Unpacking Transdisciplinary Research Scenarios in Architecture and Urbanism

Subjects: Urban Studies

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Research in architecture and urbanism is a complex undertaking. It involves a multitude of challenges, approaches, variables, diverse scales, and types of environments to examine. This entry dives into the complexities of architectural and urban research and explores the integration of diverse approaches into various research topics or domains. Recognizing the dynamic interplay of human, cultural, technological, and environmental factors in architecture and urbanism, it proposes a transdisciplinary approach to bridge existing disciplinary and methodological boundaries. This entry adopts and operationalizes a comprehensive approach that encompasses hybrid scenario development, integrated socio-spatial analysis, a revised experiential approach, and the integration of environmental psychology into architectural and urban studies. These components are envisioned to harmonize various methodologies and to depict a picture of what research in architecture and urbanism could be within an identified set of domains. This approach is grounded in a rigorous literature review, empirical evidence, and relevant validation through case studies. The application of this approach instigates a series of research scenarios which act as frameworks that provide new insights into design and practice-based research, building anatomy research, city dynamics research, housing dynamics research, and user perception studies. Each scenario demonstrates the applicability of combining theoretical insights with empirical investigations. The implications of these scenarios for architectural and urban research emphasize the significance of transdisciplinarity and highlights the importance of integrating diverse theoretical tenets and methodological insights to address the complex challenges of research in architecture and urbanism.

architectural research | urban studies | transdisciplinarity | transdisciplinary action | building anatomy | city dynamics | housing | environment-behavior studies | empirical methods

In the dynamic and multifaceted world of architecture and urbanism, there is a continuous journey toward a deeper understanding of how we design, build, and interact with our built environments. This journey encompasses the exploration of how these environments are influenced by and in turn influence various human, cultural, technological, and environmental factors. Within this broad spectrum of inquiry, this entry explores the complexities of research in architecture and urbanism which continues to face ongoing challenges. Despite the remarkable evolution of architectural theory and practice, achieving a comprehensive understanding of their interplay remains an elusive endeavor [1][2][3][4].

Historical research in architecture has traditionally emphasized styles, cultural influences, and the evolutionary narrative of design practices to provide invaluable context and to link architectural developments to broader historical and cultural movements or phenomena. Recently, however, there has been a paradigm shift that demonstrates a growing emphasis on empirical methods and interdisciplinary approaches [5][6].

The human dimension of architecture has increasingly become central to contemporary discussions, with research delving into how individuals interact with and perceive their built environments. This user-centric perspective has expanded the scope of research and enabled the integration of insights from social sciences to enrich the understanding of the experiential aspects of the built environment. Simultaneously, technological advancements like geographic information systems (GIS), building information modeling (BIM), and artificial intelligence (AI) have revolutionized architectural conceptualization and execution, leading to unprecedented precision and efficiency in design processes. Likewise, social and environmental sustainability have surged to the forefront of architectural and urban concerns, with research addressing the pressing need for sustainable design practices and evaluating the social and environmental impacts of buildings. Such a focus has prompted a re-evaluation of priorities in both the theoretical and practical realms of architecture and urbanism.

Despite the preceding advancements and emerging issues, the integration of diverse approaches into a comprehensive framework, which draws from different disciplines, remains a significant challenge. Therefore, this entry proposes a transdisciplinary approach to bridge these divides while considering a holistic understanding of architectural and urban studies. To achieve this objective, this entry introduces transdisciplinary perspectives such as hybrid scenario development, integrated socio-spatial analysis, a revised experiential approach, and the integration of environmental psychology into the study of the physical environment and its relationship with users and different types of stakeholders. These perspectives are developed to harmonize various methodologies and to establish the beginning steps towards transdisciplinary research in architecture and urbanism.

Drawing on the seminal works of researchers like Franz [5] and Groat and Wang [6] and the conceptual contributions of the lead author [7], this entry sets ambitious and multifaceted objectives that seek to delineate the intrinsic characteristics and philosophical stances underpinning research methodologies in architecture and urbanism. Additionally, this entry aims to introduce and elucidate five distinct research scenarios, each of which highlights a unique aspect of architectural and urban inquiry.

Shaping solid research frameworks, the approach adopted in developing the five research scenarios is grounded in a rigorous literature review, empirical evidence, and case study analysis. The scenarios serve as pathways, guiding researchers through the intricate landscape of knowledge production in architecture and urbanism. The implications of this entry extend beyond academic discourse by offering insights and practical applications for scholars, practitioners, and policymakers alike. By enhancing our understanding and advocating for the use of transdisciplinary approaches, this effort aims to shape the future of architectural and urban research, ensuring that it remains relevant, responsive, and robust in the face of ever-changing global challenges.

Rationale: Transdisciplinarity and the Need for Robust Research Scenarios

Transdisciplinarity is a philosophy and approach to transcendence, problem solving, and transgression [1]. It emphasizes a multidimensional exploration of complex topics while also recognizing the dynamic and evolving nature of research subjects or focus areas. It is not, however, directly attributed to a specific philosopher or scholar, but is influenced by several thinkers who have contributed to its development as a concept and as a paradigm of thinking. Notable scholars have made significant contributions to its evolution, including Jean Piaget, Edgar Morin, and Basarab Nicolescu [2][3][4]. Jean Piaget, a pioneering developmental psychologist, contributed to transdisciplinarity discourse by emphasizing the importance of understanding cognitive development as a holistic and integrated process, recognizing the interconnectedness of various domains of knowledge [2]. Edgar Morin, a key figure in complexity theory, promoted the idea that complex systems should be studied as wholes while urging scholars to transcend disciplinary boundaries for a better understanding of phenomena [3]. Basarab Nicolescu introduced the concept of the “transdisciplinary object” and emphasized the necessity of a new, integrative language that goes beyond the limitations of individual disciplines to invigorate a more holistic approach to knowledge production [4]. These contributions highlight the significance of transcending disciplinary boundaries and the value of embracing complexity while fostering a holistic understanding of social or environmental phenomena [8].

Transdisciplinarity can be elucidated as a form of knowledge developed through action involving cooperation among different parts of society, professionals, and academia to meet complex challenges of society. Transdisciplinary research starts from tangible real-world problems [9]. Answers to challenges are devised in collaboration with multiple stakeholders including academics and professionals from different disciplinary backgrounds [10]. Therefore, various arguments assert that transdisciplinarity is about transcending the boundaries of various disciplines. As a mode of knowledge production, it can concomitantly confront complexity while challenging the fragmentation of knowledge. Its hybrid and non-linear nature can easily enable disciplines to transcend and truly incorporate various academic or research structures [11][12][13][14]. Hence, it becomes crucial to envision a seamless integration between theory and practice which can be realized through the creation of scenarios that serve as pragmatic frameworks and encapsulate the dynamic and comprehensive principles of transdisciplinary thinking as it relates to research in architecture and urbanism. Emphasizing the need for scenarios, perspectives, and interdependencies within research in architecture and urbanism, transdisciplinarity allows researchers to gain a more profound understanding of the complexities involved in research undertakings by dissecting complex topics into theoretical tenets and relevant methodological approaches. The application of the transdisciplinary approach in this entry is captured through the development of five research scenarios, each of which incorporates components which stem from diverse disciplines and considers approaches like hybridity, the integration of socio-spatial analysis, a revisited experiential approach, and the assimilation of environmental psychology into urban studies.

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