including the winning and subsequently implemented design – featured a blend of elements from different historical periods.

The final outcome did not satisfy everyone. Critics pointed to the questionable reliability of the historical analyses underpinning the competition's framework. Media commentary frequently described the building as overly "fairytale-like" and naïve. Defenders, however, argued that over time the castle would simply become one of many buildings within the Old Town complex, with its authenticity no longer a subject of debate. These arguments carry a certain weight. Alongside these critical voices, an alternative proposal emerged advocating a radically different approach. J. Kozakiewicz's concept envisaged a modernist structure with large windows and an observation deck – named *Punctum* – on the hill. Both approaches found both supporters and detractors. In their assessments, comparisons were often made to the Arsenal's history, illustrating how introducing avant-garde architecture does not always harmonize well with historical surroundings.

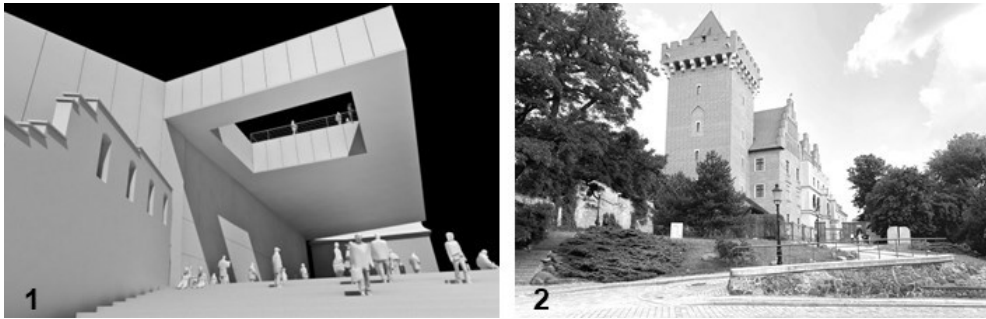


Fig. 4. Poznań, Przemys Hill: 1 – Punctum designed by J. Kozakiewicz (source: <https://owentic.com>), 2 – Przemys II Castle designed by W. Milewski (photo: author)

### FREEDOM SQUARE (PLAC WOLNOŚCI)

The urban and architectural composition of Freedom Square and Karola Marcinkowskiego Avenue is one of Poznań’s most distinctive features. The history of this space has been documented in numerous studies. In recent years, several new buildings have been added, each influencing the overall image of the complex to varying degrees. The area’s regular layout owes much of its representative character to its simple, orderly architecture – an architecture defined by rhythm and hierarchy. The compactness of the space is further emphasized by the arrangement of greenery and small architectural details.

Recently, two buildings with starkly contrasting forms have emerged, reflecting two different design philosophies. The first is the extension of the Raczyński Library, an iconic Poznań landmark whose neoclassical faade has symbolized the city for nearly two centuries. The design of the library’s north wing (by JEMS architects) was preceded by careful compositional studies. The architecture, faade articulation, and proportions of the new section are not accidental but the result of rigorous research and a skillful reinterpretation of historical principles through the lens of contemporary architecture. The new addition is clearly subordinate to the original building, maintaining a distinctly modern character while thoughtfully referencing the historic structure. The result is a compositionally coherent whole that harmoniously blends two distinct parts. This project exemplifies the importance of analytical rigor and well-founded conclusions in achieving valuable architectural outcomes.

The second notable building on Karola Marcinkowskiego Avenue is the MM Gallery (designed by Studio ADS), which opened in 2013. Its program extends beyond retail, comprising a multifunctional complex that includes shops, services, recreational areas, office spaces, and a three-level underground parking garage.



Fig. 5. Poznań, Plac Wolności (Freedom Square), Karola Marcinkowskiego Avenue:  
1 – Extension of the Raczyński Library, designed by JEMS Architekci (photo: author), 2 –  
MM Gallery, designed by Studio ADS (photo: author)

This diverse mix allowed for considerable freedom in the building's design. The architects opted for a bold, albeit risky, deconstructivist approach. A striking feature is the main entrance, marked by a dynamically emphasized corner facing Karola Marcinkowskiego Avenue. This assertive detail closes the compositional axis of the avenue on the south side, sharply contrasting with the orderly façades of the surrounding historic buildings. The rest of the building presents a very different

character: the walls are largely windowless and clad in a material with a distinctive “pulsating” articulation. This treatment alters both the scale and proportions relative to the neighboring structures in the city center. The architecture unmistakably stands apart from its environment. This pronounced visibility has sparked considerable criticism – not only from Poznań’s residents but also from a wider audience. The MM Gallery was even nominated in 2013 for the competition recognizing the worst architectural projects in Poland, where it ranked a notable third place.

The examples above illustrate two fundamentally different design approaches within historic urban contexts, leading to markedly distinct outcomes. On one hand, there is a contextual approach that respects and subordinates new construction to established and widely recognized urban values. On the other, there is a clear intention to dominate the surroundings through an overly expressive and assertive form. In the first case, the design emerges from a careful analysis of the existing architecture, while in the second, the solutions impose foreign scales and aggressive forms and details. Such interventions are often misunderstood and receive negative criticism. They tend to lose their appeal quickly and age poorly.

## CONCLUSIONS

In the face of increasing disorder in urban spaces, historic urban and architectural structures with deep symbolic significance play a crucial role in maintaining balance. They shape a city’s identity, continuity, and cultural distinctiveness. Their spatial organization encodes values that define the unique character of a place. Adding new elements to such environments is a complex task that demands thorough analysis, multifaceted research, expert insight, and public consultation. Interventions in the most valuable urban structures must consider diverse perspectives and factors.

Ostrów Tumski is not an area of intensive development. The spatial composition is free-form. The natural landscape harmoniously blends with the extensive development, and the cathedral building is the dominant feature of the urban complex. The structure has exceptional historical and symbolic significance. Any interference with the existing structure, or attempts to change the context by introducing structures with modernist forms and excessive scale, can negatively impact the image of this place.

The Old Market Square can be described as an urban archetype. It is a concept of coherent, hierarchical composition, a closed and complete system. Adding avant-garde structures that contrast with the historic character of the space is unacceptable; it creates too much formal dissonance.

Freedom Square is a clearly laid-out project, but its development can be described as highly diverse. In this case, we are dealing with architecture from different periods. Despite this, the overall impression is of an orderly, representative space. It should be noted, however, that newly designed buildings with excessively

dynamic articulation can increase the impression of randomness in the square's development, thus contributing to a decline in the quality of the urban space.

For a city to function well and preserve its spatial qualities, it is advisable to adhere to the principle of continuity – one that skillfully integrates past and present while thoughtfully anticipating the future impact of our actions.

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## STRUKTURY URBANISTYCZNO-ARCHITEKTONICZNE A SPÓJNOŚĆ I ŁĄD PRZESTRZENI MIEJSKIEJ. PRZYKŁAD POZNANIA

### Summary

Niekontrolowany rozwój współczesnych miast i coraz większy chaos przestrzenny są zjawiskami powszechnymi. Problemem jest zanik czytelności kompozycji a także kontrasty skali zabudowy i zbyt duża różnorodność form architektonicznych. Wobec tego typu tendencji, uzasadniona wydaje się potrzeba ochrony struktur urbanistyczno-architektonicznych

decydujących o równowadze i ładzie przestrzennym. Najczęściej s to załozenia historyczne, złozone z obiektów o wyjątkowo wartościowej architekturze. Struktury tego typu stanowią tzw. formy silne. Maj nie tylko znaczenie symboliczne ale w duym stopniu porządkuj tkank miejsk. Nadaj przestrzeni specyficzny charakter miejskoci, decyduj o tozsamoci miast. Działania inwestycyjne prowadzone w tych strefach s ryzykowane. Wymagaj odpowiedniego przygotowania, wnikliwych analiz, bada o szerokim zasięgu, przy udziale specjalistów wielu dziedzin. Wprowadzanie zbyt awangardowych rozwiza moze doprowadzi do degradacji zastanych wartoci. Skutki błędnych decyzji mog mie negatywny wpływ na wizerunek miasta. W takich sytuacjach wskazane wydaje si przestrzeganie zasady kontinuum polegajcej na umiejtnym łczeniu przeszłci z teraźniejszoci ale takze na przewidywaniu skutków naszych działan w przyszłci.

**Keywords:** spatial order, transformations of urban space, urban and architectural structures

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## TOWARDS A RESILIENT LOCAL FOOD SYSTEM IN OMAN

The sultanate of Oman has experienced 40 years of economy, population, and development booms. Alongside, the country has enjoyed the benefits reaped from globalisation, as it imported a majority of goods, including its food and feed, from international markets. The COVID-19 pandemic highlighted how this exchange – once considered a lavish commodity – has become a dependency for the country, and has hindered the possibility of local produce substitutions to materialise. Thus, calls for change amongst academics and practitioners have emerged, questioning the possibility of creating and honing local food systems, towards resiliencies especially in times of crises. This study adds to this discussion, by interviewing actors in the agriculture industry and trying to understand perceptions towards the challenges and possibilities of local food markets. It uses storytelling as a component to convey ideologies existent in planners, governmental officials, and farmers of the region. In particular, it questions the possibility of mixing the urban development experienced in the capital area of Muscat, with concepts of urban and peri-urban farming. We find that while the concept of farming close to urban areas is still an insecure thought within the agricultural actors, there is already a deep sense of understanding for the need to strengthen local markets. Urban farming, in the case of Muscat, is still looked upon as an experimental project.

**Keyword:** Urban Farming, Climate Change, Covid-19, Local Food Production, New Food Systems, Urban Innovation, Healthy Cities

### INTRODUCTION – FOOD SECURITY AND RESILIENCE: A LOCAL RESPONSE FOR A GLOBAL CHALLENGE

As the Food and Agriculture Organization of the United Nations states, climate change poses challenges to food security and the resilience of the global food system. In 2019, 690 million people worldwide went hungry due to the fragility of food provision. On the other hand, food production is responsible for one-quarter of the world's greenhouse gas emissions (FAO, 2019). Thus, increasing food security and

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mitigating climate change are reciprocal. FAO defines resilience as: “The ability to prevent disasters and crises as well as to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner. This includes protecting, restoring and improving livelihood systems in the face of threats that impact agriculture, nutrition, food security and food safety.”(FAO, n.d.)

The Covid-19 outbreak in 2020 has exposed the vulnerability of our food systems affecting different sectors and obstructing the supply of agricultural products. It has highlighted problems associated with the heavy reliance on imported food, where long distances between production and consumption areas increase the dependency on transportation and the likelihood to be disrupted by governmental restrictions such as border closures. It proved that long chains might result in massive wastages and lead to a shortage of products for end consumers (Altieri & Nicholls, 2020; Lai et al., 2020; van der Ploeg, 2020). Additionally, industrial farms that rely primarily upon immigrant workforces have been more affected by border closures and illnesses (since seasonal workers live together in dormitories). The post-Covid-19 era will be characterized by efforts to establish more resilient food systems providing food security. Consequently, as Altieri & Nicholls stress (2020) we will experience a new push for small-scale farming and locally produced food by urban farms. In the case of the Gulf region, Woertz (2020) stresses that the modern value chain helped GCC countries to overcome shortage, however climate change associated scarcity of groundwater and high dependency on imports are still challenges. The regional political crisis leading to the blockage of Qatar imposed by Saudi Arabia, UAE and Egypt thus exposed the vulnerability of food security policies in the region (Almohamadi, n.d.)

Therefore, this paper explores the potential and challenges of establishing a resilient local food system in Oman. It identified in the scholarly literature three main global themes (new food systems, food innovation, food governance and policies) determinants of local food systems and food security. Finally, it investigates the perception of local farmers and authorities to these themes to gain context through their perspectives.

### **New Food Systems**

A resilient Local Food System means more than ensuring access to food to all individuals. It involves multiple aspects ranging from food security, local economy, climate change, and the scarcity of resources (Benke & Tomkins, 2017; Ernwein, 2014; Feenstra, 1997). Therefore, the agriculture industry must be redesigned to become less dependent on external commodities and more reliant on local food production (Montenegro De Wit, 2021; Montenegro de Wit et al., 2021).

Alluding to Pulighe & Lupia (2020) local food systems, especially Urban agriculture, fosters inclusiveness. The allocation of public urban land for agriculture provides “landless” citizens with a frame to grow their food and participate in the food system. Urban farms and community gardens have the potential to become a platform for the dialogue on environmental justice and to create a link between

sustainable agriculture, small farms, and anti-hunger advocates (Gottlieb & Fisher, 1996). However, the contribution of alternative agrifood initiatives to social inclusiveness cannot be taken for granted. Urban Commercial Farms fail to link to community needs and thus create civic engagement, while in Urban Community Farms the decentralization process perpetrated by local food systems depends significantly on the connection between producers and consumers of food (Gliessman, 2016; Workie et al., 2020). Accordingly, direct agricultural markets are the centrepiece of local food systems (Feenstra, 1997; Hinrichs, 2000, 2003; Poulsen et al., 2017). They offer an opportunity for farmers to sell products directly to customers leading to a better understanding of their needs (Tsyplakova et al., 2020). This closer collaboration helps to shift consumers' food preferences from industrially produced "processed foods" to locally produced "fresh food" (Lai et al., 2020). This leads to the diversification of crops and more culturally appropriate diets (Gliessman, 2020), and ensures the supply of fresh food (Altieri & Nicholls, 2020).

Ultimately, new food systems help to reduce the use and consumption of expensive, scarce, or ecologically damaging inputs (Gliessman, 2016) impacting not only agricultural practices but also social systems and economic development (Feagan, 2008; Gatrell et al., 2011).

### **Food Innovation**

Local food production is a driver to overcome the urban-rural dichotomy and natural catalysator of urban innovation.

Hinrichs (2000) suggests that sustainable agriculture involves innovation, development, and diffusion of more environmentally sensitive production practices. On a global scale, the agriculture sector, from production to distribution, has traditionally benefited from the advancements in technology and innovative processes (Naidu et al., 2020). Connecting food production and cities has an innovative potential for urban agriculture techniques (Armanda et al., 2019; Moragues-Faus & Sonnino, 2019) with social and economic opportunities for city inhabitants participating in an ecologic food planning movement (Morgan, 2009; Tsyplakova et al., 2020).

Besides the innovations in agriculture techniques, Kumar and Abdin (2021) found that an emergent transition to online services started taking immediate attention during the pandemics. It emphasized the importance of innovation in communication and networking. (Farhangi et al., 2020). Additionally, technological advances are required to improve the access to information about weather, resources, markets (physical and online), and price for farmers, processors, food manufacturers, and traders to allow for more effective business decisions (Fan et al., 2021).

Kasper et al. (2017) have also discussed the importance of the interlink between different actors such as Community representatives, waste collection companies, agricultural wetland cooperatives, inhabitants, and NGOs as crucial in improving agriculture production.

Currently, agroecology is experiencing an increase in acceptance (Montenegro De Wit, 2021). Many innovative initiatives have already started supporting this system, for example, the Digital Urban Agriculture (DUA). DUA involves different actors, contributing to economic diversification while encouraging collaboration between different types of farmers (Carolan, 2020).

### **Food Governance and Policies**

When the food system is embedded in the city's spatial strategy it can contribute to achieving sustainable goals (Kasper et al., 2017). As urban agriculture produces food closer to where it is consumed, it provides cities with the opportunity to reclaim their food systems and promote social connectedness, in addition to helping fight climate change by reducing emissions associated with long transportation distances between production and consumption areas, lowering pressure to expand urban footprint, and employing alternative methods to save water and other resources (Loker & Francis, 2020; Thomaier et al., 2015).

However, the success of such endeavors is conditioned by coordinated investments in research to advance techniques to increase productivity and reduce the environmental impacts and policies to provide the necessary infrastructure for agricultural practitioners and farmers. Governments need to promote decentralized food systems based on contextualized solutions, to establish a self-reliant economy (Gliessman, 2020; Pulighe & Lupia, 2020; Workie et al., 2020). Zerbian and de Luis Romero (2021) observed urban food governance during global crises, concluding that there is a need for more local and inclusive policies. Additionally, Moragues-Faus (2020) points to the possibilities and benefits of rescaling food governance to a more local level allied to strategies to stimulate participation and representation of individuals, businesses, and institutions (Manganelli et al., 2020; White & Bunn, 2017).

Local markets, on the other hand, should be incentivized to shift their focus from imported industrial chains (Fan et al., 2021) to locally produced, healthier food, generated in a sustainable agriculture system (Loker & Francis, 2020). The government needs to allocate public funds for local farmers and small businesses to help them improve their supply chains, increasing their competitiveness against imported food (Workie et al., 2020). More recently, planners have begun to pay increased attention to urban agriculture as supportive of the main goals of food security policies, and food landscapes in the urban regions (Horst et al., 2017; McClintock et al., 2021; Morgan, 2009).

## **BACKGROUND**

Following rapid urbanization after an economic boom caused by oil and gas exports in the 1970s, the country's agriculture practices have been greatly affected. While they were once dominant in the mountain ranges and plateau of Northern

Oman, satellite image analysis and ground-truthing have shown a spillage in the urban areas. In Al Batinah, traditionally the largest agricultural area in the country, the size of the cultivated area has been shrinking since 1997 – about 12% in total (Kotagama, 2014). Buerkert et. al (2021) studies revealed an increase in urban areas from 206 ha in 2009 to 230 ha in 2014 and 252 ha in 2018. The analysis also goes on to describe the poorly understood social-ecology as a result of this rapid urbanization. It led to infrastructural developments that provoked – even in the rural villages where dwellers were formerly primarily dedicated to agricultural activities – a major shift to employment in the secondary and tertiary sectors. A culture of “conveniently accessible home gardens” has replaced the remote terrace gardens of the old oasis systems, bringing agricultural lands closer to urban areas with limited access to groundwater. Consequently, agricultural systems have seen a decrease in the local production of water-demanding crops, and an increased reliance on food and feed from international markets (Buerkert et al., 2021).

The shift of agricultural practices is not confined to Oman’s mountainous oases, as the same has occurred in farmlands of low-lying areas distributed along the coastal area such as Muscat and the Batinah regions, especially due to the land use change and the salinization of the soil making it improper for cultivation. This phenomenon inevitably impacts the food system of the nation. Today, Oman’s agriculture industry suffers from labor and water scarcity, loss of traditional knowledge and community structures, climate change, and declining species diversity (Oxford Business Group, n.d.). Despite several recent initiatives to boost dairy, red meat, and poultry production, segments with a more sustainable approach such as organic farming remain in need of contextualized regulations (Sultan Qaboos University, 2022).

The ongoing urban sprawl, particularly in the Muscat capital, is consistently engulfing new lands and placing farms at risk of being converted to housing plots. This rapid urbanization could be viewed as a factor of development and presents positive impacts to the city morphologically, socio-spatially, socio-economically, culturally and through knowledge innovation; However, this also leads to the expropriation of agricultural lands.

Furthermore, not all landowners and farmers have the means to undergo legal processes to acquire a title – thus accelerating loss of agricultural land and raising concerns for the provision of food to indigent citizens and peri-urban farmers’ livelihoods (Coulibaly & Li, 2020). There is a need to implement governmental policies and land registration systems to help in the demarcation of different spaces, mainly areas reserved for agriculture, thus preventing excessive soil erosion, reduced biodiversity, and loss of habitat.

Currently, a few governmental policies are in place for the protection of agricultural farmlands and food security systems. Alongside, the Ministry of Agriculture has created several initiatives to support the inclusion of innovative farming techniques. Nevertheless, limited awareness among local farmers precludes them to reap the benefits of these provisions.

Oman's diversity and agro-climatic conditions provide the potential for agriculture to come back as one of the primary industries in Oman. Additionally, a combination of food security concerns and a focus on economic diversification has made agriculture an area of increased government awareness and investments (Oxford Business Group, 2019).

While oasis settlements remain an integral source of the nation's food systems, the need for alternative solutions to reinforce agriculture as one of the primary industries of the nation is becoming increasingly evident, especially in relation to the pandemic.

A discussion among academics from the Sultan Qaboos University on the "Impact of Covid-9 on development in Oman" (Sultan Qaboos University, 2022) shows that despite a growth of 9.8% in the agriculture and fisheries sector over the year 2019-2020, the pandemic has emphasized the need for a more holistic approach to the agroindustry. Dr. Muhammed Othman (Center for Environmental Studies and Research, SQU) commented on the impact of the pandemic on crop production systems, supply chains, and food security. One of the key challenges in Oman, is the high dependence on seasonal foreign workforce in the agricultural sector that due to movement restrictions and social distancing rules during the pandemic caused shortages in the cultivation and harvest periods. Further, the difficulties in importing/exporting agricultural products have affected the entire food supply chain, including producers, manufacturers, and transport companies. He further underlined the mass destruction of agricultural and dairy products due to the inability of farmers or traders to transport them from points of production to manufacturing centers. Further discussions acknowledged the renewed importance of expanding strategic sectors, such as food, basic services, and information and technology to overcome long-term turmoil as demonstrated by the pandemic. Changes in the labor market could be an opportunity to reduce formerly existing imbalances within it, increasing the participation of the national workforce and improving productivity.

To facilitate shifts to Oman's agriculture scene, local researchers emphasized the importance of the conservation of urban farmlands and native specimens that are adapted to local conditions. The Oman Plant Red Data book compiled by Annette Patzelt (2006) lists a series of threats to vegetation in Oman (Annette Patzelt et al., 2014) that especially home gardens – that are still used mostly for hobby and aesthetic purposes (Al-Mayahi et al., 2019) – could substantially contribute to preserve.

Kotogama et al. (2017) stresses that only a combination of price management for the water supply and the treatment of grey water can have a substantial impact over the growing demand for water in Oman. Currently, the government is supporting the use of desalinated seawater and treated wastewater, which currently accounts for 5% and 1% of total water consumption, respectively. An initiative to increase the use of treated wastewater in agriculture is being piloted by a private firm Haya Water by building pipelines connecting a sewage treatment plant to the farmlands in the coastal city of Barka (Oxford Business Group, n.d.). Increased use of treated

wastewater for irrigation within the city of Muscat could be a means of bringing agricultural lands closer to urban lands, where 85% of the country's population currently resides. This, in turn, could pave the way towards introducing urban farming in the cities of Oman. However, there exists little to no research about the possibility to integrate urban farming into the country's cityscape and its food system.

Urban farming proposes mutually beneficial coexistence between the rapidly growing urban areas and their equally significant agrarian counterparts. The introduction of urban farms would mean that agricultural systems could be weaved into the ever-stretching urban fabric of the city of Muscat, thus bridging gaps in food security systems while addressing several other factors such as job creation, building community resilience to global pandemics, creation of active urban spaces indulging the participation of its residents, etc. In the period of 2004-2013 Only in the Al Batinah Area farmed land area has declined by about 5%. In a country where only about 7.18% of the soil is suitable for agriculture (Kotagama, 2014), all alternatives to preserve and enhance food production are worth investigating. In this study, we employed the term Urban farming in a broader sense entailing any agricultural production taking place within the limits of urban and peri-urban areas in Oman (including commercial farms and community gardens).

With all these particularities, the case of Oman's Food System and its response to the crisis provoked by the COVID 19 pandemic offers an opportunity to reflect on the role of alternative agricultural systems. The local food systems discourse including urban farms is structure in a twofold concept. Its first argument is built upon the environmental aspect: contributions to curb and adapt to climate change through reduction of emissions, compact growth, decarbonization, better resource management, etc. The second bases on the socio-political aspect: food justice, spatial inclusion, sovereignty, local governance etc.

## MATERIALS AND METHODS

This study is divided into two parts, using two distinct qualitative thematic approaches. The first part was dedicated to localizing central themes of the current scholarly debate on urban farming – including the aftermaths of the covid-19 crisis. The second was focused on understanding and interpreting the perspectives of different stakeholders involved in the process of food production and their impressions on urban farming.

Thematic analysis was chosen as the method for both parts due to its perceived flexibility in new fields of knowledge. The findings were interlinked, and employed for different purposes. For the first phase, we used an approach closer to Boyatzis (1998) where themes generated from the literature review were developed on early stages, rated individually by each author, the results jointly discussed until a final agreement upon themes (higher scores) to include is

reached (cf. appendix 1). The discussion, especially upon the themes with lower agreement between independent scores, helped to reduce individual bias over the choice of the most relevant themes.

The initial themes were rephrased as short statements also known as storylines. Storylines are known as an effective means to conduct inquiries that captures the stance of the interviewee on a specific concept relevant for the field and gives them the chance to further elaborate (Pettersson et al., 2021b). Our study used storylines to spark discussions instead of questions, as they are considerably less invasive than the latter (cf. appendix 2). These short statements work as an invitation to reflect about the subject in discussion instead of inquiring about the knowledge of the interviewer, something that could hinder the extraction of more in-depth perceptions about a topic that is somewhat absent from the public discussion in the country. Unlike in the US and Europe, urban farms as community projects are not present in the media and have not been discussed widely in the policy making programs in Oman. Agricultural work in general – as the results of this study will show- is stigmatized. Therefore, it was important to understand the perception of planners in a decision-making position that could facilitate or hinder the creation of programs to preserve and create new urban farms. Secondly, we wanted to understand how people involved in the existing food chains would see the main barriers for the establishment of these urban farms.

Accordingly, the initial 56 statements (which here forth we name *stories*) were developed based on the themes extracted from literature review. From the papers pre-selected in the scope analysis, we extracted citations summing up the main finding of the study and reformulated them. We went through several rounds of reading and re-reading until we found initial patterns in the data. Then we started coding and finally we organized the stories that emerged around four central themes: Food security and resilience, New food systems, Innovation and Urban farming, policies and governance. The authors assigned each statement to one of the four themes and additionally rated it individually in terms of its relevance globally and in the context of Oman. That procedure helped familiarize the authors with the subject and define the study framework. This method also helped map existent mental models, as we were able to see interplays and connections within the different topics presented (Pettersson et al., 2021a). Stories with an average score of 4.0 (5.0 was the maximum score) and below were excluded. Ultimately, 7 stories remained and were compiled by the authors. This approach ensured that the most important and relevant subjects were represented in a condensed way to trigger discussions.

It was important to extract the most relevant concepts to guide the discussion with the stakeholders in the following phase. Once transcripts from stakeholder interviews were collected, Clarke and Braun's (2006; 2021) reflexive thematic analysis was additionally incorporated in coding the findings presented in this paper, explained in the next section.

### Qualitative methods within a qualitative approach

In this case coding was fluid, open and guided by the data. The themes have been developed only towards the end of the analysis. In doing so we describe the different relations involved in this essential phenomenon of food production revealed by based on patterns across the data and, when possible, “dig deeper” and start to theorize how people’s social constructs interact with the urban farms as closely related with the way food is produced, the way the society and its future are thought upon. It is important to highlight that food plays a central role in rituals and gatherings of the Omani society.

We invited stakeholders of different sectors to participate in interviews. Recruitment was based on the network of the research team since in Oman it is very difficult to gain insight into the internal structure of institutions. We purposefully contacted owners of small and large scale farms from the capital area and the outskirts aiming to access the perspective from the producers on the food system in place. Additionally we invited planners of the Ministry of Agriculture and the Ministry of Housing and Urban Planning (responsible for Oman’s National Spatial Strategy) to understand what are the views and values that shape the policy making and land use management that could potentially influence a potential process of creating and integrating urban farms in the food system. Snowballing was employed to guarantee that interviewees expanded the network and brought in additional participants of their own. A total of eleven interviews were held with the. Braun and Clarke (2006) suggest a minimum of six to enable cross case pattern identification.

Table.01 Participants of the interviews and their affiliations/ functions.

#	Sex	Age	Institution	Attributions
P001	m	46	Ministry of Housing	Senior Planner/ Spatial Strategy/ Policies Food Security
P002	m	36	Ministry of Housing	Planner/ Spatial Strategy/ Policy Implementation
A001*	m	34	Ministry of Agriculture	Planner/ Livestock Sector
A002	m	46	Ministry of Agriculture	Planner/ Livestock Sector
A003	f	38	Ministry of Agriculture	Head Food Security Department
A004	f	40	Ministry of Agriculture	Planner/ Agriculture
A005	m	51	Farmers’ Association	

#	Sex	Age	Institution	Attributions
A006/ A007*	m/m	49/40	Ministry of Agriculture	Director of Research Department/ Planner
F001	m	55	Large Scale Farm Owner	
F002	m	40	Small Farm Owner	
F003	m	45	Small Farm Owner	

\*Face to face interviews; otherwise online.

Some Interviews have been conducted face-to-face (n=2) while others (n=9) via virtual meeting software due to restrictions imposed by authorities for gatherings during the Covid 19 pandemics and depending on the individual preference of the interviewees. Except for one interview (see table 1) all interviews were held individually. The interview A006/A007 was held in the premises of the Ministry of Agriculture as per request of the participant. In that case, a second interviewee participated unexpectedly. The interviewer agreed to proceed with the new setting since it was a spontaneous request by the interviewee who felt more comfortable as the second person was well informed and helped with some formulations.

Interviews with the farmers were conducted in Arabic, transcribed verbatim and translated by the Arabic-speaking authors, while the planners were interviewed in English. the final transcripts in English were used in the coding sessions.

Interviewees were first introduced to the aims of the study, the research design, methods to protect confidentiality and reminded about the voluntary character of the study. An overview of all statements was presented, and the interviewees were granted enough time to read and decide whether they agreed or not to continue the process. They were explicitly asked about their consent, and all recruited persons (n=12) agreed to participate.

After the introduction and the consent, the interviewer carefully read the first story. The interviewee would generally agree or disagree with the statement and elaborate on their vision on the specific topic. The Agreement had no analytical purpose. As stressed by Pettersson et al (2021a) it was a way to help triggering the reflection but instead of using a 5-point Likert scale we left it open and some interviewees agree and disagreed with different parts of the same statement. The interviewer asked additional questions to expand some concepts introduced by the interviewee when applicable. Once one statement was exhausted the interviewer proceeded to the following. Each interview took just over 40 minutes on average to complete apart from the interview with more than one interviewee that was more extended (approx. 120 min).

For the analytical part we followed the six stages of the reflexive thematic analysis (Braun & Clarke, 2006) informed by critical realist theory. Analysing the data

occurred in a six phases recursive manner employing an inductive approach. It goes from familiarization with the data while transcribing and reading, and multiple sequences of coding, developing and reviewing themes. Finally, the study concluded with a group discussion with the authoring team (Clarcke & Braun, 2021).

## STORIES OF AGRICULTURAL PERCEPTIONS IN OMAN

### Agricultural Renaissance a quest to independence

Since Oman's 70's economic boom, key investments include the expansion of international airports and commercial ports throughout the country (e.g. port of Duqm). The economic development was supported by immigrant workforces and attracted international industrial food chains.

The local agricultural sector on the other hand, unlike other sectors, has not benefited so intensively from the economical and societal transformations in the views of some interviewees.

*“... I don't think that incentives were evenly, you know, kind of granted: I would say the fishery sector was more incentivized than the farm sector. As they have more ports and more like Muttrah fish market for example”*  
(P002)

Nevertheless, the awareness from the government on its dependence on imported goods has started even before the pandemic and its aftermath.

*“...actually, more than 70% of agricultural products are coming from outside.”*  
(P001)

Different strategies to increase food security, especially embedded in the vision for Oman 2040 (Oman2040, 2004), have been introduced. However, their implementation is not without serious challenges, as commented on by upcoming participant sessions.

### Oman can't produce everything

Despite the targets set by the authorities to radically increase local production, some interviewees think that a complete independent food system is not realistic as P001 states:

*“We cannot -here in Oman – stand alone with agriculture itself...”*

For various reasons, it is accepted that the agriculture in Oman cannot achieve a larger scale industrial production. Industrial processes, even when questioned on other means of production, are regarded as beyond the internal capacity of production.

*“...in Oman, the local production is not that sufficient for the food industries. They will have to depend on bringing food and processing it from outside.”*  
(A005)

Conversely, some farmers are confident that it is possible to achieve more ambitious goals if investments occur accordingly. In their views, Oman has the necessary conditions to become independent from imports and provide with food security.

*“Taking this step [ ] will help the country to become a massive food producer, which will raise the local economy and we will not need to import food anymore. We have fertile lands, water and technology, we just need support and cooperation from officials.”* (F002)

All stakeholders seem to acknowledge the importance for Oman to become more self-reliant, to which extent, however, it has varying views.

### **Vulnerable supply chains**

The lack of a robust and flexible infrastructure to collect and distribute the production was also discussed. The pandemic placed a burden on supply chains both internally and internationally.

*“...the Al Batinah region was closed from Muscat, so the products were stocked, they couldn't be transported from one to another region. This was a problem that I think local farmers are facing during this pandemic situation.”* (A001)

There is a strongly perceived need to improve the infrastructure and create, as P001 states, “collection centres” for the production. This system should work with different scales of demand and serve the local market first.

*“They can take, for example, our products and sell it first in Oman, if there is no need... – not only from our Souqs [local markets] – they can sell it even outside the country.”* (A001)

### Dependence on foreign Workforce

The dependence on foreign Workforce is consensually seen as one of the main challenges – not only in the agricultural sector – but in any field involving intensive labor in Oman. Closed borders and migration restrictions has negative effects for labor-output.

*“...most of the industrial farms here in Oman depend on the foreign labor. This has shown many problems during the pandemic, because of the lockdown the work stopped, and the production stopped or is less production... But some of the businesses started employing more locals and especially women.” (A006)*

Although the crisis affects all sectors, small-scale producers weren't as heavily constrained by the restrictions, being less dependent on foreign workforce. They can instead adapt and use family/community members as a replacement for the seasonal work. The high degree of dependence on foreign labor precludes policies that invest in the agricultural sector to succeed in creating jobs for Omanis, since the grants are concentrated by a small number of industrial producers who rarely employ locals.

*“...bigger farms tend to use labour from outside, not from the locals, due to the cheap wages. So, having these commercial farms, we realize they are generating very little jobs in the farms ... the Gulf Countries are still dependent on these cheap labour so actually they don't create jobs as much as they are supposed to.” (A005)*

Besides the discrepancies of wages between local workforce and foreigners, one of the challenges is to make agriculture jobs more attractive for Omanis given the lower wages and stigma over physical labor.

*“Now the small community farms started growing and became commercial... but also themselves, they have many problems here in Oman because of the cost of manpower. So their family participates in this, but they are looking for a government job, so depending on that there will be only one person or two, the main things will remain for foreign people to work...” (A002)*

The strong competition for the market is also associated with the lack of attraction of agricultural jobs since the imported products put pressure on the prices and limit the possibility to increase wages.

*“...the margin of the profit is not there, that's why so many of these big markets like to get the imported food, as it is supposed to get it from the local*

*market... Because here to produce fruits and vegetables during the summer, we need to utilize these chilled green houses, which will consume electricity and water, and need special attention. Those products cannot be compared to the products which come from Europe where there are no costs associated with it. And it reaches here cheaper than the cost of the products which are produced locally...” (A005)*

### **Modern not “old style”**

Agriculture seems to be linked to more traditional activities in the past while the modern urban context is highly valued. That is reflected by the prevailing lifestyle with new, conditioned, comfortable houses, the universal internet coverage and impeccably built highways. In some respects, it also explains the rural-urban migration and the abandoned “old” villages of earthen architecture in the countryside.

The “poor”, rural past of Oman, before the 70es, with higher rates of illiteracy might be intrinsically bounded to traditional agricultural praxis as P01 states:

*“We have to change our mind, change our ways from the old agroecology style to a new one...” (P001)*

### **Environment**

The prevailing environmental conditions are considered as one of the main barriers to increase local production. The hot climate, scarcity of water and salinity of soils are among the main challenges. They are especially associated with the highly urbanized coastal areas. Despite all traditional systems developed in Oman such as Afalaj (1500 year old traditional water irrigation systems), the planners and farmers suggested that the only feasible solutions are based on modern systems.

*... with the scarcity of the water that we are facing and we are seeing here that the hot weather during the summer, we are trying to be adaptive to these conditions and trying to bring new technologies, for example like doing green houses to avoid the summer breeze, going inside the shaded cold and chilled, called [green] houses to grow these fruits and these vegetables. Also moving to a hydroponic system of farming where it can consume much less water than the normal traditional systems...” (A005)*

The country also relies on technical expertise to expand the agricultural land in strategic areas. Oman is creating a program called the “food baskets” in three different governorates to increase food self-sufficiency (FSS) level from 48% to 70% of internal demands for food production (MoHUP, 2020).

*“The food basket is a huge area of land. [chosen...] depending on the experiments of the soil, of the land and the experiments of the water.” (P001)*

The proposed areas in Al Sharqiya, Al Dakhlyia, and Dahria are located where land is abundantly available therefore distant from the coast where soil salinization is higher but also from central areas where the consumers are located. That in turn increases the demand for investments to improve transportation – already insufficient to cover the current situation.

*“...having it far away causes, for example, food to go bad... However, it doesn't have to be physically close to the city because you can provide efficient transport for it. For example, like [...] air-conditioning, maybe trains or freights or supply chain network, I mean that could solve the problem...”(P002)*

### **Incentives to Innovation**

Governmental incentives are helping farmers to experiment with technology and to adapt to different challenges. Mostly, experimental farms are smaller scale producers located closer to the urban areas or directly on the outskirts of Muscat where investments are needed to bring them to a commercial scale.

*“Most of the farms which have started with some new techniques are in Barka, because Barka is very near to Muscat. In Muscat, it is not very possible to have it... there are some projects to implement some of these techniques in farms.” (A004)*

They are supported by different channels to promote the use of new technologies and to train farmers to adapt to new challenges and increase production.

*“We also sometimes have some type of workshops. I once attended workshops where companies from outside of Oman come to show some types of machines to introduce to the farmers, so they can implement some type of new mechanisms into the production system. So the ministry makes a workshop, where the farmers come there, and they meet with engineers to get to know how to use these machines. So there are events from time to time.” (A004)*

### **The Role of planning**

A strict land use regulation is protecting farmland to vanish. As they cannot be converted into other sources of income, it works as an additional motivation to boost technological innovation.

*“...if you have a farm with salty water, you cannot use it for example for building a house. They have to get approval and have a clear reason why they want to change it from agricultural land to building land... therefore they have to change it from one type of farm to another type of farm.” (A004)*

Moreover, in addition to preserving production capacity, some interviewees entertain the introduction of agriculture in spatial strategies as an innovative way to promote well-being for citizens.

*“...In the cities like Muscat and Sohar, or big towns you don't find that [agriculture] is within the planning ... you don't find these areas for such activities. I think it just needs a bit of planning into these cities, to make them a bit greener than what they are now.” (A005)*

### **Negotiating the new food systems in Oman**

The stakeholder engagement is regarded among planners as a central aspect for a successful implementation of policies as P002 stresses: “The core of everything before coming to policies is raising awareness and trying to [make] people understand what we are trying to achieve.” Nevertheless, Farmers do not perceive their inclusion in decision making, and the planned ambitious changes in the food systems in Oman are overlooking their needs. Especially when it comes to small property owners who make the largest share of the agriculture dedicated population in Oman.

*“The farmer always demands and strives for his rights, but there is no one to hear them and understand their suffering in agricultural production.”(F002)*

F001 as a large scale producer is more incisive while discussing their relationship with authorities

*“...there are no contributions, and I hope that there will be work on this.... Agricultural lands can be diverted to the other side of the street, towards the south, where the mountains are. And making residential and commercial lands near the coast...We have called several times from the competent authorities in the transfer of lands, with evidence, studies, and others, but there is no questioning by the competent authorities.”*

The main channel for farmers to have a voice are the farmers' associations. Apparently, an imbalanced relationship between different producers makes their relationship difficult.

*“...we share experiences and knowledge in most agricultural associations, but I do not agree with the cooperation of commercial farms with community or small farms... commercial farms operate in a wider scope covering the needs of the market, then the matter of cooperation with small farms becomes a matter full of envy and suppression of ideas.”(F003)*

### **Rebranding**

Complementary to involving the farmers in the process of planning, working on the awareness for local products will play a major role in the successful implementation of the future food systems for the country. As F002 stresses

*“what the Omani farmer is facing is the lack of support in marketing their farms products and the local food”.*

Beyond policies to increase the local production and to protect from external competition, local producers need a campaign to increase the perception of consumers on the advantages of buying local products, their qualities and characteristics such as seasonality, adaptation to local culture, job creation, sustainability etc.

*“...this is a good thing for people who work in the local farming system. Because for example, we have production of garlic, Omani garlic. One kg of Omani garlic costs around 3 – 4 Rials, but supermarkets have garlic which comes from China or Iran which cost for only 1 kg for only 600 Baizas. But the difference is, that the local garlic taste is way [better], because we use only organic materials and we do not use pesticides to grow them.” (A001)*

### **Self-organization**

Farmers, especially small farm owners, cannot rely solely on governmental support. During the pandemics several initiatives emerged showcasing the creativity of the farmers...

*“For example, we, as farmers in small farms, when there is a surplus in production, we exchange goods with other farmers, or deal with cars that sell vegetables at points known by the community, most of the owners of these cars sell the crops of local farmers and sell them directly to the consumer.” (F002)*

Small farmers seek to enhance their market access using social media and due to direct contact while large scale farms tend to hire experts to do the marketing. Small scale farmers also seek the local markets to create a direct relation to the customers while commercial farms target supermarkets and exports.

*“These days, during Covid-19, when the markets were closed and the farmers couldn’t sell their products, they started contacting their clients, with social media. So the farmers would announce some of their products, and the consumers would try to get in contact to buy the products.” (A007)*

Direct sales in the local markets or in improvised areas help small scale producers to avoid mediators to keep the prices competitive and to increase their own profit.

*“... When the prices increase, the consumer blames the farmer although it is not his fault. It is the mediator’s fault, as when a farmer deals with a mediator to sell his crops, the mediator increases the price a lot for his benefits.” (F003)*

### **Small and big**

Small farm owners and commercial farmers do not necessarily compete since they seem to operate in different modes. That does not mean that interactions between these two actors never occur. They might sometimes collaborate when investment opportunities allow. However, a consistent exchange does not ensue for diverging interests.

*“...as a productive farmer, we do not deal with small farms or community farms directly, because the application and systems of working with us are completely different from other types of farms. But if small or community farms need some guidance and awareness on how to market local food or with farming problems, we welcome assistance.” (F001)*

The participant’s responses point to the sporadic nature of these collaborations. They are therefore reliant on private networking approaches and opportunities, instead of clear guidelines and frameworks.

*“... I know companies that are producing milk, and they are taking the milk from small farms. For example, here in Al Batinah, there are many women who are keeping animals, like cows for milking. Of course they cannot make marketing for their products, so what they do, they sell the milk for the companies. [...] I know one woman who makes cheese, and laban. Orpic company has a shop, and they made some place for this woman, where she can sell her products there. So, this is a small initiative, on making a combination or a collaboration between community and businesses. Also for plants, for example farms that produce dates, they collaborate with date companies, who collect them and produce other products.” (A004)*

### **Urban Farming could be a niche!**

The concept of urban farming is generally received with empathy. But it is not necessarily seen as a priority or main topic of discussion.

*“I’ve never seen Urban Farm quite of – in a traditional sense – Maybe it’s not even a niche it just doesn’t exist right now. But it could be, definitely experimented with and taken further for sure, I completely agree... and I mean, it wouldn’t’ve been nice if this had been started last year?” (P002)*

However Urban Farming is starting to gain some momentum, even if they are yet to be widely known, and are not done at a large enough scale to be an alternative just yet.

*“Yes, there are some small initiatives, they started already, but they are in a small scale.” (A002)*

On the other hand, some participants discussed a need to bring nature back to the city. Urban farming – they identified – could improve the aesthetics of residential areas and increase the health and well-being of the community.

*“...agriculture in the city could bring some greenery and increase well-being in the urban areas.”*

## **CONCLUSION**

In Oman and the countries in the vicinity the economic growth, demographic development and unsustainable patterns of urbanization triggered an accelerated process of expansion of the urban footprint. Consequently, agricultural production in the metropolitan areas has shrunk dramatically since land has been claimed for new developments and groundwater reservoirs depleted. Despite the modern food system in place and the planned governmental efforts to bolster the food security programs, its vulnerability has been exposed by the COVID pandemics. In this context, this study explores the perception of planners from different governmental entities involved in the spatial strategy, agricultural development, and farm owners on the potential and challenges to introduce a local food system in the consolidated urban areas of the country and to preserve and upgrade other existing areas under risk to establish a more resilient and sustainable food system.

Considering the methods we followed, we found that employing storylines was very successful for triggering a reflexive process upon key concepts related to urban farming among interviewees. Before accepting the invitation to participate in

the study, many of the participants asked for the “questions” to be sent in advance. Storylines don’t have such an inquisitive nature and the process is widely supported by the possibility of agreeing or not with the content of the statement. However, some farm owners were more hesitant to react to the statements. Partially, for not being acquainted with some concepts of urban farming and food systems. In that case, the interviewer had to elaborate on the statements and add a direct question at the end to start the discussion. Still, the responses indicate that the adoption has not compromised the content and the comparability of the results.

Typically, at the end of the interviews, participants would sum up their visions on the storylines discussed as a final statement putting the pieces together and adding their opinions freely. The open-end character of the last part helped to extract some deeper level information of the interviewer’s vision on urban farming.

We found that, overall, there is a high degree of agreement in the topics touching food security and to prioritize local agricultural production. This agreement occurs across planners of different sectors and institutions who believe that Oman should become more independent of imports and increase its agricultural capacity. On the other hand, small scale farmers do not seem to be part of the main strategies relegated to a secondary role in the planning of the new system. In terms because small scale farming is not seen as productive enough.

Furthermore, when it comes to the topic of integrated farming and the city, mixed reactions were experienced amongst participants. From whether or not they were aware of such ongoing projects, or wondering about the need of such an approach, the future for urban farming approaches and the greening of urban areas still needs to be further marketed. The participants were, however, aware of the multi-faceted benefits such projects may bring from economic to environmental stances.

Connectedly, there is a strong consensus around the usage of new technologies to overcome different environmental challenges intensified by climate change and urbanization such as the salinization of soil in the coastal area. The idea of modernizing, particularly through the introduction of new technologies, brings forth this interplay of perceptions between “old” and “new”, with the latter being held as more productive.

In a broader context, we conclude that a local food system in Oman has huge potential to address the environmental aspect that the local food system agenda targets at. Urban Farms in the major cities of Oman, could help to increase green area supporting carbon sequestration programs and reducing flash flood risks. Bringing food production closer to the consumers will help to reduce the transportation ways and might increase the awareness of people about seasonality and healthy foods. Perhaps, the access to good quality food products is even a more urgent matter given the health caused by the rise of NCDs Oman is facing than food justice. However, the community building aspect of Urban Community Farms could support environmental regeneration projects in monofunctional residential neighborhoods where a haphazard development pattern is associated with low levels of citizen engagement

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in the public life. Programs to support Urban Community Farms allied with campaigns for activation of communal spaces in residential neighborhoods have a great potential to increase quality of life and well-being of the local population. They could work as temporary farms in the many vacant plots in these neighborhoods or integrate the spatial strategy that is currently in development stages.

This study was limited by its approach to interview planners and farmers, and thus does not include perceptions from local consumers. This would be necessary in further research on the viability of local foods to substitute international inputs. Especially as a sense of awareness to localised food options is necessary for it to benefit and make a difference.

## APPENDIX

TABLE 1: INTERVIEWEES AND VENUES

#	Institution	Function
<i>P001</i>	<i>Ministry of Housing</i>	<i>Senior Planner/ Spatial Strategy/ Policies Food Security</i>
<i>P002</i>	<i>Ministry of Housing</i>	<i>Planner/ Spatial Strategy/ Policy Implementation</i>
<i>A001*</i>	<i>Ministry of Agriculture</i>	<i>Planner/ Livestock Sector</i>
<i>A002</i>	<i>Ministry of Agriculture</i>	<i>Planner/ Livestock Sector</i>
<i>A003</i>	<i>Ministry of Agriculture</i>	<i>Head Food Security Department</i>
<i>A004</i>	<i>Ministry of Agriculture</i>	<i>Planner/ Agriculture</i>
<i>A005</i>	<i>Farmers' Association</i>	
<i>A006/A007*</i>	<i>Ministry of Agriculture</i>	<i>Director of Research Department/ Planner</i>
<i>F001</i>	<i>Large Scale Farm Owner</i>	
<i>F002</i>	<i>Small Farm Owner</i>	
<i>F003</i>	<i>Small Farm Owner</i>	

Interviews performed online except of \*face to face interviews

Table 2: Storylines and means

#		Mean
54	Community farms help to improve the social environment while commercial farms generate jobs. A combination of both is beneficial for communities.	5
37	A government program that links individual community members, institutions, and businesses directly with local farmers to improve local food economies.	5
1	Post-Covid 19 era will strengthen the need for more small-scale farming and urban agriculture.	4.8
57	local markets are an opportunity to sell products and create direct relation to the customers leading to a better understanding of their needs.	4.8
8	Urban agriculture and community gardens produce food closer to where it is consumed, offering cities the opportunity to reclaim their food systems.	4.6
28	Corporate food chains are more vulnerable to a global crisis than small farmer webs.	4.6
49	The circular economy depends on the collaboration between different actors (government, tech companies, farmers, and local businesses).	4.6
48	The government should ensure that local businesses can participate in large- or small-scale urban agriculture experimental projects in the city.	4.4
23	Urban farming can revitalize abandoned buildings, brownfield sites, and vacant open spaces.	4.4
30	Interlinking different actors (community representatives, waste collection companies, agricultural wetland cooperatives, inhabitants, and NGOs) is crucial in improving agriculture production.	4.4
34	Direct agricultural markets are the centerpiece of local food systems.	4.4
36	Governments should create a framework that includes empowerment of community members, economic development strategies, and more direct relationships between producers and consumers.	4.4
3	Heavy reliance on imported food has also resulted in massive waste due to the inability to transport or purchase crops during the restrictions imposed during the pandemics.	4.4
43	We need to reduce the rural-urban food chain by incorporating innovative urban agriculture techniques in cities. (aeroponics, aquaponics, etc.).	4.4
6	Small-scale farmers suffered smaller impacts from COVID in comparison to large-scale industrial farms because they rely mostly on family labor.	4.4

#		Mean
32	When food systems are embedded in the city's spatial strategy and are treated as trans-sectoral and interactive infrastructures, they can foster sustainable agriculture.	4.4
47	We need policies that ensure a just Urban Agricultural system and include all parties involved in the system such as the users, planners, owners/businesses, etc.	4.4
27	The supply crisis during the pandemic provoked a shift towards unhealthier consumption habits of heavily processed items with longer shelf life.	4.4
9	Allocating public urban land for agricultural use would provide "landless" citizens to grow their food and participate in the food system.	4.4
14	Government should allocate public funds to help local farmers and local businesses to improve their supply chains increasing their competitiveness against imported food.	4.2
40	Dissimilar to the global food system, the local food system based on agroecology concepts dramatically impacts the local economy, social dimensions, and food security.	4.2
53	Strategies for food security combined with citizen participation play an essential role in sustainable urban development. They are key elements of good governance.	4.2
17	longer distances between production and consumption areas lead to a more dependent food system on transportation, and subsequently the more susceptible it is to international lockdowns or restrictions.	4.2
26	When regions become exporters of a single kind of crop they grow heavily dependent on the global market. They also become more vulnerable as the Covid-19 pandemics have shown.	4.2
15	The Covid-19 experience affirms the importance of promoting research and investing in infrastructure to help farmers to become more resilient against unforeseen disasters provoked by climate change.	4.2
16	It is necessary to improve access to information about weather, resources, markets, and prices to farmers, processors, food manufacturers, and traders to allow for more effective business decisions.	4.2
38	Creating harmonious urban-rural linkages will affect a sustainable farming system based on three main elements: Leadership, collaboration (different stakeholders), and regional food system.	4.2
13	Decentralized food systems support emerging economies to become self-reliant and protect the local food production.	4
21	Urban agriculture addresses emerging issues including food security, dietary diversity, social inclusion, and income generation.	4

#		Mean
22	Urban and peri-urban agriculture can help to rethink the spatial arrangement of cities.	4
4	The agricultural industry must be redesigned to become less dependent on external commodities and more reliant on local farmers.	3.8
20	Urban and peri-urban agriculture is a step towards regional self-sufficiency and food security.	3.8
50	Digital Urban Agriculture Involves different actors and contributes to economic diversification.	3.8
56	Farmers are aware of new techniques and programs to modernize production	3.8
18	One key strategy to food chain resilience is to shift consumers' food preferences from industrially produced "processed foods" to locally produced "fresh" food.	3.8
24	Urban Farms and community gardens offer open-air refuges for stress relief, recreation, cultural activities, and social connection in light of the pandemic.	3.8
25	Food should come from small producers to ensure the supply of fresh food.	3.8
41	IT and other technologies are influencing urban farming in our cities.	3.8
42	Small ventures in urban farming have a remarkable impact on the local food market.	3.8
44	We need to examine existing infrastructure and resources and utilize them to allow more innovative practices of Urban agriculture to thrive.	3.8
19	Urban agriculture can make locally produced food cheaper and accessible for all.	3.8
55	Family members became more involved in the farm during the pandemics	3.8
39	Agroecology principles aim to improve conventional farming systems.	3.8
35	A cooperative marketing strategy operating with technical assistance on local markets may help to develop the local food economy.	3.6
45	Urban agriculture offers innovative methods to revitalize vacant buildings and other underused urban spaces (such as Z farming and community gardens).	3.6
2	The current system of industrial food production concentrates the profit in large organizations while losses are shared by society.	3.6
46	Urban agriculture is sustainable because promotes social connectedness and helps to fight climate change.	3.6
51	New urban food policies should become more inclusive operating at a local level.	3.6
52	We need a new framework for analyzing the challenges and advantages of urban food policy contexts.	3.6

#		Mean
29	The gap between planning and implementation is an opportunity to create synergies between other industries and stakeholders on a small scale.	3.6
31	Urban farms may offer further synergies such as water reuse.	3.6
7	Industrial food production is more vulnerable to being disrupted by worker illnesses (since they live together in dormitories) and border lockdowns since migrant workers face barriers to travel to their jobs.	3.4
12	The government should implement new risk management programs including cash or food assistance to cover the basic needs of citizens.	3.4
5	Agroecology has a tremendous potential to increase its level of acceptance	3.2
33	Sustainable agriculture involves the innovation, development, and diffusion of more environmentally sensitive production practices.	3.2
10	Local food production offers contextualized solutions to local problems.	2.8
11	Local food production leads to diversification of crops and more culturally appropriate diets, resulting in a healthier lifestyle.	2.6

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## W KIERUNKU ODPORNEGO LOKALNEGO SYSTEMU ŻYWNOŚCIOWEGO W OMANIE

### Streszczenie

Niniejszy artykuł podejmuje problematykę rozwoju lokalnych systemów żywnościowych w Omanie, opierając się na badaniach jakościowych przeprowadzonych wśród przedstawicieli sektora rolniczego. Celem analizy jest rozpoznanie sposobów postrzegania wyzwań i potencjałów lokalnych rynków żywności przez kluczowych interesariuszy. Zastosowanie narracji (storytellingu) pozwala uchwycić dominujące ideologie i postawy obecne wśród planistów, urzędników publicznych oraz rolników. Szczególną uwagę poświęcono możliwości integracji dynamicznego rozwoju urbanistycznego obszaru metropolitalnego Maskatu z koncepcjami rolnictwa miejskiego i podmiejskiego. Wyniki badań wskazują, że mimo utrzymującej się niepewności wobec lokowania produkcji rolnej w bezpośrednim sąsiedztwie miasta, wśród badanych aktorów istnieje wyraźna świadomość potrzeby wzmacniania lokalnych rynków żywności. Rolnictwo miejskie w Maskacie pozostaje jednak na obecnym etapie postrzegane przede wszystkim, jako rozwiązanie eksperymentalne.

**Słowa kluczowe:** rolnictwo miejskie, zmiany klimatu, COVID-19, lokalna produkcja żywności, nowe systemy żywnościowe, innowacje miejskie, zdrowe miasta



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## THE IMPORTANCE OF RHYTHM IN HUMAN CREATIVITY AND SPACE PERCEPTION

Rhythms accompany humans on many existential levels. They are part of both their inner and outer worlds. Rhythms occur in the human body, in daily activities, in nature, as well as in creative works, music, poetry, architecture, and urban planning. Contemporary architectural design increasingly observes a shift away from typical rhythmic and symmetrical forms in favor of dynamic, stimulus-rich structures. According to the author, new buildings adjacent to historic buildings often disrupt the previously uniform spatial expression of a street or square because their facades fail to incorporate the tranquil, rhythmic spatial arrangements of existing historic buildings. In the article, the author decided to examine the importance of rhythm for humans in visual form and the perception of historical spaces in which new buildings have appeared that do not take into account the existing context. The new architecture emerging in the city generally attracts attention as a manifestation of modernity and is generally received positively. However, research has shown that in historical developments, which were built based on symmetrical layouts and rhythms, and which clearly strive for harmony, new buildings that do not adhere to these standards are perceived very negatively.

**Keywords:** rhythm, harmony, architecture, facade composition, historical buildings, place identity

### 1. INTRODUCTION. RHYTHM, TERMINOLOGY, AND MEANING

#### 1.1. Rhythm – terminology

Rhythms accompany humans on many existential planes. They are part of both their inner and outer worlds. Rhythms can be found in various areas of life, in living organisms, such as the rhythm of the heartbeat, pulse, and rhythmic breathing; in nature, such as the earth's rotation and its orbit around the sun, the succession of day

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and night, the seasons, and so on. Rhythms also appear in everyday human activities, such as walking and running, in the objects around us (the ticking of a clock), as well as in our creativity, in music, poetry, architecture, and so on.

Rhythm is a term that can be interpreted in several ways, depending on the context. Generally, rhythm can be understood as an element or pattern repeating itself at a given time interval, encompassing sounds, movements, or even certain events. For example, in poetry, rhythm can be built by repeating syllables within lines, using rhymes or repeated phrases. More specifically, rhythms are built by maintaining a regularity in the number of syllables within lines, or by repeating word endings (rhymes), or by repeating entire phrases.

The PWN Polish Language Dictionary provides the following definitions of rhythm: „regular repetition of something at equal intervals in time or at equal distances in space”; „a fixed sequence of events, processes, etc.”; „an even repetition of sonic and syntactic elements”; „a factor regulating the duration of sounds in a musical piece and determining their sequence in time” [<https://sjp.pwn.pl/slowniki/rytm.html>, accessed 05.05.2025].

In music, rhythm is a fundamental element that gives a composition its dynamics and structure. It can be said to be the way sounds are arranged in time, creating specific patterns, for example, by varying the length of notes or accentuating them. In music, the following elements of rhythm are distinguished: – meter, the way rhythm is organized based on regular intervals of time (bars); – rhythmic values, which determine the duration of individual sounds; – accents, or stronger sounds, as elements that give rhythm dynamics and character; – rests, intervals where sounds are absent and which, like sounds, also create rhythmic patterns. In the performing arts, rhythm is the timing of events on a human scale: musical sounds and silences that occur in time, dance steps, or the meter of spoken language and poetry. In some performing arts, such as hip-hop music, the rhythmic delivery of lyrics is one of the most important elements of style. Rhythm can also refer to visual presentation, as „synchronized movement in space” [Jirousek 1995].

Rhythm also appears in the visual layer, so the language of patterns also relates to it. In architecture, we often speak of the rhythm of individual building elements, such as the rhythm of columns, supports, the rhythm of windows on the façade, the presence of accents, bay windows, turrets, details, ornaments, etc.

## **1.2. The importance of rhythm in composition as exemplified by music and architecture**

The Many researchers have noted analogies between music and architecture. By treating works of music and architecture as compositions and analyzing their structures, one can discover many common features belonging to both disciplines. Concepts such as rhythm, articulation, proportions, the distances between individual elements (in space and time), and accents appear in both buildings and musical works. Proportions

are the relationships between individual elements, but also the relationships between elements and their gaps, as well as the relationship of parts to the whole work. In architecture, these relationships can be considered in relation to individual elements as well as groups or larger fragments of a composition. Beginning with the simplest window openings and their complexes, arranged on the flat surfaces of external walls, the organization and number of accents, and ending with larger sections of a building protruding from the façade face as the relationship of the parts of the form to the whole.

In musical pieces, individual sounds, intervals and their spacing, intensity, and frequency are distinguished within the overall composition. The spacing between window openings, balconies, or other recurring elements on a building's facade also create rhythmic patterns. The most distinct common element found across various creative fields is rhythm, which, regardless of the art form, is defined as the repetition of certain clear patterns. In music, for example, repetition applies to individual sounds, their sequences, and also to slightly larger sections of a piece. In architecture, this repetition can be found in the arrangement of building facade elements, for example, in the rhythms of window openings, loggias, balconies, columns, pillars, and accents. Repeating elements can be spaced at equal or varying intervals, creating repetitive sequences. Simple, regular, and more complex rhythms can be found in both architecture and music. It can be argued that the composition of a musical and architectural work is essentially a relationship between emptiness and fullness. In architecture, façade elements occur at intervals; the gaps between elements are as important as the elements themselves, as they constitute the overall composition of the façade. Similarly, in a musical piece, there are pauses, longer or shorter breaks, between sounds and their sequences. Charles Jencks compares the arrangement of window openings on a building's façade to the notation of a musical piece, the notation of notes on the staff of individual floors [Jencks, 2013].

It can therefore be stated that the individual elements of a musical or architectural composition, together with the breaks and repetitions between them, occur in time [See.: Trickett, 2018, accessed 15.03.2021].

According to the author, articulation is an important term for both disciplines, offering endless possibilities for shaping a composition [Cf.: Encyclopedia of Music, 1995]. Articulation of elements in an architectural work offers the designer numerous possibilities and ways of shaping it, as it can run in both directions, vertically and horizontally, although horizontal rhythms are more easily and quickly recognized and noticed. Rhythms can occur in the arrangement of: – window and door openings, balconies; – vertical or horizontal parts of a building; elements protruding from the facade face, such as projections, bay windows, or cornices; – elements protruding above the eaves or roof, such as gables, dormers, skylights, chimneys, etc.; – details, pilasters, sculptures, bas-reliefs, and other ornaments. According to the author, rhythms can be built on the principle of a calm continuation of the same elements, but also on the principle of contrast, in which case the accents of the composition can be particularly highlighted.

## 2. HARMONY OF COMPOSITION, THE IMPORTANCE OF SYMMETRY AND RHYTHM

### 2.1. The importance of compositional harmony, rhythm, and symmetry throughout the centuries

Vitruvius already discussed the importance of harmony in composing a work of art in his work „On Architecture, Ten Books,” where he attempted to explain, among other things, the principles relating to the composition of sounds and those relating to the composition of buildings. All these principles had one thing in common: compliance with the laws of harmony [Vitruvius 1956, pp. 86–94]. Renaissance philosophers and aestheticians also emphasized the importance of harmony and cohesive forms. Alberti’s concept of „concinnitas” is synonymous with harmony, which is described as the clarity and unambiguity of all the individual parts of a work, as well as the composition of the entire work. Such qualities as clarity and unambiguity are achieved through the use of symmetry in the creation of a work [as cited in Żórawski 1973, p. 21].

In many ancient writings, the term „harmony” is used interchangeably with „symmetry.” Symmetry, as a shape or visual composition, has accompanied humans throughout history, from the structure of their bodies through their surroundings to their minds and mentality. Depending on the era, interest in it and its significance increase or decrease. For example, in ancient times, symmetry referred to the entire reality. For ancient philosophers, symmetry signified a specific order, a certain regularity, and above all, proper and appropriate proportion, which could be perceived by the senses and understood by the mind [Gajda-Krynicka 1993].

The first comprehensive and consistent concept of symmetry was presented by the Pythagoreans at the end of the 6th century BCE. They primarily tested it in mathematical form. They also associated it with the cosmos, understood as a model of perfection. The word symmetry comes from Greek and is translated as „co-measurement” or „consonance” (in music).

When considering harmony, rhythm, in addition to symmetry, is also important. Like symmetry, rhythm has always accompanied humans, from the rhythm of their hearts through their surroundings, seasons, days, and even their creativity. Rhythm can be defined as periodicity or recurrence in time (in musical compositions) or space (ornaments, building elements), as a result of a chain of chords or proportions. Proportions are associated with concepts of beauty, harmony, rhythms, and symmetry. In ancient times, proportions primarily referred to music and poetry.

The Greek word „rythmós” derives from the verb „rheo” („I flow”). Ghyka believes that the word „rhythm” should be reserved for characterizing the harmonicity and periodicity of events in time, while the concept of symmetry describes the interrelationships between elements and the whole in a spatial sequence [Ghyka, 2006].

According to the definition of Aristoxenus of Tarentum, rhythm is an order defined by temporal intervals. Expanding this definition further, rhythm is that property of a sequence of events occurring in time that evokes in the observer's mind a sense of proportionality between the durations of the various events or groups of events that comprise the sequence. Put simply, rhythm is in time what symmetry is in space [Ghyka 2006].

Juliusz Żórawski, in turn, describes rhythm as a set of forms arranged in a single sequence and having identical fields of formal activity [Żórawski 1973, p. 110]. The author believes that in the perception of space, the absence of an element in rhythm will always be perceived by the observer as a deficiency or even an error. In such situations, the observer most often experiences an unpleasant feeling of something missing, and their mental balance will be somewhat disturbed. The observer will develop a desire to correct this error by complementing the rhythm of the elements. According to the author, this occurs because human beings have ingrained patterns of psychological structure and preferences that prevent them from accepting mutilations of form that are inconsistent with the guidelines of the whole, rhythmic or symmetrical. The understanding of symmetry and rhythms has its origins deep within human brain processes [Żórawski 1973, pp. 22-23].

## **2.2. Rhythms and symmetry in architecture and urban planning as a pursuit of order and beauty**

The Humans have always strived to organize their surroundings, from their homes to their settlements and cities. To achieve this, they have utilized ingrained preferences for forms such as symmetry and rhythm. These preferences likely stem from, and derive from, the structure and functioning of their bodies (symmetrical structure, heartbeat rhythm, walking strides) and from functioning in an environment characterized by rhythmic changes, such as the seasons of the day and year, and so on.

In ancient human settlements, both small and large, and in contemporary single-family housing estates and larger urban developments such as cities, rhythm was already utilized at the stage of designing plots for building houses, although it was not yet clearly perceived visually in these two dimensions. The aforementioned rhythm became decidedly more visually apparent after buildings were constructed on the designated plots, i.e., with the emergence of the third dimension. Another dimension influencing the visual perception of rhythm is time, which is related to the observation of space as the observer moves. Sometimes, the observer's movement in the city is accompanied by the rhythm of smaller forms than buildings, closer to the human scale, such as trees, shrubs, or flower beds, which can be touched and which are perceived very positively by the observer.



A



B



C



D

Fig. 1. A, B, Rhythm of arcades, windows, balconies, Cagliari, C, D, Rhythm of green forms and architectural elements, Poznań, (photo: Sobczykńska)

Rhythms play a significant role in both urban and architectural composition. Whether we're dealing with a larger space, such as a city or street, or a specific architectural form, rhythm in each case introduces a certain order.

In all eras, regardless of architectural style, symmetries and rhythms can be found in buildings and facades. In representative buildings, a combination of these two compositions, or symmetry of the rhythms of individual building elements, often occurs. When designing important structures such as town halls, palaces, public buildings, museums, and temples, people often sought to create an ideal composition—one that was distinct, powerful, clear, and unambiguous to the observer. Designers intuitively knew that this goal would be achieved through the use of shapes such as symmetry and rhythms.

In the perception of any space, rhythms create a certain order, and when present in symmetrical arrangements, they give a building or urban space a distinctive, clear, and distinctive character. Since ancient times, symmetry has been associated with elegance, harmony, and perfection of form and composition.



Fig. 2. A, Poznań, rhythm of greenery, windows, B, Cagliari, rhythm of trees, flowerpots, columns, (photo: Sobczyńska)

### 3. THE IMPORTANCE OF RHYTHMS IN THE PERCEPTION OF ARCHITECTURAL SPACE – SURVEYS

According Rhythms play a significant role in both urban and architectural composition. The rhythm of similar elements, along with gaps, creates a compositional whole [Sobczyńska, Kaszuba 2016, pp. 17-18]. For example, the rhythm of buildings with gaps between them, or the rhythm of windows or bay windows on a building's facade.

Juliusz Żórawski, in his work „About the Construction of Architectural Form,” emphasizes that every form has its own „formal guideline” [1973, p. 42], which is, for example, a symmetrical form. According to the author, „formal guideline” applies to both larger spaces, the urban layout, and smaller forms, such as the building's mass, facade composition, plan, greenery layout, etc. A larger urban space, such as a district (Montmartre in Paris or the historic centers of European cities), a street, a frontage, or a single architectural structure, can possess its own formal guideline, its own individual character. Such a formal guideline (characteristic feature) of an urban or architectural composition might be, for example, the rhythm of its elements and their symmetry (the rhythm of buildings and trees in an urban layout, or the rhythm of windows, bay windows, and avant-corps on a façade), as well as specific colors and materials. These characteristic features, such as the

symmetrical arrangement of windows, bay windows, and other building elements, and certain characteristic rhythms, can be found in individual parts of cities built during similar historical periods. This can be observed in the frontages of squares and streets, where buildings were built in a similar style and character. Such spaces are characterized by a uniform, clear expression, space image, and coherent composition.

Observing the historic building's facades, one can notice that their elements have always created a specific, easily decipherable rhythm. The composition of the facades of old buildings reveals attention to shaping rhythms and proportions, and the elements are arranged according to a specific, clear guideline. In contemporary buildings, on the other hand, it is difficult to see the meticulously designed rhythms of windows and projections as in previous centuries.

In contemporary design, it is observed that the ancient concept of ideal symmetry and eurythmy, as very static, and the aforementioned considerations regarding the formal guidelines of the overall composition, are increasingly being replaced by a more dynamic, stimulating vision of the spatio-temporal perception of the form of an architectural structure. The rhythms of building elements, once inextricably linked to symmetry, are now associated with the phenomenon of movement and space-time and are used in a very dynamic and loose interpretation. In newly constructed buildings, contemporary designers often deliberately introduce rhythmic disruptions and inconsistencies in the vertical direction, on individual floors. The author decided to investigate the consequences of this in the perception of city space and how it is experienced by users of these spaces and visiting tourists through survey study no. 2. This study was preceded by survey study no. 1, in which respondents were asked what importance visual rhythm has for them (the rhythm of windows, balconies, bay windows, details in an architectural building, the rhythm of trees in the street, the rhythm of buildings, etc.).

### **3.1. The Survey Study No. 1. Study's description and results**

The survey was conducted among 15 respondents, women and men aged 30-70. The question asked was, „What is the importance of visual rhythm to you? What feelings do you experience?” After asking this question, the author provided the respondents with examples of visual rhythms, including the following: the rhythm of windows, balconies, bay windows, columns, and other elements in architectural structures; rhythms in urban spaces, such as the rhythm of trees on the street, the rhythm of buildings in a housing estate, etc.

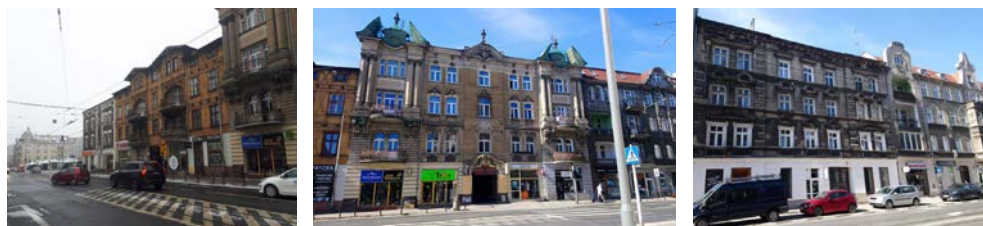
The author recorded respondents' responses to the questions. Tables include respondents' responses (words and phrases), starting with the most frequently repeated ones, and the number of responses.

Table 1. Results of survey no. 1.

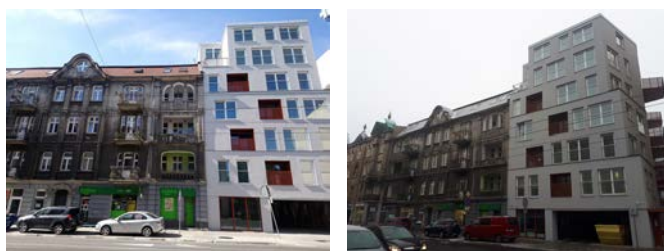
answers to the question „the meaning of rhythm in space, feelings”	number of responses/ 15 people
tidiness, order	15
peace, calmness	14
sense of harmony	12
sense of coherence, homogeneity	10
sense of security	9
clarity, specificity of space	8
raising the status of a place	5
systematisation	3
remembering a place, associating a place	3
enhancing the place’s significance, expressive, power of space	2
attachment to place	2

[Sobczyńska 2025]

### 3.2. The Survey No. 2. Study’s description and results



A



B

Fig. 3. J. H. Dąbrowskiego Street, A. street character, B. new building in the historic frontage, lack of continuity of rhythms and window proportions (photo: Sobczyńska)

The survey was conducted among 15 respondents, women and men aged 30-70. Respondents were shown two areas of Poznań: Jana Henryka Dąbrowskiego Street

and Plac Bernardyński, where new buildings were constructed to complement the historic buildings. They were asked for their opinions and feelings about the form and facades of the new structures in relation to the character of the existing buildings and the overall composition. Thirteen of the respondents live in and around Poznań, including seven in these districts, and the remaining two were tourists from Spain. The tables present respondents' responses (words and phrases), starting with the most frequently repeated ones, and the number of responses.

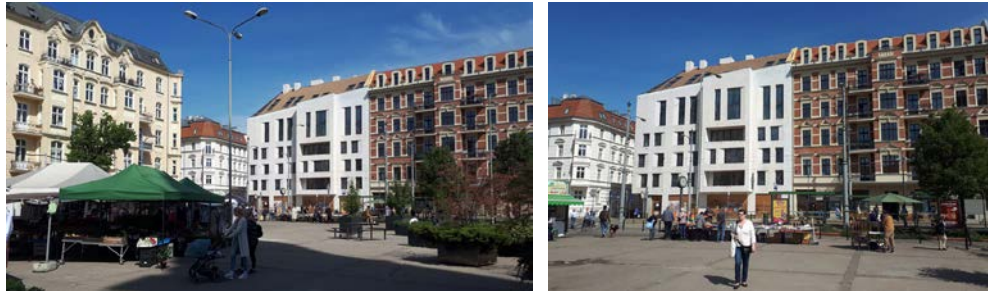


Fig. 4. Poznań, Bernardyński Square, new building as a complement to the historical buildings, lack of similarity in rhythms and window proportions (photo: Sobczyńska)

Table 2. Results of survey no. 2. Perception of the new building in the existing historic development of Jana Henryka Dąbrowskiego Street and Bernardyński Square in Poznań

Jana H. Dąbrowskiego Street, Responses (number of responses/15 people)	Bernardyński Square, Responses (number of responses/15 people)
<b>negative perception of space (15)</b>	<b>negative perception of space (15)</b>
not matching the existing buildings (15)	not matching the existing buildings (15)
too high, too large, coarse elements (15)	strange window shapes and their arrangement (15)
does not match all the elements, shape and size of windows, height, colour (15)	the new building is detached from the existing buildings (14)
windows too large and chaotically arranged (14)	chaos, lack of coherence and clarity (12)
chaos, lack of order (13)	scary, ugly, trashy, coarse (9)
overwhelming (10)	aggressive (8)
terrible (5)	weird (6)
weird (5)	overwhelming (6)
massacring the street space (3)	looks like a prison, a penitentiary (2)

[Sobczyńska 2025]

The new architecture emerging in the city generally attracts attention as a manifestation of modernity and is generally received positively. However, research has shown that in historical developments, which were built based on symmetrical layouts and rhythms, and which clearly strive for harmony, new buildings that do not adhere to these standards are perceived very negatively. In the examples of historical spaces shown above, where new buildings lack similar rhythms, proportions, and symmetry, there is a clear sense of disruption to the existing layout and space expression. During the research, the author observed that the most negative opinions, characterized by very strong emotions, were expressed by people living in the immediate vicinity of these spaces. Therefore, it can be concluded that not only the space composition but also the identity of the place was disrupted.

#### 4. CONCLUSIONS

Although contemporary design tends to strive for highly dynamic, stimulating forms, it turns out that in historical spaces with their homogeneous character, these objects are not positively received. For centuries, these spaces have been created based on the principles of harmonious composition, taking into account symmetry and rhythm, as outlined by architectural aesthetic theorists. As we can see, symmetry and rhythms stemming from the anatomy of the human body and being deeply rooted in it, are timeless values stemming more from need than fashion. The shape of a space influences human emotional responses, feelings, and behaviors, so designers of architectural and urban spaces should not forget about human preferences stemming from their psychophysical constitution. According to the author, dynamic, eye-catching objects are necessary in cities, but their locations should be carefully considered. It often happens that such anti-rhythmic, chaotic objects, placed adjacent to historic frontages, unnecessarily destroy their homogeneous character and space expression, as well as the historically valuable identity of the place, and evoke negative feelings in the users of these spaces. People should be able to choose to be in a space full of stimuli or, if necessary, leave it and go towards more peaceful and homogeneous compositions such as historic districts, streets or squares, characterized by a specific, individual space expression.

According to the author, the rhythms of building facade elements play a crucial role in creating a clear and uniform spatial expression of a historic development block or frontage. Therefore, she believes that when designing new buildings to complement the historic development, the existing rhythms and proportions of individual architectural elements characteristic of a given historic space should be taken into account. This way, a new building appearing within the historic development, adjacent to the block or frontage, will not disrupt the „formal guidelines” and individuality of that space, thus preserving a uniform, clear spatial expression and the identity of the place.

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## ZNACZENIE RYTMU W TWÓRCZOŚCI CZŁOWIEKA I PERCEPCJI PRZESTRZENI

### Streszczenie

Rytmu towarzyszą człowiekowi na wielu płaszczyznach egzystencjonalnych. Są częścią zarówno jego świata wewnętrznego jak i zewnętrznego. Rytmu występują w ciele człowieka, w jego codziennych czynnościach, w przyrodzie, a także w jego twórczości, w muzyce, w poezji, architekturze i urbanistyce. We współczesnym projektowaniu architektonicznym coraz częściej obserwuje się odejście od typowych ukształtowań rytmicznych i symetrycznych na rzecz dynamiki bogatej w bodźce. Według autorki nowopowstałe budynki w sąsiedztwie historycznej zabudowy często zaburzają jednorodny dotąd wyraz przestrzenny ulicy czy placu dlatego, że nie uwzględniają w swoich fasadach spokojnych rytmicznych układów przestrzennych istniejącej historycznej zabudowy. W artykule autorka postanowiła zbadać znaczenie rytmu dla człowieka w formie wizualnej i odbiór historycznych przestrzeni, w których pojawiły się nowe budynki nieuwzględniające zastanego kontekstu. Powstająca w mieście nowa architektura generalnie budzi zainteresowanie jako przejaw nowoczesności i jest raczej pozytywnie przyjmowana. Jednak badania pokazały, że w historycznej zabudowie, która powstawała w oparciu o układy symetryczne, rytmu i w której widać dążenie do harmonii, pojawiające się nowe budynki, które nie zachowują tych standardów, odbierane są bardzo negatywnie.

**Słowa kluczowe:** Znaczenie rytmu w twórczości człowieka i w percepcji przestrzeni

Rafał GRACZYK<sup>1</sup>, Matylda RAKOWICZ<sup>2</sup>

## FUNCTIONAL CHARACTERISTIC OF SELECTED SMALL TOWNS IN WIELKOPOLSKA REGION INFLUENCING SPATIAL DEVELOPMENT

The article presents research conducted in selected small towns in the Wielkopolska Region (Greater Poland): in a town within the sphere of influence of an agglomeration (Pobiedziska), a tourist town (Sieraków), a town located off the main transport routes (Odolanów), a town with an unchanged historical urban layout (Rakoniewice), and a town valuable for national culture (Pyzdry).

**Keywords:** agglomeration, national culture, small towns, tourism, urban planning, Wielkopolska Region (Greater Poland).

It was assumed as a thesis that small towns in Wielkopolska, similarly to towns in Western Europe, will determine the identity of the region and the nature of functional and spatial transformations. Therefore, the main objective of action is to stimulate the economic and social potential of tourism and culture, including assigning new socio-economic functions to existing buildings and areas, among others through the reconstruction, modernization and renewal of neglected and unused urban areas and residential districts in towns. At present, the wave of modernity, which has very rapidly entered small towns and is developing in a dangerous way, poses a serious threat to the proper shaping of the historical and cultural urban layouts of towns.

### 1. INTRODUCTION

The settlement units presented in the study were founded between the 13th and 16th centuries. An analysis of the location of the selected towns in the region shows that they are distributed relatively evenly in relation to one another. It can also be

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observed that some of them are situated away from the main transport routes. Such a location of small towns, away from the roads that are most important for the voivodeship, is associated with reduced access to cultural, educational and health-care institutions.

Rail transport, which has a very dense network in the Wielkopolska Region, played a significant role in the development of small towns. In the second half of the 19th century, the emergence of rail transport stimulated the development of these localities due to the establishment of passenger and transshipment stations in their vicinity.

Tourism, sport and recreation are developing in the region. The factors conducive to this phenomenon and influencing the development of recreation in the voivodeship include: the cultural richness of Wielkopolska, elements of cultural heritage that make up the cultural identity of small towns, the most important of which are extensive forest cover and the abundance of lakes. The small towns analysed in the paper – Pobiedziska, Sieraków, Odolanów, Rakoniewice and Pызdry – can be counted among such centres. This has made it possible to identify the role played by these towns depending on the resources they possess (Fig. 1).

### **1.1. Research method**

In preparing the article, the following research methods were used: comparative analysis, the method of physiognomic identification, and graphic analysis of changes in the historical and cultural urban layouts.

In the conducted research, a direct field survey method was adopted. One type of research was an environmental interview carried out among town residents and local decision-makers. The questionnaire survey made it possible to become familiar with the studied locality as well as with the respondents' opinions. The collected information made it possible to identify the differences occurring in the analysed representative towns and to determine the role played by historical and cultural urban layouts.

### **1.2. Geographical and natural characteristics of the analysed towns**

The small towns studied in the Wielkopolska Region were mostly founded between the 13th and 16th centuries as a result of their favourable geographical location (Münch 1946). The system of waterways in the region is highly favourable for tourist navigation, forming the so-called Wielkopolska Loop.

The attractiveness of the area is determined by the considerable diversity of its components, such as landform, forests and surface waters. The most important factors generating regional and supra-regional tourist flows include: historical monuments, sites associated with the history of Poland, especially the beginnings of

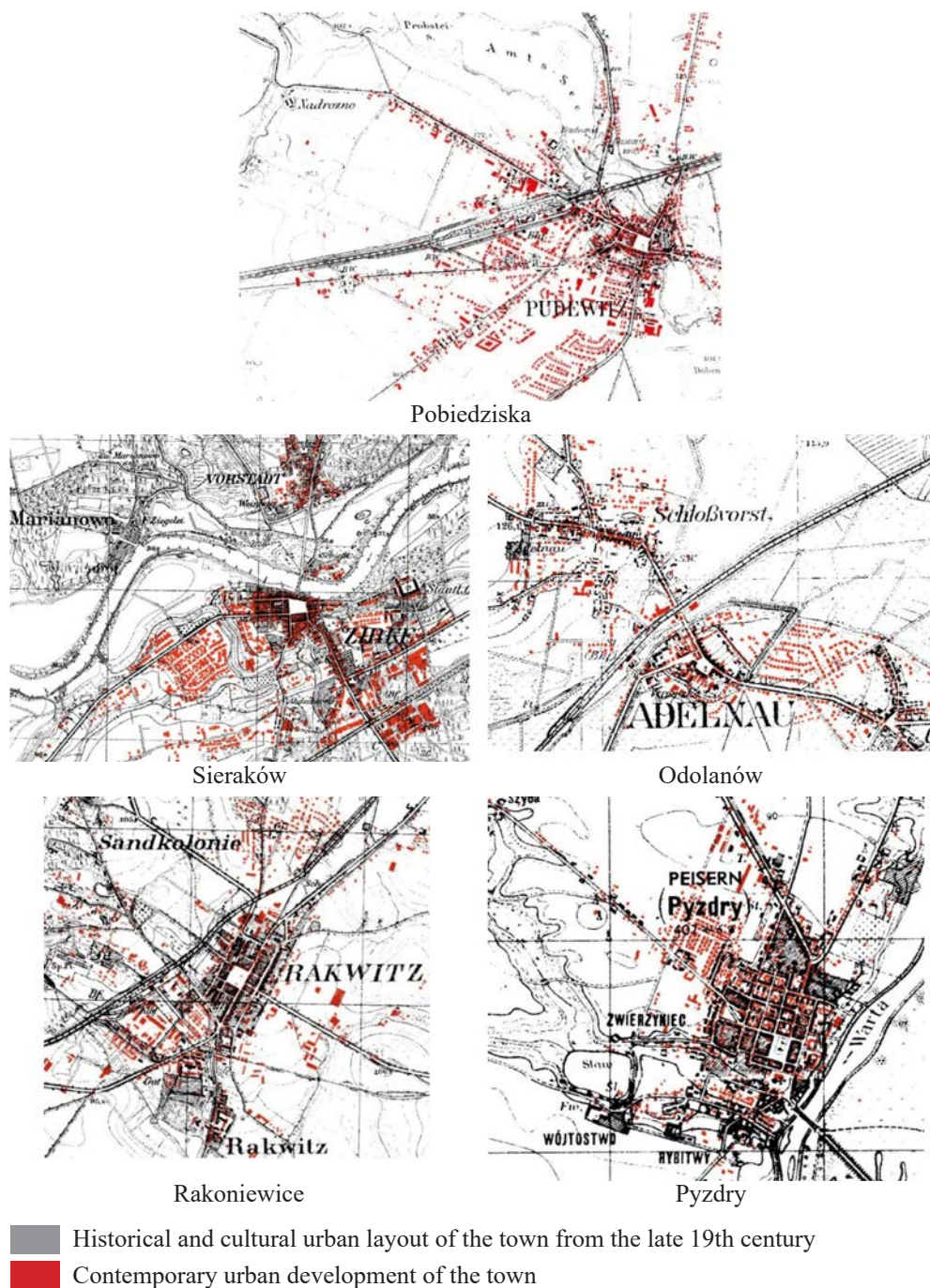


Fig. 1. Historical urban layout of the town against the background of contemporary urban development, compiled by the author on the basis of geoportal.gov.pl, Messtischblätter map

Polish statehood, places concentrating cultural events, historic cultural routes and places of religious worship.

Some of the small towns are located within areas protected by law (national parks, landscape parks, nature reserves, forest complexes). The location of the towns within these areas, in buffer zones, determines their specific functions related to tourism or low-nuisance industry [Table 1.1]

Table 1.1. Environmental conditions

No.	Town	Rivers	Water bodies	Location
	1.	2.	3.	4.
1.	Pobiedziska	–	lakes: Biezdruchowo, Małe, Dobre	Gniezno Lakeland,
2.	Sieraków	Warta – linking Międzychód and Skwierzyna in the west and Wronki in the east,	Lake Jaroszewskie,	Sieraków Landscape Park, Buki nad Jeziorem Lutomskim forest reserve, Noteć Forest,
3.	Odolanów	Barycz – right-bank tributary of the Oder,	–	Milicz Basin,
4.	Rakoniewice	–	–	Poznań Lakeland,
5.	Pyzdry	Warta – linking Ciężen with Konin to the east and Śrem to the west,	–	edge of the Września Plain and the Konin Valley,

### 1.3. Transport conditions

In the area of the present-day Wielkopolska Voivodeship, important roads and trade routes crossed the region, linking Greater Poland with European cities and contributing to the inflow and settlement of a substantial urban population. Some of the centres analysed owed their economic growth to this fact. The location of Pyzdry on an important trade route from Kraków via Kalisz to Poznań, as well as on the then navigable Warta River, led to the rapid development of the town. Owing to such a location, the most important trade routes for the region developed: from Wrocław to Poznań and further to Pomerania, and from Frankfurt an der Oder to Poznań and further eastwards via Pobiedziska towards Toruń. This transport system essentially survived until the partitions of Poland in the 18th century. The division of Wielkopolska between Russia and Prussia and the delineation of new borders led to the disappearance of certain sections of roads and trade routes (Tłoczek 1955), which had previously created favourable conditions for the development of these localities [Table 1.2].

Table 1.2. Location of small towns in relation to the transport network

No.	Town	Road transport		Railway lines
		International and national roads	Voivodeship and county roads	
	1.	2.		3.
1.	Pobiedziska	–	(Poznań – Gniezno), (Kostrzyn – Pobiedziska)	Poznań – Gniezno – Inowrocław – Gdańsk
2.	Sieraków	–	no. 133 to Chrzypsko Wielkie, no. 150 through the Noteć Forest to Wronki, no. 182 from Międzychód to Wronki, the most important and busiest of the voivodeship roads running through the town, no. 198 running along the southern edge of the Noteć Forest to Radgoszcz in the Międzychód commune,	suspended passenger traffic (Międzychód – Wronki),
3.	Odolanów	–	no. 444 (Krotoszyn – Odolanów – Ostrzeszów), no. 445 (Odolanów – Ostrów Wlkp.),	Ostrów Wielkopolski – Grabowno Wielkie,
4.	Rakoniewice	no. 32 (Poznań – Zielona Góra),	no. 312 (Rakoniewice – Wielichowo – Czacz – to national road 5),	Wolsztyn-Grodzisk Wlkp.-Luboń
5.	Pyzdry	–	no. 442 (Września – Pyzdry – Gizałki – Kalisz), no. 466 (Słupca – Ciężen – Pyzdry),	narrow-gauge – not in operation,

#### 1.4. Functional and land-use structure

The western and southern part of the region consists of areas located at a distance from large urban centers and lacking a strong core. However, this peripheral location may become an asset for local development. An example of this is Odolanów, analysed in the paper, which acts as a center concentrating the social and economic life of the area.

The central part of the voivodeship is distinguished by its tourist attractiveness, which also includes cultural and historical attractiveness. The richness of the area lies in its natural environment, whose most valuable resources and assets have been placed under legal protection. These include, among others, the Nadwarciański Landscape Park, within the boundaries of which Pyzdry is located,

protected landscape areas, natural and landscape complexes, as well as Natura 2000 sites. Within the natural structure, the main ecological axis is formed by the Warta River. Sections of the valleys of the Warta and Noteć rivers form the route of the Wielkopolska Loop, together with the towns covered by this study, such as Sieraków, which provide a tourist hinterland and have recreational infrastructure.

Among the factors influencing the development of recreation in the voivodeship are the cultural richness of Wielkopolska and the elements of cultural heritage that build the cultural identity of small towns, the most important of which are extensive forest cover and a large number of open water bodies.

Table 1.3. Main functions of the analysed towns

No.	Town	Industry	Trade/services	Agricultural services	Tourism and recreation
	1.	2.	3.	4.	5.
1.	Pobiedziska		X		
2.	Sieraków				x
3.	Odolanów	X			
4.	Rakoniewice		X	x	
5.	Pyzdry		X	x	

compiled by the author, based on data from Statistics Poland (GUS)

## 2. POBIEDZISKA – A TOWN WITHIN THE INFLUENCE OF AN AGGLOMERATION

The town belongs to the group of the earliest foundations in Wielkopolska. At that time, a regular town layout was established. The market square in Pobiedziska was formed at the junction of roads that had existed before the town was founded. These were roads leading to Poznań, Gniezno and Kostrzyn (Münch 1946).

At the end of the 17th century, settlers came to the town and its surroundings, building new houses and workshops and cultivating the land. This process of reconstruction and economic stabilisation was interrupted by the Great Northern War. Towards its end, new settlers from Silesia and Germany began to arrive in Pobiedziska, which stimulated the development of the town, in particular trade and crafts (Kwiatek, Lijewski 1998). With the Second Partition of Poland, the town became part of the Kingdom of Prussia.

The interwar period was a time of general impoverishment of the population. Nevertheless, a fire station, a shooting range and a sports field were built in the town and a beach and small marina were arranged on Lake Biezdruchowo. In the

mid-1970s, a noticeable economic revival took place. A town marketplace was established on the northern shore of Lake Małe (Frankiewicz 2007).

In the second half of the 20th century, in the south-western direction, along the exit roads from Pobiedziska and the railway line, the built-up areas were extended and complexes of multi-family and single-family housing developed. The layout of the old part of the town has not undergone major changes to this day. The main composition of the town's historical and cultural urban layout was already shaped in the Middle Ages. The market frontages are formed by 2-3 storey buildings from the turn of the 19th and 20th centuries, with steep roofs, commercial premises on the ground floors and their ridges aligned with the edges of the market square. The most valuable historical monument in Pobiedziska is the church of St Michael the Archangel, located in the north-eastern corner of the market square, and belonging to the oldest Gothic churches in Wielkopolska. Among the listed monuments is also, among others, the historical urban layout of the town. In total, the register of the Voivodeship Heritage Conservation Office in Poznań includes 9 entries from Pobiedziska (6 buildings, the belfry of the parish church of St Michael the Archangel, the remains of a fortified manor house and the historical urban layout of the town).

The town concentrates primarily service, residential and production functions. Nearly half of the municipality's inhabitants live here. Roughly half of the residents are employed locally, while the other half commute to other localities, mainly to Poznań as the core city of the agglomeration.

A very large group of people participating in the survey reported problems related to the lack of access to services enabling them to spend time outside the home. A significant number of respondents expressed a need for better access to cultural services. Respondents willingly participate in cultural and entertainment events organised in the town. They appreciate the contribution of the municipal authorities to the organisation of such initiatives. They state that these events provide the best opportunity for a walk with the family or meeting friends.

### **3. SIERAKÓW – A TOURIST TOWN**

Located in Międzychód County, the town, owing to its situation between lakes, the Warta River, a Natura 2000 area and the Sieraków National Park, performs a recreational and tourist function. It has a well-developed recreational infrastructure on Lake Jaroszewskie.

The 16th century was one of the most prosperous periods in its history. Its location on a navigable river determined its development. Construction of the Bernardine church and the castle was begun. The town did not suffer destruction during the wars with Sweden, which allowed it to develop correctly in spatial terms. After the Second Partition of Poland, it came under Prussian rule. In 1817 the town was almost completely destroyed by fire and then rebuilt while retaining the pre-fire layout.

The monuments and sites that have permanently shaped the town's physiognomy include the former Bernardine church and the former half-timbered Evangelical church, now in ruins and undergoing irreversible degradation year by year. The provincial register of monuments lists 18 entries, including 16 buildings.

The availability of services for tourists is also of no small importance. The town area is covered by several forms of nature protection, including the Sieraków Landscape Park and Natura 2000 areas. Respondents drew attention to the historic buildings preserved in the urban space. They identified the Opaliński Castle, which has become embedded in the residents' consciousness, as the most important feature identifying the town, as well as the still operating stallion breeding complex, whose buildings were erected in the first half of the 19th century.

Residents indicated urban green areas and the lake with its kayak marina, beach and promenade as the most distinctive features of the town. On the basis of the surveys, it can be concluded that most of them expect services such as a restaurant, watchmaker and fast food bar. Individual responses also mentioned needs such as entertainment in general, a bookshop, car park, cobbler, computer shop, furniture shop, cinema, park and playground. In the town centre, residents clearly feel the lack of developed walking paths and of an orderly layout and design of the market square.

According to respondents, there is also a lack of adequate lighting of streets and squares. Insufficient and inadequate lighting causes the town to empty in the evening. This is particularly evident in summer, when tourists arrive in the town as a tourist and recreational centre.

Residents of Sieraków also commented on their level of satisfaction with the town's architecture and urban planning. Negative opinions focused on the lack of urban planning control, and the absence of a development strategy and land-use plan.

#### **4. ODOLANÓW – A TOWN LOCATED OFF THE MAIN TRANSPORT ROUTES**

The development of the town dates back to the 15th century, when three parts of the urban layout emerged: the town centre and the suburban areas of Zamkowe and Górka. The chartered town was surrounded by defensive walls, which were demolished by the partitioning powers at the beginning of the 19th century. From the mid-18th century, an economic revival took place. Three religious buildings date from this period: the Evangelical church and two Catholic churches. The rapid development of the town was not halted by the Second Partition of Poland in 1793. It was a multicultural town, inhabited by Catholics, Protestants and Jews<sup>3</sup>. The 19th century was a period of prosperity for the town, which had an agricultural and

<sup>3</sup> *Geographical Dictionary of the Kingdom of Poland*, available online: [http://dir.icm.edu.pl/pl/Słownik\\_geograficzny/Tom\\_VII/380](http://dir.icm.edu.pl/pl/Słownik_geograficzny/Tom_VII/380) [accessed: 10.02.2016]

craft-based character. At that time, the town hall, synagogue<sup>4</sup>, post office building, slaughterhouse and water tower were built (Kwiatek, Lijewski 1998). In 1909 a railway line was routed through the town. War damage after the First World War, changes in the ethnic structure and the resulting impoverishment of the population slowed down the town's development. After the Second World War, the town developed very slowly, retaining mainly an agricultural character. Significant changes occurred with the discovery of natural gas deposits and the construction of a natural gas de-nitrification plant at the turn of the 1960s and 1970s.

The spatial structure of Odolanów makes it possible to distinguish several types of areas characterised by different forms of land use. These include areas of inner-city residential development, single- and multi-family housing, parks and green complexes, as well as agricultural land.

In the town centre, compact inner-city residential development predominates, together with commercial and service facilities clustered around the market square. The residential buildings located there date mainly from the late 19th and early 20th centuries. The historic buildings entered in the register of the regional heritage conservator include the existing churches and the historic urban layout. In total these are 4 listed monuments (3 buildings and the urban layout of the town).

The areas on the north-western and north-eastern outskirts of the town are characterised by multi-family and single-family housing. In the western part of the town there are areas of industrial development with a predominance of production and warehouse facilities. In addition to numerous interesting historic buildings, the town also has sports and recreational facilities (a stadium, sports hall and playing fields), which enhance the tourist attractiveness of Odolanów. Open areas complement the urban fabric of the town. There are three parks in the town, including the frequently mentioned Park of Nature, as well as roadside greenery, estate greenery and allotment gardens. An important recreational asset of the town is its location within the range of the protected area Dolina Baryczy (Barycz Valley).

According to the survey findings, most residents have lived and worked in Odolanów since birth. The remaining part of the population is employed in larger neighbouring towns such as Ostrów Wielkopolski and Kalisz. Problems are felt in relation to entertainment and catering services. In the opinion of the majority of residents, there are no places in the town, apart from parks, where they can spend time after work. In the absence of alternatives, they prefer to spend their free time at home in private. Regardless of age, residents generally feel that the town does not offer attractions that would encourage them to go out. A large proportion of respondents are dissatisfied with the architecture and urban layout of the town, which they consider to be ageing, monotonous and chaotic.

Residents are divided in their views on the extent to which the local authorities are involved in improving the town's appearance. Some believe that the authorities

<sup>4</sup> Available online: <http://www.sztetl.org.pl/pl/article/odolanow/5,historia/> [accessed: 10.02.2016]

take care of the town by renovating buildings and cleaning the streets. The other half of respondents believe that the local government's interest is too limited and allows historic buildings to deteriorate. According to respondents, cultural events organised in the town do not have any significant impact on the development of Odolanów.

## 5. RAKONIEWICE – A TOWN WITH A LARGELY UNCHANGED URBAN LAYOUT

The buildings in Rakoniewice are very characteristic of small towns in Wielkopolska. Old gable-end houses, wooden and half-timbered, have been preserved, among others in Grodziska, Kościelna, Krystyny, Poczтова and Wolsztyńska streets. The spatial layout of the town consists of a relatively large market square for a small town, measuring 112×120 m, from which the streets radiate. The plans for the arcaded houses around the market square were established at the end of the 17th century. These were wooden arcaded houses with gable or broken roofs covered with shingles. They were distinguished by a high level of carpentry craftsmanship. The appearance of the houses was regulated by ordinances issued by the town owners, who supported the construction of arcades both because of their usefulness in trade and craft development and because of their representative appearance. The buildings were destroyed in fires in 1877 and 1927. At present, only four houses have survived in the northern corner of the market square.

Most of the buildings entered in the records of the Voivodeship Heritage Conservator are located within the historic layout of the town. There are 18 entries from Rakoniewice in the register of the Voivodeship Heritage Conservation Office in Poznań (including 15 buildings, a park, former garden areas and the urban layout of the town).

The vast majority of residential buildings were erected before 1945 and, due to technical neglect and wear, require extensive, comprehensive modernisation and renovation works. The condition of the historic buildings is particularly poor<sup>5</sup>. In recent years, the town has become an area of intensive single- and multi-family residential development. Dwellings are also being created through the adaptation and reuse of various existing buildings, such as a tannery, winery, grist mill and shoe factory. The investments carried out, making use of existing post-industrial facilities, result in a better managed urban space<sup>6</sup>. At the southern edge of the town there is a park with a palace, which constitutes the largest green enclave in the town.

<sup>5</sup> Based on data from the Rakoniewice Town and Municipality Office (UMG Rakoniewice)

<sup>6</sup> *Development Strategy of the Town and Municipality of Rakoniewice for 2016-2021*. Available online: [[http://www.rakoniewice.pl/asp/pl\\_start.asp?typ=14&menu=272&strona=1](http://www.rakoniewice.pl/asp/pl_start.asp?typ=14&menu=272&strona=1)], accessed: [12.09.2016]

The most important sports facility in the town is the sports and entertainment hall, opened for use in 2009 in Nowotomska Street. The facility is used for educational purposes and for organising various types of events – cultural, entertainment and educational – both for the residents of the town and for those of the municipality and the county. The town also has a full-size football pitch, two smaller “Orlik”-type pitches, and an outdoor gym in the park.

The proportion of respondents employed in the town is similar to that of those working outside it. The latter are employed mainly in localities that are well connected by road and rail to Poznań, Wolsztyn and Grodzisk Wielkopolski. Residents attach great importance to the town’s historic fabric, valuing above all the market square and the historic buildings in its vicinity. Respondents repeatedly pointed to the recreational advantages of the park in the southern part of the town as a suitable place for rest. Relatively often they also regarded their own gardens as an equally good place for relaxation, explaining this choice by the lack of attractions in the town and by a greater sense of safety.

Most residents are satisfied with the architectural and urban qualities of Rakoniewice. Opinions were strongly divided when it came to assessing the town’s commitment to caring for aspects related to the shaping of urban space. Respondents who felt that the town’s involvement was insufficient were mainly older people, who often complained about architectural barriers. The vast majority of residents do not engage in matters that determine the appearance of the town. Lack of time was the most frequently cited reason. Residents also often replied that this was not their responsibility.

In the residents’ perception, the cultural and entertainment offer is insufficiently developed. The demand for such services results mainly from demographic factors, in particular an ageing population. This is an adverse factor and leads to a weakening of residents’ identification with their place of residence.

## **6. PYZDRY – A TOWN VALUABLE FOR NATIONAL CULTURE**

In the Middle Ages, it was one of the largest Polish defensive-residential complexes (Olszacki 2010). Kings Casimir the Great and Władysław Jagiello, as well as Casimir Jagiellonian, stayed at the castle on numerous occasions. From that time onwards, the town began to develop very dynamically in economic terms (Kwiatk, Lijewski 1998). During the partitions, by decision of the Congress of Vienna, the town found itself in 1815 within the borders of the Russian Empire, where it remained until the First World War. Thus, Pyzdry was the westernmost town of the empire. In 1918, Pyzdry returned within the borders of the reborn Polish state.

The spatial layout is clear, which is reflected in its orthogonal structure and the division into urban blocks (Zaniewska 1987). Due to the exceptional character of the town center, its multilayered cultural structure, and buildings important for the

history and culture of Pyzdry, the town has been included in the register of monuments of the Wielkopolska voivodeship. In total, 13 sites are listed in the register of the Voivodeship Heritage Conservation Office in Poznań (including 9 buildings, the remains of the castle, 2 fragments of the town walls and the historical urban layout of the town).

The cultural and sports life of the town's residents is supported by the Museum of the Pyzdry Land, the Municipal and Communal Public Library in Pyzdry, and the Center for Culture, Sport and Promotion in Pyzdry. The Museum collects cultural assets, organises exhibitions, and conducts research, educational and publishing activities. Its seat is located in the former Franciscan monastery. The institution organises various exhibitions and workshops<sup>7</sup>. The Municipal and Communal Public Library in Pyzdry also operates in the monastery premises. The Library pursues its objectives by collecting and processing library materials that serve the development of reading and the satisfaction of information, educational and self-education needs. Its public character makes the library a meeting place for the local community<sup>8</sup>. The primary objective of the Center for Culture, Sport and Promotion in Pyzdry is to conduct cultural activities such as organising municipal and national ceremonies, open-air events, competitions, summer and winter holiday activities for children and young people, sporting events, as well as promoting the town<sup>9</sup>. The following facilities are available to residents: the sports and entertainment hall in Pyzdry and a complex of sports pitches.

The growing importance for tourism, since the beginning of the 21st century, of the Wielkopolska Loop and of kayaking trips, which have been attracting increasing interest, led to the construction in 2007 of a boating marina. The implementation of the entire project involved the County Office, the Pyzdry Town and Municipality Office, the Tutaj Warto Foundation and the Marshal's Office in Poznań. The next project planned after the construction of the riverside marina in Pyzdry is the development of a promenade along the Warta River, together with the installation of lighting and benches. In the future, as part of the development of the riverside areas, it is planned to build a pedestrian footbridge across the Warta River at the site of the former wooden bridge, which was destroyed by retreating German troops. The only existing river crossing is located almost half a kilometre from the town center and lies in a busy section of the regional road.

In the perception of residents, the town of Pyzdry is rated positively. The medieval layout of the town, the low-rise housing and the compact development pattern are all evaluated favorably. A characteristic feature of the town's physiognomy and of residents' identity is its location on a high escarpment with the remains of the

<sup>7</sup> [http://www.muzeum\\_pyzdry.republika.pl/](http://www.muzeum_pyzdry.republika.pl/) [accessed: 11.03. 2014]

<sup>8</sup> <http://bibliotekapyzdry.pl/> [accessed: 11.03. 2014]

<sup>9</sup> <https://www.pyzdry.pl/272,centrum-kultury-sportu-i-promocji-w-pyzdrach.html> [accessed: 11.03. 2014]

former castle complex. Residents see the recently built kayak marina as a positive example of the local authorities' activity. The disadvantages of the town include its underappreciated and not very well maintained historic monuments and, in the opinion of residents, too little interest on the part of the authorities in this issue. The most frequently mentioned shortcoming is the lack of places for active recreation and small catering services. Most people are willing to take part in events organised in the town. Non-participation is most often due to residents' obligations rather than a lack of interest in social life. In general, initiatives undertaken by the town authorities are met with a positive reception and attract a significant proportion of residents.

The research made it possible to examine the functioning of selected representative small towns. The statements collected during the surveys and the conclusions presented can serve as a basis for design work and for planning concepts for the development of small towns. As shown by the author's research, investment in and development of public spaces in small towns can significantly contribute to increasing their attractiveness.

Investments that are particularly appreciated include marinas on river and lake shores, as well as green areas that encourage activity and recreation. Water bodies located near towns or within their administrative boundaries affect in various ways the attractiveness of the space and the physiognomy of a small town. In localities where a large navigable river flows, it is possible to organise many attractions of a utilitarian and commercial nature for both residents and tourists. The attractive location of Pobiedziska on the Piast Route, the wealth of its geographical environment, the traces of Piast history and the proximity of Poznań have directed the municipality's development towards tourism and recreation. By contrast, the natural and landscape assets of Sieraków mean that the town is perceived as an attractive tourist destination. The tourism development policy pursued by the local authorities has led to a significant increase in the number of visitors. The town has favourable conditions for the development of tourism, resulting above all from its natural setting: proximity to the river, a high proportion of forests and lakes, a varied relief, the existing technical infrastructure and the availability of land for investments related to holiday and second-home development. The recreational asset of the town of Odolanów is its location within the range of the protected Barycz Valley area. This location means that the town performs a tourist service function for part of the visiting population. After the fires of the 19th century, Rakoniewice retained part of its historic wooden arcaded houses with broken gable roofs covered with shingles, once typical of Polish towns. Today they serve as an example of how traditional Polish small-town development used to be shaped. Pызdry performs a tourist and cultural function thanks to its location on the Warta River and its well-preserved urban fabric with many monuments valuable for the culture of Wielkopolska.

An analysis of the development conditions of small towns in Wielkopolska points to the need to invest in urban space with regard to local cultural and natural values.

Given the specific role that the towns studied play in the settlement system, attention is drawn to the need to clarify and make more legible the functional and spatial structure of towns, in order to increase their attractiveness and improve the quality of public spaces.

The main criticism concerned the underestimation of the development of external areas of the town. A detailed analysis of the questionnaires collected during the field surveys showed that the buildings with which residents most strongly identify are public utility buildings that are distinctive elements of the urban space.

The spatial layout of development in the analysed towns is well connected with open areas and supports the development of public and commercial functions. The main element of the urban structure is the street, understood as a historical and cultural urban layout. Streets form the framework of the town's spatial structure. Public and private services are concentrated along them. The diversity and concentration of such services shape the image of the town and determine the investment and tourist attractiveness of the areas located in their immediate vicinity. Less favourably perceived are the parts outside the inner-city development, where new buildings are constructed without regard to regional conditions. In these areas, it is particularly important for the town to implement the modernisation and transformation of development of low aesthetic, historical and compositional value.

On the basis of the analysis of the small towns discussed, it can be observed that elements once linked to the agricultural functions that most towns in Wielkopolska used to perform within the settlement network are disappearing from the landscape of these localities. The old development is vanishing, destroyed both by the passage of time and by fires, which frequently affected the extensive wooden building stock that small towns once possessed. The development of Rakoniewice is an example of this process.

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## FUNKCJONALNE CECHY WYBRANYCH MAŁYCH MIAST WPŁYWAJĄCE NA KSZTAŁTOWANIE ROZWOJU PRZESTRZENNEGO

### Streszczenie

W artykule przedstawiono badania prowadzone w wybranych reprezentatywnych małych miastach Wielkopolski. Do badań jako próby wybrano pięć miast o określonych determinantach jakie pełnią ze względu na swoje położenie. Jako determinanty wybrano charakterystyczne miasta, które spełniają poniższe warunki: miasto w płynie aglomeracji (Pobiedziska), miasto turystyczne (Sieraków), położone na uboczu głównych dróg komunikacyjnych (Odolanów), miasto o niezmienionych historycznych układach urbanistycznych (Rakoniewice) oraz jako piąte miasto cenne dla kultury narodowej (Pyzdry). Jako tezę przyjęto, że Wielkopolskie małe miasta na podobieństwo miast zachodniej Europy będą decydować o tożsamości regionu i charakterze przemian funkcjonalno-przestrzennych.

Dlatego zasadniczym celem działania jest ożywienie gospodarcze i społeczne potencjału turystycznego i kulturalnego, w tym nadanie istniejącym obiektom i terenom nowych funkcji społeczno-gospodarczych, m.in. poprzez odbudowę, modernizację i odnowę zaniedbanych i nie użytkowanych obszarów miast i dzielnic mieszkaniowych w miastach. Współcześnie fala nowoczesności, która bardzo szybko wtargnęła do małych miast i niebezpiecznie się rozwija, stwarza duże niebezpieczeństwo dla prawidłowego kształtowania historyczno-kulturowych układów urbanistycznych miast.

**Słowo kluczowe:** aglomeracja, turystyka, Wielkopolska, kultura narodowa, małe miasta, układy urbanistyczne

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## FLOATING ARCHITECTURE AS AN URBAN DEVELOPMENT AND ACTIVATION TOOL FOR WATERFRONT AREAS

The article addresses the subject of employing floating architecture (FA) as a means of contemporary urban planning, with a particular focus on housing-related concerns. An examination of international case studies reveals the extensive potential for the implementation of 'floating' structures. The culmination of the theoretical and technical experimentation phase at the commencement of the third decade of the 21st century has facilitated the popularisation of this type of solution, not only as a response to the elite needs of sophisticated public utility architecture. In addition to unique commercial hotel projects on prestigious waterfronts, increasingly egalitarian housing projects are now being developed. Advanced structural forms, including derivative models such as amphibious architecture and boathouse architecture, have become a standard component of spatial planning methodologies in regions where conventional development approaches are not feasible due to a complex interplay of technical, administrative, and economic factors. In the current epoch, there is an ongoing discourse surrounding the adaptation of urban environments to the imminent challenges posed by climate change. Within this intellectual landscape, floating architecture emerges as a prominent solution, garnering serious consideration within a development strategy that emphasizes flexible resilience. Such strategies are particularly pertinent to regions susceptible to flooding, as well as to the conceptualization of artificial ocean habitats intended to serve as refuges for individuals displaced by the repercussions of climate change. The article presents the systematised results of the work of an inter-university scientific and teaching team on identifying the main trends in the application of floating architecture in the revitalisation of urban waterfront areas. The results were utilised in order to define the scope of two master's theses dedicated to the Gdańsk waterfront.

**Keywords:** revitalisation, water urbanism, floating architecture, affordable housing, housing on water, contemporary urban planning, port cities, climate change urbanism, activation of inactive port docks and waterways, waterfront redevelopment

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## 1. FROM EXPERIMENT TO PLANNING TOOL

Floating architecture (hereinafter referred to as FA) is a dynamically developing branch of contemporary architecture and is a solution that is systematically taken into account in urban planning. Polish-language literature on the subject is dominated by publications on technical solutions, the environmental dimensions and the architectural form of FA structures, in line with the global trend of research into the so called *aquatic architecture*. Global studies on FA are dominated by an interdisciplinary research perspective. Their main focus combines technology with architecture and art, but is gradually being extended to related disciplines such as landscape architecture, environmental studies and spatial planning [Bujniewicz 2019 after Wylson 1986, Williams 2009, Burchard C., Flesche 2005 and Barker, Coutts 2016, Strangfeld, Stopp 2015, Dreiseitl, Grau 2005]. This is primarily a response by scientific and design communities to the issue of the effects of climate change, including, among others, rising sea levels. The urban planning approach to research on FA and its derivatives is also undergoing changes. Alongside aquatic architecture, the so-called *water urbanism* is becoming more widespread, sparking a resurgence of interest in this design approach, initiated at the beginning of the second half of the 20th century by the late Metabolists [De Meulder, Shannon 2008, Nijhuis, Jauslin, van der Hoeven 2015]. While architectural scale is increasingly becoming a subject of interest not only for scientists but also for investors in Poland [Nyka 2013, Bujniewicz 2019, Piątek 2016], studies on urban scales are still secondary topics in studies on the revitalisation of urban waterfronts [Lorens 2013] or in research on broadly understood blue-green urban infrastructure [Konopka 2002]. The results of current Polish research, mainly concerning the integration of scales and problem areas, are disseminated across international publications. These are mostly cross-sectional theoretical studies that explore a prospective form within the framework of global climate and environmental concerns [Januszkiewicz, Gołębiewski et al. 2024].

Until recently, FA was mainly perceived as a valuable form of artistic expression or alternatively as a technical experiment. From an urban planning perspective, inspiration for FA applications is derived from sources external to the exploration of European tradition. The analysis of regional construction practices, mainly on the southern Chinese coast, the archipelagos of Oceania and settlements in the floodplains of Asia's great rivers, such as the Mekong Delta on the border between Laos and Thailand, is of great importance for the advancement of this field of study. At the heart of these settlements are structures that increase the flexibility of buildings in response to changes in water levels, which characterise the development of fishing villages. Innovations made in the era of climate change,

frequently in the *low-high-tech*<sup>3</sup> spectrum, are designed to address the growing problems of those regions. At the same time, they draw the attention of European designers and planners to the potential of innovative solutions to local development challenges.

The main trend in practical applications of FA has so far been a kind of programmatic counterpoint in the context of waterfront public spaces and a pillar of luxury hotel and residential offerings. In recent years, there has been a paradigm shift in the perception of the potential of FA solutions. Once seen merely as a response to the growing housing problem, solely in regions directly exposed to the effects of climate change, FA solutions are now recognised as an important tool for planning and revitalisation, especially in metropolitan areas experiencing shortage of available building land. This trend includes specific solutions using canals and basins that are no longer used for port and shipping purposes. It is being gradually developed through the use of large-scale floating artificial islands as an alternative to building full polders, which are used to facilitate the urbanisation of shallow coastal areas. The conventional approach to shifting the coastline constantly uses technological advances to reduce the costs of expanding safe settlement in reclaimed areas and depression zones. Experiences on this scale bring us closer to the implementation phase of expansive solutions, known as *ocean habitats*. They are part of a trend initiated in the early 1960s by architects such as Kenzo Tange (Tokyo Plan 1960) and Kikutake Kiyonori (Marine City 1963). These habitats represent a response to new development challenges – building shelters for the so-called climate *refugees* migrating from areas permanently threatened by rising sea levels.

Following the experimental phase, which was mainly supported by public funds, FA was incorporated into the expanded urban planning toolkit. At the dawn of the second decade of the 21st century, technical and legal solutions improving the private sector's implementation of FA solutions became widespread, not only in port and coastal centres. This led to a significant evolution of trends towards the application of FA in four main areas, addressing the complex development challenges of cities and regions. These are:

- 1) revitalisation of an extensive network of inland waterways and post-port water bodies, especially those with an uncertain future, which for decades have been subject to restrictions on permanent development for urban purposes, due to, among other things: (a) the cost of reconstruction, (b) legal and administrative status, e.g. reserves for port and transport use,
- 2) economic and residential revitalisation of the coastal areas with unstable shores, typical for: (a) reservoirs created as a result of the reclamation of excavations and opencast mines, (b) areas at risk of flooding,

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<sup>3</sup> High-low tech is an approach promoted by a research group at MIT that studies the correlations between the use of high-tech materials and technologies and solutions derived from pre-industrial building traditions (according to MIT Media Lab Overview < High-Low Tech — MIT Media Lab

- 3) new urbanisation in shallow sea areas resulting from limited availability of building land due to ownership structure, administrative barriers and/or geo- and hydrotechnical changes,
- 4) conceptualisation of theoretical frameworks for the establishment of artificial ocean habitats as temporary or permanent refuge islands for climate refugees from archipelagos threatened by rising sea levels.

The following paragraphs present selected examples illustrating, often in a complex manner, the aforementioned trends. Dutch projects mainly follow the third trend, while British-London projects, similarly to the Scandinavian ones (Copenhagen and other Danish-Swedish projects), explore the first trend. German practice in Lusatia demonstrates the development of applications of the second trend, and the selection of non-European examples shows the complexity of creating large-scale floating habitats that fit into both the third and fourth trends.

The article presents the systematised results of the work of an inter-university scientific and teaching team composed of: Dr. Hab. ... and Dr. ... The research concerned the identification of the main trends in the application of floating architecture in the revitalisation of urban waterfront areas. The research was carried out in search of answers to two main research questions:

- 1) To what extent do FA solutions go beyond the architectural scale and evolve into a tool for urban planning solutions?
- 2) Which form of urban landscape represents the highest-rated solutions using floating architecture?
- 3) How does Polish practice relate to solutions employed in other countries that are regarded as prototypical or model solutions?

A preliminary review of Polish and foreign literature on the subject was conducted for research purposes. This review focused on the description of European examples of good practice. In addition, the materials from our own field studies were reviewed and supplemented. The conclusions from the introductory part were used to define the topic and scope of two master's theses on the development and activation of waterfront areas. As part of the theses, two hypothetical conceptual design studies were created, together with theoretical studies providing an in-depth analysis of the design issues:

## 2. TYPOLOGY OF OBJECTS AT THE WATERFRONT

An important element for studies on FA and its applications is the definition of conceptual categories and the establishment of a boundary between *floating architectural objects*<sup>4</sup> and units that should be defined as boats or ships (Photo 1d, Photo

<sup>4</sup> In English, the terms *floatig* (floating on water but not drifting) and *buoyant* (meaning resilient, light, floating on the surface (of a liquid)) are used here, as mentioned by [Piątek 2016].

2a-2b, Photo 4, Photo 5b, Photo 6, Photo 7). The fundamental distinction resides primarily in the structural solutions that enable (a) independent, safe navigation using their own propulsion devices (boat) or (b) movement under tow without their own propulsion (barge). Researchers in this field systematically organise the existing architectural and structural solutions, commonly referred to as *floating architecture*, whose typology covers a wide spectrum of waterfront structures and *structures that float* independently on water. They take into account the nature of the water body, the location in relation to the water surface, shore and bottom, as well as the technology employed<sup>5</sup> [Piątek 2016], [Kuryłek 2019].

The difficulty in studying this subject can be attributed to a myriad of factors including linguistic and translation challenges that necessitate the consideration of local specifics and adaptation to technological advances. This is particularly evident in urban planning studies that do not deal with technical aspects as key issues. For the purposes of this article, Polish terminology has been adopted, taking into account the general division that occurs in specialist studies and is observed in professional debate. This reflects, in a generalised but methodologically correct way, the understanding of architectural and construction issues applied worldwide, sufficient for the description of applications on an urban scale.

AP facilities are typically anchored to platforms that are *buoyant* and *designed for the purpose of water-based operations*, rather than for the function of continuous movement and navigation. This is the primary distinguishing feature that differentiates APs from residential boats, including *houseboats*, *barge houses*, and *other similar vessels (hereinafter referred to as HBs)* whose original design was intended for safe navigation using their own propulsion or as a towed object (Photos 1a – 1b). These include both objects designed for stationary use, with the possibility of intermittent towing as well as units that have been adapted for these purposes as residential or commercial watercrafts. It is important to acknowledge the additional distinction that is made in relation to floating hotel facilities. The term “*flotels*” refers to immobile (fixed) facilities that float on water<sup>6</sup>, whereas the term “*Botels*” refers to facilities that are designed as independent, self-propelled vessels serving as hotels. Research in the field of waterfront architecture has led to the emergence of novel technical and architectural solutions, thereby establishing new categories such as *amphibious architecture (AA)* and *boathouse architecture (BA)*. These are waterfront facilities that are permanently anchored to the ground. Their distinct, adaptable configuration enables them to operate reliably in settings characterized

<sup>5</sup> Piątek distinguishes six different types of structures based on their construction (no Polish equivalents of the names used are provided): (1) Static elevation building, (2) Amphibious building, (3) Waterside building, (4) Pile building/stilt building, (5) Floating building, (6) Houseboat [Piątek 2016].

<sup>6</sup> Armchairs primarily offer inexpensive lodging for port workers, including, among others, crews servicing oil rigs. However, in the era of the expansion of the tourism industry, they are undergoing a shift in connotation by entering the market of luxury hotel services.

by fluctuating flood-induced water levels. In the event of flooding, it mitigates the risk of structural damage and functional impairments, thereby preserving architectural harmony. The AA solution employs a specialized dry dock-type foundation design that enables the building to rise safely under the pressure of flood water flowing into the dock basin (Photo 5a). BA solutions, on the other hand, are used for buildings suspended above the maximum expected flood water level. A characteristic feature here is the overhanging part of the building above the water level, often supported by a system of flood-resistant supports or even protruding from the water (Photo 5c), or, in newer solutions, the use of the ground floor as a boat garage directly connected to the water body (Photo 1c). The area susceptible to flooding encompasses rooms that may be periodically flooded – as the name suggests, they were traditionally used to store boats and water equipment.



A



B



C



D

Photo 1a (top left) a houseboat in Wilhelmsburg, Hamburg and 1b (top right) in *Aberdeen floating village*, Hong Kong, 1c (bottom left) *boathouse-type* residential house in Wilhelmsburg, Hamburg and 1d (bottom right) summer house in FA construction on the artificial lake Partwitzer See in Lusatia, Germany (Source: own)

### 3. EXAMPLES OF SOLUTIONS ILLUSTRATING THE FOUR MAIN TRENDS IN THE PRACTICAL APPLICATION OF FLOATING ARCHITECTURE

#### 3.1. The Dutch experience – creating landscapes in the era of climate change

Dutch specialists have been the undisputed leaders in developing technical and planning solutions that enable cities to adapt to climate change using FA and its derivatives. This status is the result of constant feedback between theory and practice in planning dedicated to creating artificial landscapes for new urban developments on reclaimed urban areas (trend three). The examples described below integrate all four main trends in the use of FA and its derivatives. They enter new water areas, but also revitalise areas of disused waterways. The process is taking place in one of the most densely populated regions of Europe – the heart of the Dutch economy, Randstad (Amsterdam-Rotterdam-The Hague). A rigorous approach to the anticipated rise in sea levels is associated with efforts to optimise climate change adaptation strategies. It is imperative to note that the threat posed by water is not limited to a single aspect. A deep understanding of its nature allows us to see it as a partner for the implementation of technical and organisational solutions open to applications in the field of FA. An example of this approach is the research conducted at *the Maritime Research Institute Netherlands* (MARIN) on a model of an energy-independent floating platform with a diameter of 5 km. It is postulated that such *floating islands* could potentially serve as an alternative to the conventional method of creating polders. This proposed solution is asserted to offer a cost-effective alternative, both in terms of construction and operation, to the prevailing approach<sup>7</sup> [Waals, Bunnik, Otto 2018]. MARIN's research shows that the transition from floating single objects and their complexes to extensive aquatic habitats is now a conceivable solution, similar to the Masdar City experiment – a fully independent desert district of Abu Dhabi (UAE). The highly advanced state of Dutch theoretical research is possible thanks to the gradual acquisition of practical experience. Innovation in the context of cooperation with water is developing in many ways, combining traditional experience with the latest technical solutions. Examples illustrating representative implementations of FA and its derivatives (AA, BA, etc.), analysed from an urban planning perspective, include:

- 1) established in Ypenburg, The Hague. Although the master plan for the polder development envisaged 7,000 homes<sup>8</sup>, in 2005 the first experimental complex of 900 residential units in the form of so-called water villas was completed here.

<sup>7</sup> Date of access: 10.10.2024 <https://constructionclimatechallenge.com/2017/08/09/dutch-plan-5km-wide-floating-mega-islands-for-future-living/>

<sup>8</sup> Date of access: 10.10.2024 <http://www.mvrdv.nl/projects/152/ypenburg>

In its description of the concept, MVRDV writes about *the popular Waterwijk in The Hague*<sup>9</sup> (...) *the scale, a total of 900 homes, allowed for innovation. Is it true that 10% of the project budget can be allocated to innovation? According to the principles of economics, experimentation is possible as long as the other homes carry less risk. However, by saving costs on one island – creating fewer quays, reducing infrastructure needs and simplifying solutions – MVRDV made it possible to invest creatively in the creation of another island – creating new, experimental environments on it (...)* (own translation).

- 2) The unique polder part of Amsterdam known as IJmeer. Its part – Ijburg, is undergoing a gradual transformation into a prominent *water district* in Europe, *i.e.* a kind of archipelago of ten urban islands. In 2009, the *Waterbuurt West* residential development complex was built here, designed by *MR A&U* and *Architectenbureau Marlies Rohmer*, comprising approx. 50 floating luxury homes. It was soon complemented by a mirror-image development carried out by individual investors. The whole project fits in with the target concept of a socially and programmatically sustainable district of 45,000 inhabitants. In 2011, the authors wrote about their project: *Is it a boat? Is it a house? Is it romantic or pragmatic? It is a hybrid. It is not what you think. A complex of 75 floating houses and quayside villas under private ownership for own residential use and for rent (...) qualifies as a significant solution to the modern housing needs of the Netherlands. Canals with houses on the water, with a local restaurant or hotel, are of course a familiar sight in Dutch cities. But these are always individual solutions, more reminiscent of boats than houses. (...) Strategic spatial integration of existing cities generates a clearer contrast between urban and rural areas, making new urban developments unnecessary or even harmful. Living – and working – on the water is, in fact, a complex use of space. It is also a way of transforming obsolete port areas and flooded quarries. What is more, aesthetic considerations and the fact that it promotes a sense of freedom and closeness to nature are arguments in favour of living on the water (...)*<sup>10</sup>.
- 3) The pioneering *Sluishuis* in Ijburg. It is a 10-storey (52 m) multifunctional building on a floating island platform, which was built in 2022. It is a terraced structure with a usable area of 46,000 m<sup>2</sup>, described as *a scenic local landmark* of the water district. It is additionally surrounded by a cluster of 30 floating single-family homes, complementing the fully commercial development designed by a consortium of *Bjarke Ingels Group* and *Barcode Architects*.<sup>11</sup>

<sup>9</sup> Date of access: 10.10.2024 [www.mvrdv.nl/projects/153/watervillas](http://www.mvrdv.nl/projects/153/watervillas)

<sup>10</sup> Date of access: 10.12.2024: [www.archdaily.com/120238/floating-houses-in-ijburg-architectenbureau-marlies-rohmer](http://www.archdaily.com/120238/floating-houses-in-ijburg-architectenbureau-marlies-rohmer)

<sup>11</sup> Date of access: 10.12.2024: [www.dezeen.com/2016/11/30/big-bjarke-ingels-group-barcode-architects-terraced-block-sluishuis-ijburg-amsterdam/](http://www.dezeen.com/2016/11/30/big-bjarke-ingels-group-barcode-architects-terraced-block-sluishuis-ijburg-amsterdam/)

### 3.2 The British experience – the revitalisation of London’s basins and post-port canals

The tradition of living on water is still strongly cultivated throughout the United Kingdom and is a viable option in major cities for those seeking an alternative and economical lifestyle<sup>12</sup>. This can be described as a kind of movement towards living on the water, either permanently or temporarily, associated with the possibility of moving around the country<sup>13</sup>. An example of this is *Swan Island* in Twickenham, west London. This unique *floating private village* on the Thames was established 60 years ago on a private initiative. It consists of a community of about 40 households living in floating units adapted for stationary residential purposes, known as *houseboats*, numerous hybrid solutions and unique FA structures.

In the context of such cultural conditions – an ongoing tradition of living by and on the water – the adaptation of Dutch experiences in the field of modern FA solutions found particular understanding in London in the context of the growing housing crisis. In 2013, in an architectural competition announced by the *NLA New London Architecture* think tank and the Mayor of London’s office, the 10 winning entries included analyses and solutions highlighting the potential of disused waterways and harbour basins. The award-winning consortium of *Baca Architects and Floating Homes*<sup>14</sup>, specialising in the field of so-called *Aquatecture* [Barker, Coutts 2016], proposed a solution inspired by Dutch practice, i.e. the creation of 7,500 new, accessible, eco-friendly homes (prefabricated) within a month, floating along the banks of London’s disused canals. In 2006, in accordance with the winning design by Baca Architects, *Floating Homes* built a prototype modular floating home in the Chichester Canal<sup>15</sup>. *Baca Architects* are also the designers of the first British amphibious home built on the banks of the Thames in Marlow (2016). The structure can adapt to water level changes of up to 2.5 metres<sup>16</sup> (Photos 2a and 2b).

<sup>12</sup> See also [Krenz 2018]

<sup>13</sup> An example of this is the Scottish initiative [www.livingonwater.co.uk](http://www.livingonwater.co.uk) (Date of access: 10.10.2024)

<sup>14</sup> Date of access: 10.10.2024 [www.architecture.com/find-an-architect/baca/london/chichester-floating-home-west-sussex](http://www.architecture.com/find-an-architect/baca/london/chichester-floating-home-west-sussex)

<sup>15</sup> Date of access: 10.10.2024 [www.floatinghomes.ltd.uk/chichester-prototype.html](http://www.floatinghomes.ltd.uk/chichester-prototype.html), [www.dezeen.com/2016/10/23/chichester-model-canal-baca-architects-wooden-floating-home-uk/](http://www.dezeen.com/2016/10/23/chichester-model-canal-baca-architects-wooden-floating-home-uk/)

<sup>16</sup> Date of access: 10.10.2024 [www.dezeen.com/2016/01/20/baca-architects-bouyant-amphibious-house-river-thames-buckinghamshire-floating-architecture/](http://www.dezeen.com/2016/01/20/baca-architects-bouyant-amphibious-house-river-thames-buckinghamshire-floating-architecture/)

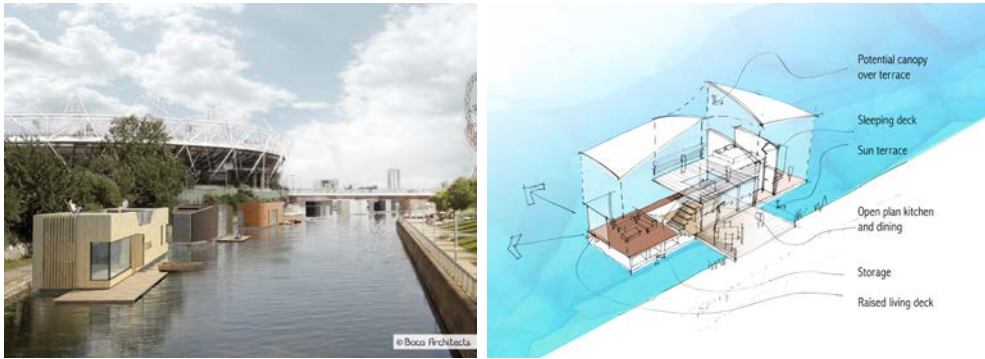
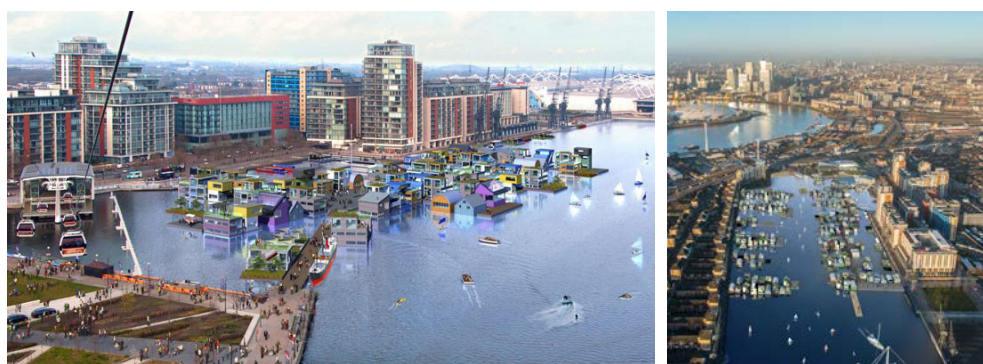


Photo 2a: (left) floating houses by Baca Architects, as a competition response to solutions for the housing crisis in London, and 2b (right) design of a modular house by Baca Architects (Source: [www.architecture.com/find-an-architect/baca/london/chichester-floating-home-west-sussex](http://www.architecture.com/find-an-architect/baca/london/chichester-floating-home-west-sussex), [www.baca.uk.com](http://www.baca.uk.com), Date of access: 10.10.2024)

The use of FA solutions became the core of a new concept for the city's approach to the *Royal Victoria Dock* area in 2014. In the 1980s, London's *Docklands* were the undisputed cradle of transformation of post-port areas, carried out in accordance with neoliberal economics open to innovative business solutions. The *Royal Docks* area was envisaged as a place for generating economic impulses and, as such, provides an ideal environment for the market reinforcement of new trends in a global metropolis. Port functions for passenger services for cruise ships and private tourist vessels have been combined here with functions related to the nearby Canary Wharf business district. The *ExCel* exhibition and conference centre with its extensive hotel base (including the luxury *Yacht Hotels Sunborn* hotel) is connected to a transport system that includes a local business airport, good access to the road network, the urban transport system with the *Docklands Light Rail DLR Royal Victoria* station, and the unique *Emirates Royal Docks* cable car, offering views along the Thames to the *Greenwich Peninsula*. The entire vast area has been undergoing redevelopment for decades, but has still not achieved the critical mass to outweigh the dominance of the large *ExCel* exhibition centre complex, which is completely closed off architecturally from interaction with the harbour basins. The noticeable lack of port activity, which intensifies the feeling of acute emptiness, is inadequate for the economic potential that are visible here. Recognition of this phenomenon has led to the development of solutions that indirectly illustrate the potential of new trends combining the contemporary technical and architectural capabilities of the Port Authority with *pop-up* market phenomena, i.e. temporary facilities for periodically operating services.

The East End *London Floating Village* urban architecture competition resulted in the selection of a preliminary master plan concept for a six-hectare floating structure. It was developed by a design and development consortium, in which the British winning competition team, *dRMM Architects* (Photos 3a and 3b) and

*Igloo Regeneration* joined forces with Dutch partners Monteflore, Floatbase and Marlies Rohmer Architects & Urbanists, who have experience in projects such as *Waterbuurt West* in Amsterdam's IJburg. The water village programme aims to create an active neighbourhood community (50 residential units), bringing together creative people from different social backgrounds in a waterside lifestyle. Referring to the characteristics of the surroundings, FA concept also includes an extensive service and recreation programme (with a swimming pool and ice rink) comprising a total of approx. 200 different types of floating units (12,000 m<sup>2</sup> of usable space). Political changes in the London authorities led to the project being halted in 2016. The decisive arguments were the issue of airport nuisance and safety zones and the social dimension of the local economy, which the new Mayor of London, Sadiq Khan, treated as a priority.



Photos 3a and 3b: Victoria Royal Dock as East London Floating Village according to the competition concept by *dRMM Architects* (Source: <https://inhabitat.com/englands-first-floating-village-coming-soon-to-east-londons-royal-docks/>, date of access: 10.10.2024)

### 3.3. The Scandinavian experience

#### 3.3.1. Copenhagen's plans for hybrid waterfront districts

Copenhagen is considered the third strong centre recognising the potential of FA, which, like Amsterdam and London, faces the problem of affordable housing. Copenhagen's Nordhavnen is the Danish response to Dutch solutions in the pursuit of artificially expanding the range of investment areas, a process which is taking place under the pressure of from market mechanisms regulating prices and the availability of land on the mainland. A new 200-hectare *residential and commercial* district is being constructed on an artificially reclaimed former port area. It is currently the largest inner-city development area in Scandinavia. Over the next few decades, a settlement for 40,000 residents is to be built there. The implementation plan is currently being developed by a consortium of COBE Architects and SLETH

MODERNISM, Polyform and Rambøll<sup>17</sup>. The creation of a high-quality living environment involves recreational infrastructure challenges – safe, universal access to water. Located in the central part of the district, near the international school, *CF Møller's Nordhavn Islands* project introduces a complex of floating swimming pools<sup>18</sup> to the public space. This is a growing trend in revitalised post-port water areas, known from the centres of Copenhagen (Islands Brygge), Berlin (*Badeschiff* in Kreuzberg) and Antwerp (*Badboot*).

### 3.3.2. *Urban Rigger* – a Scandinavian floating housing module

Openness to alternative solutions for water relations, allowing for the use of both FA and derivative structures resistant to changes in water levels, was combined in Copenhagen with a priority issue in the Danish system – the social dimension of waterfront development. The issue of affordable housing, including the needs of the large academic community, was addressed in the *Urban Rigger* project by the BIG Bjarke Ingels Groupe design office (photo 4). This project may be regarded as a flagship project among the numerous experiments currently underway in FA design. In response to the projected 4 million student housing deficit that is expected to affect European cities after 2025, BIG proposed a floating complex of six modular student micro-housing units in the Refshaleøen post-port district of Copenhagen. It has become a tool for revitalising disused quays and water areas, and has made it possible to keep students in the deserted city centre of the metropolis. Due to the implementation of a recycling strategy, the cost of the solution was reduced and the unique port character of the complex was maintained – nine shipping containers connected into a floating module offer 12 studio flats. The regular shape of the plan allows the modules to be combined into larger floating structures. The *Urban Rigger* model has been used in a number of European cities. In Nordre Frihamnsbassängen (Gothenburg, Sweden), there are plans to build a student village with 216 affordable accommodation units in 12 modules, in accordance with the plans of architects from BIG<sup>19</sup>. It has been asserted that this technology makes it possible to create 200 to 300 floating modules per year, which translates into 2,000 to 3,000 available student residences (according to Loudrup for EUobserver). *Urban Rigger* proves that, thanks to its simple design, the solution can be multiplied and adapted in conditions far from Scandinavian standards. At the same time, it is a strong reference to the historical origins of FA solutions – the adaptation and reuse of containers (*reuse, recycle*) so evident in the idea of living on old boats and barges (*houseboats*) withdrawn from regular service or in boathouses converted into flats<sup>20</sup>.

<sup>17</sup> <https://ramboll.com>, Date of access: 10.10.2024

<sup>18</sup> <https://aasarchitecture.com>, Date of access: 10.10.2024

<sup>19</sup> <https://www.urbanrigger.com/projects-gothenburg/> <https://euobserver.com/regions/135030>, Date of access: 10.10.2024

<sup>20</sup> <https://www.urbanrigger.com/>, Date of access: 10.10.2024



Photo 4. *Urban Rigger* by the BIG Bjarke Ingels Groupe design office (own source)

### 3.4. The German experience – FA for landscape restoration

Germany has extensive experience in implementing large-scale revitalisation programmes in the format of IBA Internationale Bau Ausstellung. This is an organisational structure focused on the implementation of solutions dedicated to the development of an area undergoing special, multi-faceted restructuring. Innovation is understood here holistically – technical challenges are addressed by the implementation of innovative administrative solutions, for which appropriately designed financial and legal tools are created. The pioneer in introducing FA into systemic spatial solutions was IBA SEE, or Internationale Bau Ausstellung Fürst-Pückler-Land, operating in Lusatia between 2000 and 2010. IBA SEE, or IBA *Jeziorna*, dealt with the issue of restoring the economic independence of the new lake district<sup>21</sup>, which was being created on the systematically

<sup>21</sup> <http://wirtschaftsregion-lausitz.de/>, Date of access: 10.10.2024

flooded post-mining brown coal excavations of the Neisse River. IBA SEE focused more strongly than previous processes of this format (IBA Ruhr Gebiet) on the nature of the change process. Strong emphasis was placed on the potential of transitional programmes and solutions, adapted to the current phase of the decades-long process of landscape restoration and strengthening of the local community in the *shrunk*<sup>22</sup> region [Rembarz 2018]. One of the tools of this approach was the promotion of alternative tourism. An important pillar of this approach was the FA (German: *schwimmende Hauser*) solution, which facilitated the activation of reservoirs whose banks have been undergoing geotechnical stabilisation and re-naturalisation processes for several decades, and the waters of which are gradually changing their chemical composition, adjusting their pH to the standard required for normal use for sports and bathing<sup>23</sup>. The long-term objective of the IBA activities was to change the image of the region and reverse negative migration trends. An attempt was thus made to apply Amsterdam's solutions in Lusatia, adapted to local hydrological and legal-administrative conditions, which were developed on the basis of analyses carried out as part of international research projects [Rembarz 2018].

The adoption of the IBA format for the transformation of the Wilhelmsburg-Harburg area – Hamburg's port districts – was aimed at overcoming the unfavourable image of so-called *metro zones*. This is a category defining inner-peripheral areas where the activation of endogenous development potential requires the implementation of innovative strategies [Rembarz 2018]. In recent decades, the area at the fork of the Elbe delta has experienced repeated flooding and has become an area where the problems of a multicultural immigrant community have accumulated. The city's new policy, called *Leap across the Elbe*, was intended to develop innovative principles for land development and management. One of the three main problem areas of the ten-year transformation was the issue of increased flood risk associated with rising sea levels. In contrast to London, Hamburg is still an open port, so a key issue in the development of the city's waterfronts is to take into account not only the daily tides, but also the frequent flood waves carried by the river current, which are now often exacerbated by torrential rains. In its pursuit for solutions that are both sustainable and cost-effective, IBA Hamburg investigated the feasibility of using FA and its derivative structures as an alternative to the construction of elevated embankments (see photo 5). A number of model technologies for flood-resistant foundations are demonstrated by the *WaterHouses* programme in the *Wilhelmsburg Island Park* area, which uses amphibious structures. However, the key to promoting FA in Hamburg is the implementation of the fully energy-independent floating

<sup>22</sup> This refers to the so-called shrinking processes, i.e. socio-economic de-development characterising the industrialised regions of the former GDR at the turn of the 20th and 21st centuries (German: *Schrumpfende Region*, English: *shrinking region*), such as the lignite mining area in Lusatia (Cottbus), industrialised areas in Saxony-Anhalt such as Wolfen-Bitterfeld-Halle and Leipzig, an icon of the fight against shrinkage and urban decay [Rembarz

<sup>23</sup> For more information, see [www.lausitz-resort.de](http://www.lausitz-resort.de) Date of access: 10.10.2024

office building *IBA Dock*<sup>24</sup>. Its operation in the basin of the former *Müggenburger Zollhafen* customs terminal demonstrates contemporary technical possibilities for revitalising basins and post-port canals in a sustainable manner, while at the same time not compromising the continuity of elevated flood defences [Hamm, Bartels 2010]. Situated on the opposite side of the basin is *the Mügge* community centre. It uses *boathouse architecture*, which is also promoted in the *Harburger Binnenhafen* area – the former river port of Harburg. *Marina Schlossinsel* is a luxury residential complex located on the edge of the former port canals. Each building has garage spaces for boats on the ground floor, opening directly onto the harbour basin, from which, thanks to the canal network, the centre of Hamburg can be reached more efficiently by motorboat than by land [Rembarz 2018b].



Photo 5. Architectural proposals for the use of structures resistant to high flood waves implemented as part of IBA Hamburg: (from left at the top) (5a) amphibious buildings from the *WaterHouses* programme, (5b) the *IBA Dock* office building, and (5c) the *die Mügge* community centre (Source: own)

Research in the field of urban studies has made it apparent that there is a salient relationship between public administration and private sector activities across various European countries. Hamburg is described as an important centre for the development of floating housing trends, although this is a relatively new phenomenon in this metropolis. However, it should not be forgotten that the traditional connection with water has not been broken in this part of Germany and the idea of owning a boat is not a foreign concept here, as it is in Scandinavia, the Netherlands or the British Isles. Based on a framework plan developed in 2016, the city council is

<sup>24</sup> [www.detail.de/artikel/die-architektur-lernt-schwimmen-1481/](http://www.detail.de/artikel/die-architektur-lernt-schwimmen-1481/), <https://www.archdaily.com/288198/iba-dock-architect> <https://www.internationale-bauausstellung-hamburg.de/en/projects/iba-dock/projekt/iba-dock.html>, [www.internationale-bauausstellung-hamburg.de/en/projects/the-building-exhibition-within-the-building-exhibition/waterhouses/projekt/waterhouses-living-at-inselpark.html](https://www.internationale-bauausstellung-hamburg.de/en/projects/the-building-exhibition-within-the-building-exhibition/waterhouses/projekt/waterhouses-living-at-inselpark.html), Date of access: 10.10.2024

endorsing the developing model of aquatic living in the form of houseboats and new housing solutions in the FA model. At the same time, it revitalising canals that have been excluded from port functions in planned locations. In this way, Hammerbrook, an office and manufacturing district suffering from a lack of urban life and dominated by a vast railway and transport hub, is changing its austere profile (photo 6).

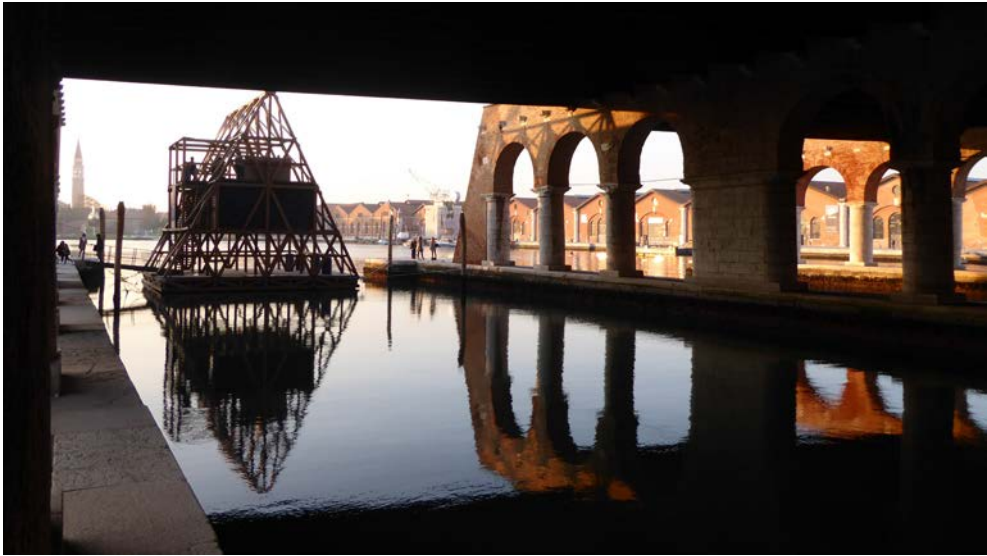


Photo 6. FA in Mittelkanal Hamburg-Hammerbrook (Source: own)

#### 4. NATURAL DISASTERS, FORECASTS FOR THE FUTUTRE AND FA

Collective experiences of crises, particularly natural disasters, have become a catalyst for a wide range of changes in both thinking and action. A landmark experience for the United States in the past decade was the reconstruction of New Orleans, destroyed by Hurricane Katrina in 2005, which was hampered by the global financial crisis of 2007-2009. The destruction of the American South (mainly the states of Louisiana, Mississippi and Florida) necessitated the introduction of numerous modern solutions to increase *the resilience* of metropolitan areas. This mainly concerned public structures and facilities, especially technical infrastructure such as bridges, embankments and flood defences, as well as transmission lines. In collaboration with experts from Amsterdam, a new flood protection strategy for the city was developed, and New Orleans began to introduce new FA solutions<sup>25</sup>. However, the process

<sup>25</sup> [www.globalconstructionreview.com/trends/dutch-experts-assist-new-orleans-new-water-plan/](http://www.globalconstructionreview.com/trends/dutch-experts-assist-new-orleans-new-water-plan/), Date of access: 10.10.2024

of restoring the city to life became an area for competing interests. The potential for technical and organisational modernisation using FA, AA and BA structures has clashed with existing market habits reflecting the dominant trends in customer lifestyles. The differences in scale and thinking models were particularly evident in the debate in which Amsterdam's solutions were compared with the neoliberal American city. This was particularly evident in the issue of affordable housing<sup>26</sup>. The main consequence of the hurricane-induced flooding was a profound housing crisis among the poor communities of New Orleans. Given the extent of damage and growing needs, private initiatives were activated in accordance with the American model of society. One of the most notable in terms of the scope of the proposed architectural innovation was the *Make it Right Foundation*, sponsored by the American film star Brad Pitt. In pursuit of the goal of environmentally friendly reconstruction of the city, the Foundation carried out the reconstruction of a socially sensitive neighbourhood as a model project. The *New Orleans Lower 9th Ward* project involved world-renowned architectural firms such as Pugh & Scarpa, Adjaye Architects, MVRDV, Kieran Timberlake and Morphosis Architects. They created 21 prototypes of flood-resistant housing complexes, each involving the construction of 150 affordable eco-friendly homes. In this unique urban laboratory, testing complex technical and organisational conditions, the proposal by the American firm Morphosis Architects gained particular publicity. Unfortunately, due to non-technical reconstruction conditions, their prefabricated amphibious FLOAT House did not become a new, widespread modular solution. This example contributes to studies on the role of tools for dissemination of technical innovation in neoliberal urban management systems.

*Material* for similar observations is also provided by the analysis of the reconstruction of regions destroyed by tsunamis and/or earthquakes, such as Thailand in 2004 or Haiti in 2010. There, too, the potential and need for advancement in the dissemination of new ecological and technical awareness, taking into account the challenges of adaptation to climate change, is recognised. However, the passage of time has demonstrated that despite the conceptualisation of solutions at the level of *floating habitat* visions, such as *Harvest City* for Haiti by Boston-based E. K. Schopfer, reality still does not support even their partial implementation. Disasters engage politicians and spark the imagination of designers. They also open up intellectual space and funding for complex research for the benefit of *coastal communities* located in areas of immediate danger. Concepts similar to the vision of *Currents for currents* by the *Dada* architectural office in Manila, Philippines (Photo 9a) can serve as a working research hypothesis. This proposal not only involves the spatial organisation of a self-sufficient coastal *water community*, but also combines its economic functioning with the production of electricity using ocean waves and natural constant water currents.

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<sup>26</sup> A popularised description of the situation in Polish is provided by Dan Baum's 2017 book entitled *Dziewięć Twarzy Nowego Orleanu* (Nine Faces of New Orleans) (published by Czarnie)

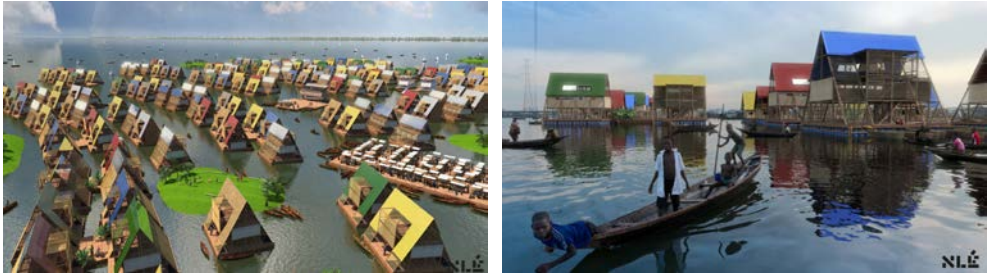


Photo 7 *Makoko Floating School* from the Oko-Agbon district of Lagos, Nigeria, designed by NLÉ/Amsterdam\_Lagos in 2013, was symbolically displayed in a scaled-down model at the international architecture exhibition – La Biennale di Venezia 2016 entitled: *Reporting from the Front*. (Source: own)



Photo 8. The prototype of the floating house design by NLE was used in the model strategy for the renovation of „water slums” according to the Lagos Water Communities Project 2013 document, developed by NLE (Source: NLE)

Based on similar premises, a concept was devised by the Dutch-Nigerian architectural firm NLE, focusing on technical solutions that could be quickly implemented for the 10,000-strong *Oko-Agbon* district and *the Makoko Community*, inhabiting *the Nigerian floating slums* in the megacity of Lagos. The future of this symptomatic place on earth became the subject of discussion at La Biennale di Venezia in 2016, entitled *Rapporting from the Front*, as part of a special project entitled *Rapporting from Cities: Conflicts of an Urban Age* prepared by London School of Economics Cities (LSE Cities) in consultation with UN Habitat III. The model strategy for the renewal of Lagos' *water slums*, according to the *Lagos Water Communities Project 2013* document (photo 8), contributes to the discussion on the needs and possibilities of solutions for the adaptation of cities in the global south to climate change. The NLE approach (photo 7), combining high-tech solutions with low-tech possibilities (*high-low-tech solutions*), was a significant counterpoint to the visions created for cities by technically and economically advanced countries such as China, which are unattainable for developing countries. An example of this is the *Floating City* concept for the Hong Kong-Zhuhai-Macao Bay Area, prepared by AT Design Office<sup>27</sup>. This fully modern vision makes no reference to the local tradition of water-based fishing settlements, exemplified by the 400 km lagoon of fishing villages. It is an agro-urban development in the Xiapu area, characterising the coastline of Ningde City in Fujian Province in south-eastern China<sup>28</sup>.

The renowned Danish design firm BIG Bjarke Ingels Group, in collaboration with the MIT Centre for Ocean Engineering and the Explorers Club, has developed its own concept for *Oceanix City*. It was presented to the new UN *Sustainable Floating Cities* Commission in 2019 and at the World Urban Forum convened by UN-Habitat in 2020. *Oceanix City* builds on the practical experience gained in the *Urban Rigger* container dormitory project tested in Copenhagen and Gothenburg, adapting it to the global development challenges set out in the 17 Sustainable Development Goals 2030. *Oceanix City* is a network of floating, hexagonal artificial islands (Photo 9b). These modules can be combined and integrated into fractal-shaped systems, enabling the creation of urban blocks, housing estates or even entire towns, ranging from small neighbourhoods for 300 residents to towns of 10,000 inhabitants, referred to by BIG as *nautical communities*. *The floating habitats* will be a fully independent and self-sufficient ecosystem, thanks to the use of circular water and sewage management solutions, vertical farming and aquaponics, and energy supply from renewable sources. In a situation of limited resources, the principle of transport based on the power of nature and human muscles (sail, rowing boat, bicycle) is to be used<sup>29</sup>.

<sup>27</sup> [www.atdesignoffice.com/floating-city/](http://www.atdesignoffice.com/floating-city/), date of access: 10.10.2024

<sup>28</sup> <https://www.dailymail.co.uk/news/article-2451023/Chinas-Tanka-boat-peoples-floating-homes.html>, date of access: 10.10.2024, [https://www.chinadaily.com.cn/travel/2017-10/19/content\\_33441456.htm](https://www.chinadaily.com.cn/travel/2017-10/19/content_33441456.htm), date of access: 10.10.2024

<sup>29</sup> <https://big.dk/#search>, date of access: 10.10.2024

## SUMMARY

*Floating architecture (FA)* solutions are structures that combine durability with openness to change. The fundamental notion of this approach is to maintain a constant relationship with the landscape, to establish a relationship with water, and more broadly with nature, into the daily rhythm of life. This principle guides artistic projects and is eagerly adopted in the promotion of facilities with a wide range of cultural and entertainment programmes. Perceived as an integral part of the urban landscape, FA becomes, in special situations, the very material/building block of its creation, especially in floating residential complexes and multi-scale aquatic habitats.

The appeal of such solutions resonates with the investors, thereby endowing FA implementations with market reality. FA facilities not only respond to the demand for new means of individualising tourist offers, but also expand the housing offer. Not only in terms of different economic standards, but above all in terms of lifestyle options, they are increasingly turning to *live-work* models. APs in specific conditions have greater potential for service and production projects. In business schemes, they often appear in *pop-up* projects, used both in social economy projects and in *prime* activities, e.g. in the creative industry.

Included in integrated spatial plans, FA can be a powerful catalyst for both the natural landscapes of rural areas and reclaimed post-industrial and post-mining zones. It also works well in highly urbanised centres implementing revitalisation programmes in post-port areas. However, in the absence of legal and administrative regulations that take into account spatial values and environmental issues, FA and its derivatives can pose a threat to the environment and the natural landscape. This issue can lead not only to a decline in the quality of life, a weakening of the local economy due to the attractiveness of the urban landscape, but also damage to the image of the area.

In this context, the utilisation of FA for the development of floating options for affordable housing is emerging as a new area of concern. In dynamically developing metropolises driven by neoliberal economic mechanisms and lacking effective social and housing policies, the disparity between the availability of building land (in terms of quantity and price) and the demand for living space is increasing. In non-European areas, especially those constantly threatened by the effects of climate change, this often means spatial restrictions on the full realisation of life activities. In this context, *FA* solutions and their derivatives are seen as key development policy tools, not just alternatives to the creation of safe housing and social infrastructure.

As a result, the previously strictly luxurious connotation of *floating architecture* is changing, which implies the expansion of the commercialisation process of FA as a market product. From this standpoint, the notion of floating houses, complexes, or even entire cities as ocean habitats transitions from an intellectual hypothesis to a tangible alternative. This is particularly salient in regions where frequent

natural disasters have called into question the efficacy of conventional technical solutions and urban planning principles.

A comprehensive analysis of architectural projects in the field of FA, which is part of a broader discipline of *aquatic architecture* and *water urbanism*, shows that this is not the exclusive domain of Dutch architects. However, they are experts at building a coherent planning and administrative system, thanks to which private investments by various entities are an integral part of a functioning mechanism that incorporates the element of water into shaping a high quality of life. The key to coordinating individual and public efforts is a flexibly constructed master plan, which provides a platform for cooperation between parties to create the best target solutions. The inevitability of confronting the issue is contained in a quote from a speech by BIG Bjarke Ingels Group at the UN in 2019 (...) *9 out of 10 of the world's largest cities will experience the effects of rising ocean levels by 2050. Fate is leading us towards the sea, which may be our future.* (...)

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## ARCHITEKTURA PLYWAJĄCA JAKO URBANISTYCZNE NARZĘDZIE ROZWOJU I AKTYWIZACJI STREF NAWODNYCH

### Streszczenie

W artykule podniesiono kwestie wykorzystania architektury pływającej (AP) jako narzędzia urbanistyki współczesnej, ze szczególnym uwzględnieniem zagadnień mieszkaniowych. Analiza przykładów zagranicznych wskazuje na szerokie spektrum potencjału obiektów „unoszących się na wodzie”. Zakończenie fazy teoretyczno-technicznego eksperymentu, umożliwiła u progu trzeciej dekady XXI wieku popularyzację tego typu rozwiązań, nie tylko jako odpowiedzi na elitarne potrzeby wyrafinowanej architektury użyteczności publicznej. Obok wyjątkowych realizacji komercyjnych projektów hotelowych

na znaczących wizerunkowo frontach wodnych, powstają dziś coraz bardziej egalitarne projekty mieszkaniowe. Obiekty AP wraz z formami pochodnymi jak amphibious architecture i boathouse architecture, są już obecnie częścią stałego narzędziownika planowania przestrzennego na terenach, które z przyczyn złożonych (techniczno-administracyjno-ekonomicznych) nie mogą być zabudowane w konwencjonalny sposób. W dobie debaty wokół przystosowania miast do skutków zmian klimatycznych, architektura pływająca jest poważnie rozważanym rozwiązaniem w elastycznie odpornej (resilience) strategii rozwoju obszarów stref zagrożenia powodziowego lub wręcz sztucznych oceanicznych habitatów projektowanych dla klimatycznych migrantów. W artykule przedstawiono usystematyzowane wyniki pracy międzyuczelnianego zespołu naukowo-dydaktycznego, dotyczącego określenia głównych tendencji w zastosowaniach architektury pływającej w procesach rewitalizacji miejskich stref nadwodnych. Wyniki wykorzystano w określeniu zakresu dwóch projektowych prac magisterskich dedykowanych frontowi wodnemu Gdańska.

**Słowa kluczowe:** architektura pływająca, rewitalizacja miasta, transformacja frontu wodnego, wodna urbanistyka, aktywizacja nieczynnych akwenów i dróg wodnych, mieszkalnictwo na wodzie, urbanistyka współczesna, miasta portowe, mieszkalnictwo społeczne, urbanistyka w dobie zmian klimatycznych.