



11TH INTERNATIONAL CONFERENCE

ON ARCHITECTURE
– CHALLENGES IN

DESIGN

PROCEEDINGS

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SUSTAINABLE URBAN SOCIETY ASSOCIATION

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Preface

At the beginning of the 21st century, faced with the challenges of climate change, depletion of resources, high environmental pollution, and hints at an uncertain future, we are questioning the various roles of architecture. Whether technological development and the use of new concepts in design, the use of new materials in construction, the use of new tools in the creation of concepts can provide an answer, is the theme of the conference and exhibition “Challenges in Design”.

The new concept of architectural objects and the use of materials in the isolation of objects and the concept of facade envelope are an inspiration and a challenge in creation. Is art a part or is it against the concept of an architectural work – art vs architecture. Whether architecture and new media and the use of virtual and augmented reality can be tools in architectural design is the question of the position of architecture in the digital era – from parametric design to VR and AI, as tools in design. In addition to new buildings in the transformation of the city and the change in the structure of activities, there are many huge abandoned industrial buildings, which refers to the topic of reconstruction – reworking of the city and architecture – reworking of architecture and the city – reuse of abandoned buildings and places.

The conference will explore and discuss the complexity and different meanings of architecture. These topics will consider the essence of architecture through all its dimensions, always thinking of it as an art and a philosophical reflection on architecture. The essence will be considered through different points, processes and trends that contribute to new aesthetics and functionality: globalization, new approaches to design, innovative technologies, projects, and materials. A special block of topics is focused on the challenges in architecture and urban design in terms of how we can reshape the future in creating sustainability after the pandemic and how we can reset the sustainable development goals for the challenges of the pandemic – from the perspective of research, policy, or practice.

In the past year, many conference programs were focused on that topic, such as the [New European Bauhaus](#) initiative for green sustainable cities, or the [COP 27](#) UN conference on climate change and impacts, many also implemented educational programs at universities, as well as charters and declarations in associations. That is why it is particularly interesting how cities will be organized in future development, how to improve the quality of work and life, and how architecture can help through the organization of space and materialization. In particular, the further improvement of information technology, which has made an outstanding contribution, enabling the holding of study programs in the faculties, as well as the holding of conferences and meetings.

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The Architecture of Fluidity

Visualization of the Research Process of Figurative and Nonfigurative Instrumentalisation of the Fluidity Phenomenon in Architecture

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Abstract: Based on the research on the phenomenon of fluidity in architecture, this paper emphasizes the importance of connecting theory and practice in expanding the operational knowledge of architectural design, in the contemporary fluid state of intense changes in the context of architectural creation. This poster presents a visualization of the research process that uses inductive graphic narrative in deductive methods of analysis and synthesis of (1) theoretical platform, the interdisciplinary theoretical framework of the phenomenon of fluidity; (2) principles of fluidity architecture; (3) design procedures for instrumentalisation and (4) sets of methodological instruments that include all three levels of architectural creativity function, form and experience. At the same time, the authentic technique of architectural research with drawing and diagram, which shows the original model of thinking and operationalization of knowledge from the domain of architectural theory into the design process, is visualized in this paper. The interpretive graphic narrative analyzed and systematized the sets of characteristic methodological procedures and instruments from the analysis of representative examples of projects of selected leading architectural representatives. The outcome of the integral theoretical-practical analysis is the definition of the *flow*, the universal principle of both figurative (form and function) and non-figurative (perception and aesthetics) instrumentalisation of the fluidity in the process of architectural design, which is visualized in this paper.

Keywords: fluidity, flow, architectural design, research by design, visual narrative

Contemporary architectural theory interprets the design process as dynamic, fluid and variable (Hensel, 2012; Allen, 2009; Vidler, 2010; Garcia, 2010; Kwinter, 2010; Spiller, 2010; Gausa et al, 2003 etc.), as a reaction to the fluidity of the contemporary context (Castells, 1996, 2004; Pawley 1998; Virilio, 2000; Graham & Marvin, 2001, Bauman, 2000, 2005). The complexity of the contemporary context and the need for a dynamic, active role of the architect goes beyond mechanical procedures, so "the project becomes a larger theoretical construct, defined outside the studio or construction site, expressed through a medium that goes beyond the object and the drawing" (Allen, 2009, pp 12). Therefore, "practice is not a static construct, but is defined by its flows" (Allen, 2009, p 13), which is why there is not one narrative, one theory, or one principle, but the architectural design is based on their pluralism. Such pluralism implies the constancy of changes, actions and engagements, so tactical improvisations over time accumulate solutions in new operating principles and models, constantly building on previous experiences. Accordingly, unlike purely discursive practices, the material aspects of architectural practice evolve by operating with translations, transpositions and transcoding of various forms of presentations and media, which constantly develops new concepts in the dynamics of the design process.

The visualization of research in this paper aims to show how hyperproduction, the exponential acceleration of the design process, fragmentation of architectural elements, dematerialization and dispersion of disciplinary and physical frameworks in contemporary architecture affect the design process, methods, techniques, tools of contemporary architectural conceptualization, operationalization and representation of the fluidity phenomenon.

By the constancy of changes during the design process, and as a consequence of the fluidity of the contemporary context of the architecture and the city, design becomes an iterative process in which "process and behaviour relationships are modelled" (Ayres, 2012, p 4) and the dynamic, performative potentials of the design process are affirmed. Liminality and erosion of conventional forms of architectural presentation and historically based instrumentalization techniques resulted in the dominant development of diagrams as the leading methodological instrument of architectural practice at the end of the 20th and during the 21st century.

Within the analysis of the instrumentalization of fluidity in architectural design, the point of view according to which the diagram is equated with the flow and represents the basic instrument of conceptualization and operationalization of flows in architecture is significant (Garcia, 2010, 25). Diagrams instrumentalise dynamic processes, relationships, movements, non-figurative flows, effects, etc. in architectural design. Concerning contemporary urban phenomena - globalization, new technologies, current issues of sustainability, new models of political, social and cultural systems and transdisciplinary influences of complexity and pluralism -

diagrammatic practices in architecture are intensively developing in an eclectic manner of multidisciplinary methodologies. Anthony Vidler writes about the diagram as an instrument that corresponds to the speed of the contemporary context, variability in the process of operationalizing parameters and conditions, as a drawing that "affirms the process versus the product" (Vidler, 2010, 55). Vidler says that diagrammatic representations contributed to traditional values, styles and ways of visual communication "dispersing into the universal flow of the abstract" (Vidler, 2010, 55), which emphasizes transparency, infinity, liminality, inexhaustibility, extensions, etc. Sanford Kwinter analyzes the key categories and phenomena that are operationalized with diagrams concerning the methods and methodologies of different architectural schools and thoughts (Kwinter, 2010, pp 122-127). Accordingly, the diagram is developed as a synthetic instrument for understanding and creating a space through which the perceived reality is related to the formal system that is being organized.

Based on the above, the need for presenting a new, authentic author's model of thinking was recognized, where diagrammatic drawing stands out as an instrument of connecting theory and practice in architecture and urbanism, connecting the scientific and creative domain, through a visual graphic narrative.

This paper highlights the visual, simultaneously deductive and inductive graphic narrative, as an authentic model of research, reflection and operationalization of theoretical knowledge in design research. The investigation of the phenomenon of fluidity in architecture is positioned between the scientific and creative domain of architectural creativity and is based on the equal analysis of the extensive interdisciplinary theoretical framework and the extensive established platform of project elaborations of contemporary design practice (Jerković-Babović, 2022).

The paper is conceived as a visual essay that includes 4 main research parts with the visualization of the research results in part 5, which were carried out in research for a doctoral dissertation (Jerković-Babović, 2022):

- (1) chronological analysis of conceptual aspects of fluidity in an interdisciplinary theoretical framework;
- (2) analysis of the relationship between conceptual aspects of fluidity in the context and appearance of architecture and synthesis of the principles on which fluidity in architecture is based;
- (3) analysis of the principle of fluidity in the works of authorities of contemporary design practice (250 projects) and definition of design procedures of figurative and non-figurative instrumentalization
- (4) analysis and synthesis of methodological instruments of fluidity in the design process through representative project elaborates

(1)

The first part (figure 1) shows a visual narrative during the research process of an interdisciplinary theoretical framework that includes theories of cultural studies, philosophy, aesthetics and art, chronologically from the 17th century to the contemporary context.

The visualization represents a vertical timeline of theoretical sources from the 17th to the 21st century where connections between theoretical sources were established in the research process. On the left side of the vertical chronological line are systematized interdisciplinary sources in which the fluidity of the architectural context is read, and on the right are the sources in which the fluidity of architecture is read. The pink colour indicates the theoretical sources in which the non-figurativeness of fluidity is recognized (conceptualization, aesthetics, the experience and perception of fluidity), and the blue colour indicates the sources in which the figurativeness of fluidity is read (elements of the organizational structure, design, materialization, movement in space, etc.). In the graphic narrative, connections are drawn between theoretical sources, based on direct connection or connection to theoretical propositions and recognized similarities and aspects of figurativeness or non-figurativeness of fluidity that have been recognized. The theoretical sources start from the first uses of the terms fluidity and flow in the architectural discourse and start from the Baroque period, the 17th century. The first vertical shows chronologically organized sources according to the previously explained model, with a systematization of direct chronological links of theoretical positions in which the development of fluidity can be followed. The second vertical highlights the theoretical sources in which the development of figurative fluidity is recognized from the 17th to the 21st century, and the third the chronology of the development of non-figurative fluidity, through the relationship between fluidity of context and fluidity in architecture. The fourth vertical shows the summa samarium of all the above with the newly established connections of theoretical positions that were recognized and established in this research.

(2)

The second part of the research (figure 2) presents the most significant results of the analysis of the chronology of the development of fluidity through chronologically systematized and synthesized aspects of fluidity in architecture. Aspects of fluidity are chronologically diagrammatically highlighted and connected through basic

concepts in architectural discourse, through the relationship of fluidity in the architectural context, architectural history and theory, and the appearance of fluidity in architecture, and architectural design creativity. Based on that systematization, analysis and synthesis, the deductive process visualized in the graphic narrative defined three basic principles based on fluidity in architecture. Through each of the principles, the research hypothesis was verified and proven (Jerković-Babović, 2022) and each of the principles was additionally broken down into figurative and non-figurative aspects on which it is based and whose operational value will then be analyzed through selected representatives in architectural design practice.

(3)

The third part of the research presents the visualization of the formation of a platform for the research of architectural practice of the 21st century through 5 selected case studies and 250 selected project studies (50 for each representative design authority). Aspects from the theoretical chronological analysis are visually read in the architectural elaborations, and based on that, the projects are classified according to three defined principles of fluidity. The analysis of the complete works of selected case studies (Peter Eisenman, Bernard Tschumi, Zaha Hadid, OMA, UN Studio) through 50 projects each, a total of 250 projects, was statistically processed and visually presented with diagrams of the statistical representation of the principle of fluidity and the design procedures by which the principles are operationalized in architectural design.

(4)

In this way, a platform of project studies was established for further analysis, which is shown in Part 4 (figure 4) and represents the basic part of the research. Based on a defined set of criteria for the analysis of methodological procedures and instruments in the design process, representative projects were selected through project elaborations. 15 representative projects were analyzed through the relation of the author's theoretical assumptions in which the conceptual aspects of fluidity were sought and brought into direct connection with the visual elements of the work, where the instrumentalisation of fluidity in contemporary architectural design is analyzed. Based on that analysis, models, mock-ups, diagrams, drawings, montages, etc. are singled out using deductive methods and graphic diagrammatic narratives. methodological instruments that instrumentalize the figurativeness and non-figurativeness of fluidity.

At the end of this analytical-synthetic procedure (figure 5), qualitative and quantitative parameters are summarized, based on which sets of characteristic methodological instruments are systematized. Flow, as a basic criterion, is divided into figurative and non-figurative design procedures and is linked to the functional, formative or experiential domain of the architectural project through the systematization of instrumentalization toolsets.

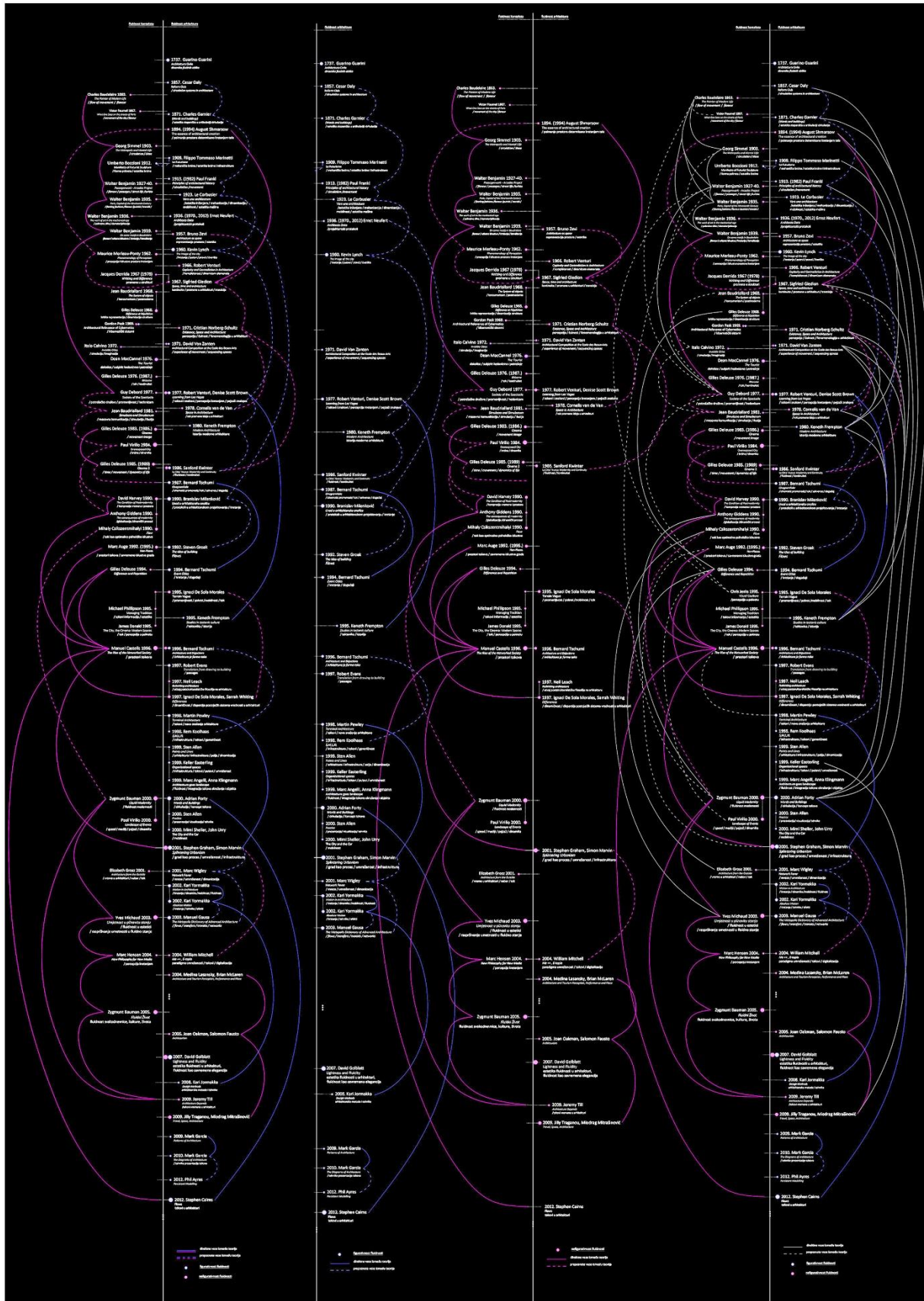


Figure 1 - chronological analysis of conceptual aspects of fluidity in an interdisciplinary theoretical framework

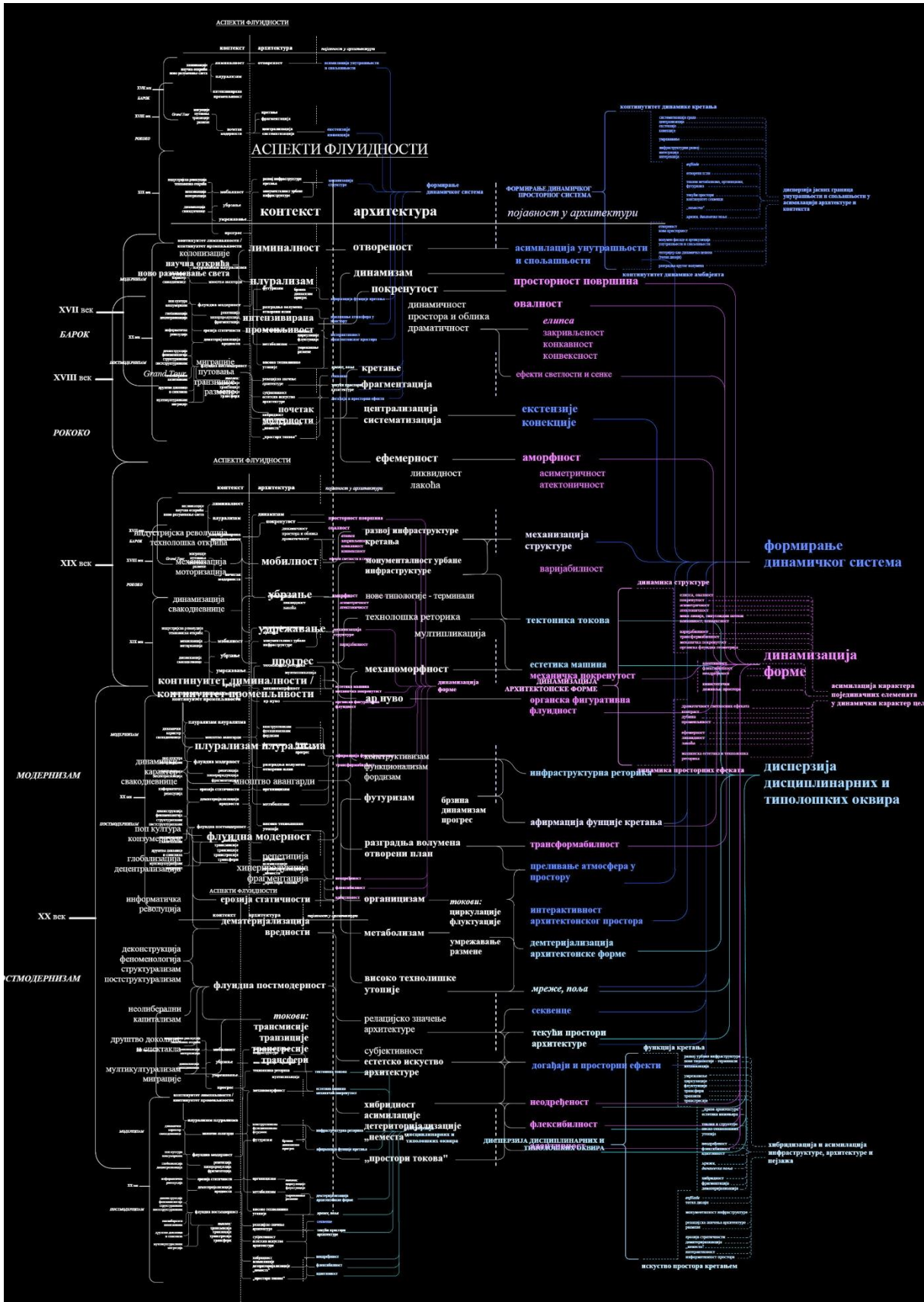


Figure 2 - analysis of the relationship between conceptual aspects of fluidity in the context and appearance of architecture and synthesis of the principles on which fluidity in architecture is based

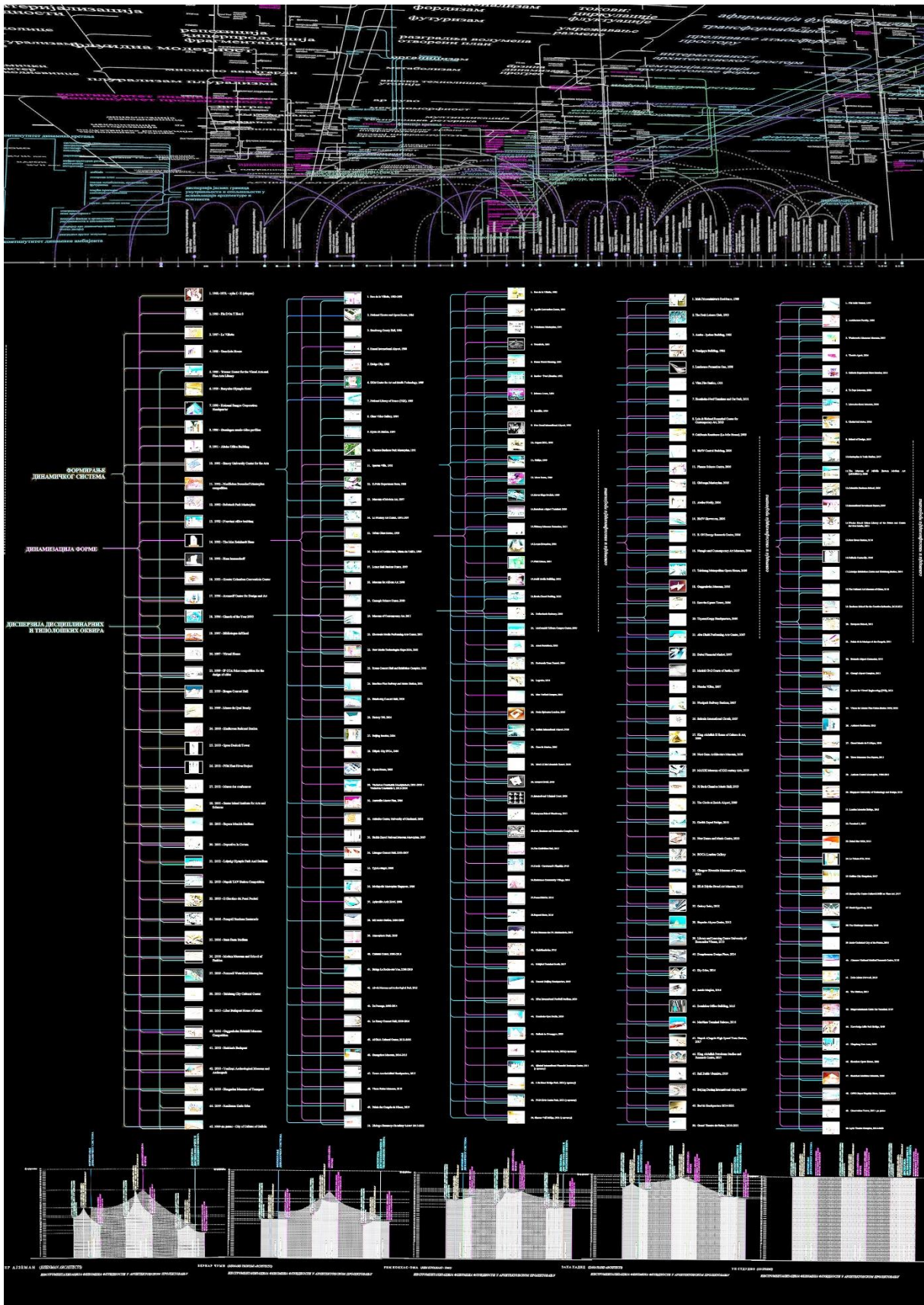


Figure 3 - analysis of the principle of fluidity in the works of authorities of contemporary design practice (250 projects) and definition of design procedures of figurative and non-figurative instrumentalization

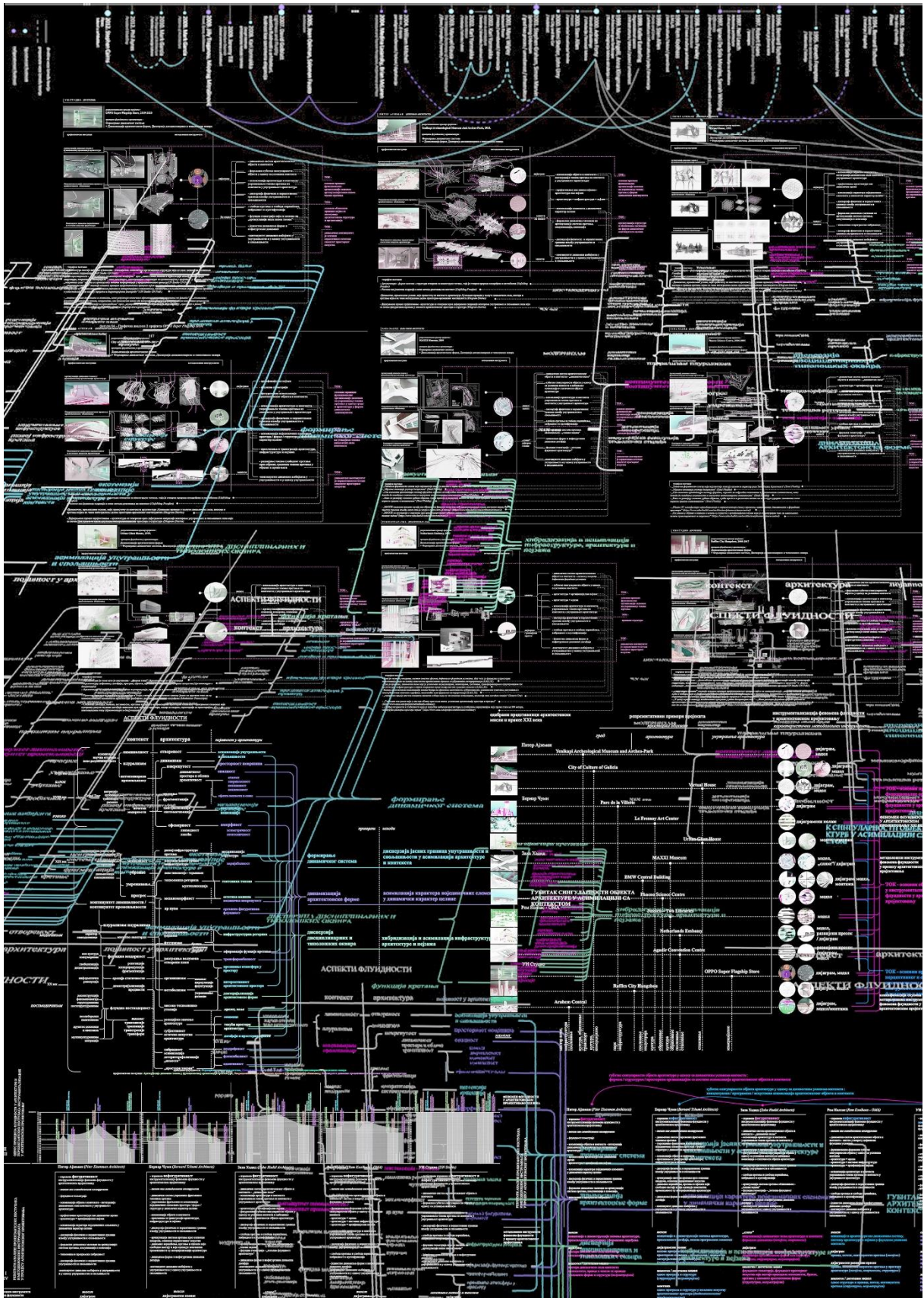


Figure 4 - analysis and synthesis of methodological instruments of fluidity in the design process through representative project elaborates

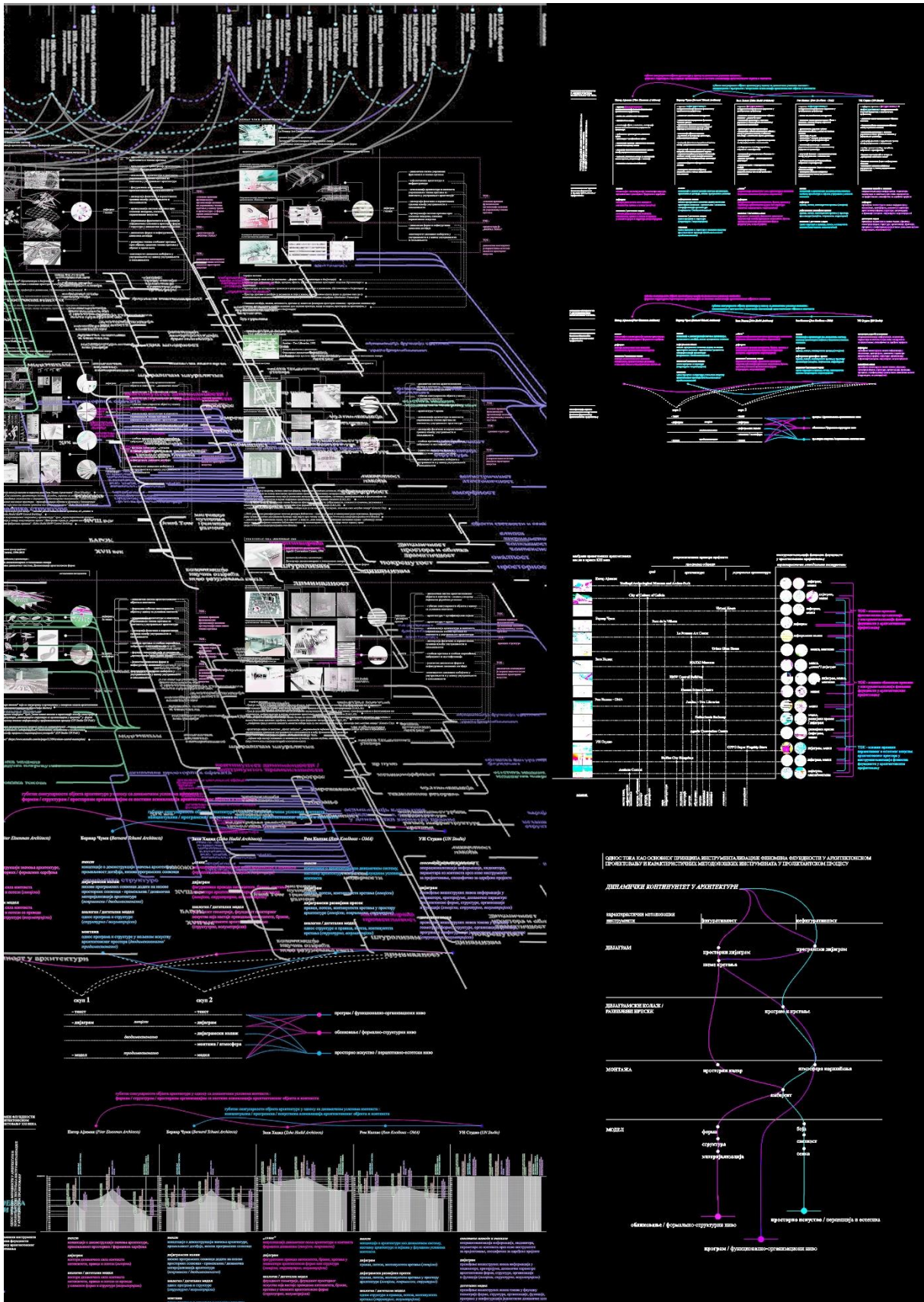


Figure 5 - analysis and synthesis of methodological instruments of fluidity with qualitative and quantitative parameters summarized, based on which sets of characteristic methodological instruments are systematized and applied to figurative and nonfigurative aspects of *flow* in the design process

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