

SATURDAY, APRIL 13
SESSION 10
11:15 - 12:15

ROOM C - SALA DE VIDEOCONFERENCIAS

Inès Zaid

**The measurement of spatal
adaptability as a breeding
ground for architectural
experimentation**

Author:

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Category: Extended abstract

The measurement of spatial adaptability as a breeding ground for architectural experimentation.

The interplay between rapid urbanisation and rampant uncertainty challenges cities globally to adapt to constantly evolving needs and pressures. In Europe, where the expansion of urban spaces currently surpasses population growth (1), adaptability has gained significant attention among designers, decision-makers and scholars.

Indeed, by addressing the built environment's obsolescence, adaptability addresses space and material scarcity whilst acknowledging the dynamic interaction between buildings and entities, aligning with the principles of the Open Building concept (2,3). Specifically, this study endeavours to centre the topic of architectural adaptability to its spatial dimension. Space is hereby "created by a constellation of natural and man-made objects [, where,] in the mind of the creator, user, or beholder; every architectural constellation establishes its spatial framework" (4) and is preserved as a resource.

The design-driven method of research, therefore, revolves around the "artefact" of the building to speculate, project, test, and imagine. Adaptability emphasises the role of time and spatial dimensions as actors of architectural creation. Thus, it extends the team of stakeholders beyond a selected team of individuals at a given moment and recognises that "a building is not something you finish; it is something you start", as aptly stated by Brand (4).

This vision of buildings reinforces the subjectification of architecture as an actor in its own right(5) that finds its theoretical roots in the Open Building movement(3), emphasising the collective involvement in the design process. The built environment becomes, therefore, a laboratory where urban and architectural forms are tested, ideas explored, and lessons learned. Indeed, architectural adaptability is the capacity to adapt to any change. It transforms the buildings into a design process as an exploratory quest where the building becomes both the tool, the entity and the recipient of new knowledge. It strives to transform the building into an experiment by constantly formulating wicked problems (5) that the building can sense and measure (6,7). Within this conceptual framework, stakeholders can, therefore, envision the physical, speculated, feasible, and expected building, to inform their design interventions in the way of experimentations (8)

The first phase of this research will engage the literature to define the meaning of adaptability and its interplay with experimentation. Using a systematic literature review, the material sourced will be selected in a reproducible fashion. This is important as the definition of adaptability can be very controversial, and although similar studies have been conducted (9–11), the specific spatiality of adaptability was never systematically reviewed. This will help support the identification of metrics and identify qualitative aspects of adaptability for driving design-driven methods of research that are backed by data in the context of architectural experimentation., resting the existing literature on the topic (12–14).

The second phase will address the overlapping qualitative elements of adaptability with the *neu Bauhaus* "beautiful, sustainable, together". These can find a direct parallel with a branch of the adaptability literature: evolutionary architecture. Derived from Darwin's theory of evolution, it draws parallels between design decisions and natural selection (2). This evolutionary matrix will constitute the backbone of this paper, to comprehend how evolving buildings constitute a compelling research by design method, even if, or *especially* because they are built. This creates the condition for stakeholders to converse, converge and diverge. In this setting, the building and the events (i.e., pandemic, floods, etc.) are all key players in the building's conception, creating data that can be measured and implemented towards a design agenda (7). Only one aspect of adaptability will be

selected for this study, focusing on the morphology and permeability of the building; it will demonstrate some scenarios in which architectural permeability is part of the wholesome experiment, which is the lifetime of an architectural structure.

This paper delves into research by design, shedding light on the continuum of design and stakeholder engagement, emphasising a passive yet impactful contribution to the design of buildings. Additionally, it explores methodologies for measuring this research by design through layered data sources, offering insights into the dynamic interplay of experimentation, stakeholder engagement, and architectural innovation.

1. UN DESA. The Sustainable Development Goals Report 2023: Special Edition [Internet]. New York, N.Y.: United Nations; 2023 Jul [cited 2024 Jan 17]. Available from: <http://desapublications.un.org/publications/sustainable-development-goals-report-2023-special-edition>
2. Habraken NJ. Supports: An Alternative to Mass Housing. Routledge; 1972. 113 p.
3. Habraken NJ. Change and the Distribution of Design. *Open House Int* [Internet]. 2005 Jan 1 [cited 2023 Nov 7];30(1):6–12. Available from: <https://doi.org/10.1108/OHI-01-2005-B0003>
4. Brand S. How Buildings Learn: What happens after they're Built. 1994.
5. Rittel HWJ, Webber MM. Dilemmas in a General Theory of Planning. *Policy Sci* [Internet]. 1973;4(2):155–69. Available from: <http://www.jstor.org/stable/4531523>
6. Alanne K, Sierla S. An overview of machine learning applications for smart buildings. *Sustain CITIES Soc*. 2022 Jan;76.
7. Batty M, Axhausen KW, Giannotti F, Pozdnoukhov A, Bazzani A, Wachowicz M, et al. Smart Cities of the Future. *Eur Phys J Spec Top*. 2012;214:481–518.
8. (PDF) What Does It Mean To Make An Experiment? [Internet]. [cited 2024 Jan 22]. Available from: https://www.researchgate.net/publication/343548954_What_Does_It_Mean_To_Make_An_Experiment
9. Askar R, Bragança L, Gervásio H. Adaptability of Buildings: A Critical Review on the Concept Evolution. *Appl Sci* [Internet]. 2021 Jan [cited 2023 Oct 9];11(10):4483. Available from: <https://www.mdpi.com/2076-3417/11/10/4483>
10. Pinder JA, Schmidt R, Austin SA, Gibb A, Saker J, Pinder J, et al. What is meant by adaptability in buildings? *Facilities* [Internet]. 2017 Jan 1 [cited 2023 Oct 13];35(1/2):2–20. Available from: <https://doi.org/10.1108/F-07-2015-0053>
11. Schmidt III R, Eguchi T, Gibb A. What is the Meaning of Adaptability in the Building Industry? In 2010 [cited 2023 Oct 11]. Available from: <https://www.semanticscholar.org/paper/WHAT-IS-THE-MEANING-OF-ADAPTABILITY-IN-THE-BUILDING-R%C3%B3bert-Eguchi/8aeb3a76e3b5a9852d20f5e782722f9b91f2f8c>
12. Tsoumpri D. Architectural space as an open, adaptable system: A design experiment. *Int J Archit Comput*. 2023 Mar 24;
13. Viny A, Dabholkar A, Llach D. Two Design Experiments in Playful Architectural Adaptability. *NEXUS Netw J*. 2018 Apr;20(1):25–39.
14. Chica JA, Apraiz I, Elguezabal P, Rrips MO, Sánchez V, Tellado B. Kubik: Open Building Approach For The Construction of an Unique Experimental Facility Aimed to Improve Energy Efficiency in Buildings. *Open House Int* [Internet]. 2011 Jan 1 [cited 2024 Jan 9];36(1):63–72. Available from: <https://doi.org/10.1108/OHI-01-2011-B0008>

Reflection on the Topic:

In a world where actors and stakeholders within the build environment seek increasingly accurate certainty, through the ubiquity of big data, there is a stark misconception of what constitute a model, and the expression of a society ill at ease with the challenges ahead of us. By giving the illusion of accuracy, there is a nurturing of an anxiety towards the uncertainty that lies ahead of us. Beyond testing ideas and liberating architects from some or many constraints, experimentation is a great tool to foster and nurture positive methods of communication. This, in turn feeds the ground of experimentation as ideas and insight can flow in a more inclusive fashion and should be encouraged across disciplines.