Reflexions on the Plurality of Methods in Architecture

Oya Atalay Franck

Editorial Summary: With »Reflexions on the Plurality of Research Methodology in Architecture«, Oya Atalay Franck explores the plurality of methods in architecture, unfolding the broad variety of working fields in the discipline. She highlights the specificity of the design tasks, resulting in a unique challenge for each task with correspondingly individual answers and results, thereby framing designing as an adaptive creational process that corresponds to the distinct demands of the project. Although the design process here is outlined as interactive and feedback-dependent, including the interwoven use of different media and working methods, this contribution questions whether the discipline of architecture can actually be investigated according to proven procedures of research practice. [Katharina Voigt]

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Architecture is, first and foremost, the creation of spaces for human activity and habitat. In order for such space to be defined, the architect designs and constructs buildings and related structures. Architecture, in this sense, is also the product of this process: the buildings and man-made structures. The domain of the architect as »maker of spaces« extends to all areas of human presence and all levels of scale: from a single room in a herder's hut high up in the mountains to megacities with millions of inhabitants. Architecture thus also includes urban design and shall be used here in this encompassing sense.

The qualitative requirements of architecture as a human habitat are manifold, and they differ from place to place, from scale to scale, and from use to use. The Roman architect and theoretician Vitruvius summed them up in three main categories: firmness – a built structure has to be strong, hold its own weight and the weight that comes with its use, and withstand the elements; functionality – a built structure has to serve its purpose well,

whether it is housing, trade, industrial production, services or leisure; and beauty – a built structure has to provide a worthy atmosphere and a satisfying experience for the senses and for the mind.

Architectural problems vary significantly – it is safe to say that no two are alike. In their professional careers, architects typically specialize in some category of task, designing for example schools, or houses, or hospitals, or city quarters. Each of these tasks has different requirements. Nevertheless, when we look at the process of solving architectural problems, we can identify certain analytical and synthetical phases and steps which are crucial for tasks at all scales and levels of difficulty.

First, the architect has to learn about the task at hand and understand its fundamental requirements. This includes getting to know the functional requirements and the means, wishes, and needs of the client and the user, understanding the conditions of the site – its geology, topography, climate – where the built structure is to be established, as well as learning about the social and cultural context. This is the analytical phase of the process.

The architect then has to develop spatial and technical solutions to this task, usually in variants which are discussed with the buyer and other stakeholders. This is the core of the architectural process and the key activity of the architect: the activity of designing and constructing. This encompasses the conceptual and synthetic phase of the process, where ideas regarding the solution to the problem come together in a vision of the final product.

Finally, the solution to the architectural problem has to be transformed from its merely theoretical state to its practical implementation through the planning of the construction process and its execution. This is the concretizing phase of the process, where that which was merely an idea is turned into solid matter.

These three phases of architectural production never follow each other in this »one-two-three« sequence. Instead, they overlap and interweave, for already during the first encounter with the client commissioning a work or the first visit to the site, the architect must consider the shape and structure of the final product. Ideas regarding materials and construction technology inform the process of shaping space as much as they are a result of it. Testing the feasibility of a concept sometimes results in backlash reaching all the way to the analytical phase, when certain findings may have to be critically reevaluated.

Designing architectural space is therefore always an iterative process, a process of feedback loops. Some design methods integrate this as a key

element and actively work at different scales simultaneously: at the urban level, the level of individual spaces, and of the constructive detail – this is sometimes referred to as the »scenario method« (cf. Gerber/Kurath/Schurk/Züger (eds.) 2018[2013]). Other methods approach an architectural problem much like using a zoom lens for photography, beginning with the broadest view and diving deeper and focusing more and more on the details of the situation at hand, trying to develop successful approaches to issues at smaller scales, quite like standardized patterns of a language (cf. Alexander/Ishikawa/Silverstein 1977).

It should be mentioned that many architects may have a problem with the terminology used in this text. They may not like to think of their activity as providing solutions to problems in the way that an engineer might approach a typical task. Of course, thinking of architecture as mere »problem solving« is robbing it of its key element, the magical quality that architectural spaces and structures have when they become art, and which the German philosopher Schelling characterized as »solidified music« (Schelling 1859: 575).¹

Such an objection is justified: Not everything about architecture can be rationalized and logically reduced to a »problem«. However, even if you exclude these »artistic« elements from the discourse on research and methodology, a large amount of substance regarding architecture and its process and products still remains and can be included. That is what is primarily discussed here: All of the components of the process and products of architecture, which can be analyzed and synthesized in a structured, systematical and methodological way.

Obviously, as areas of research, the first two Vitruvian qualities – firmness and functionality – are more open and welcoming to investigation, scientific and otherwise, than the third – beauty. Beauty is notoriously difficult to measure, to expose to empirical observation without killing it, and to logically reason and debate. David Hume, a leading thinker of the Enlightenment and one of the forefathers of empiricism and skepticism, wrote in 1742: »Beauty is no quality in things themselves: It exists merely

1 Translation: Oya Atalay Franck. German original: »Was also in dem Gebiet des Schematismus liegt, ist der arithmetischen Bestimmung unterworfen in der Natur und Kunst, die Architektur, als die Musik der Plastik, folgt also nothwendig arithmetischen Verhältnissen, da sie aber die Musik im Raume, gleichsam die erstarrte Musik ist, so sind diese Verhältnisse zugleich geometrische Verhältnisse.«

in the mind which contemplates them; and each mind perceives a different beauty.«²

But beauty may be the quintessential element of architecture, that which sets it apart from mere »construction«. »Beauty« in this context is a synonym for all that deals with aesthetics, with perception and emotion, and with the artistic element of architecture. If you ask an architect »what is architecture?«, you may get puzzling answers like these: »Architecture is masterly, correct and magnificent play of masses brought together in light« (Le Corbusier 1927: 29); or »Architecture is the will of an epoch translated into space« (Wedderkop 1924: 31–32);³ or »Architecture is the reaching out for the truth« (Kries/Eisenbrand/von Moos 2012: 13).

This does not mean that the artistic element of a design is completely inaccessible to research. It is certainly open to reflection and critical thinking, which themselves are forms of research as well. But there is a similarity to alchemy or natural philosophy in the speculative unity of the natural and the spiritual in the concept of beauty, of that which can be explained and that which can not.

It's a banality to state that not all tasks of architecture pose the same difficulties and that not all architects are equally qualified to solve all tasks. This is not just a question of artistic creativity and talent, but also a question of experience and intelligence. Further – with the increasing complexity of a problem – it is a question of whether the architect tackles the process of learning about problems involved in a task and develops spatial and constructive solutions for this task in a systematic and methodical way.

One thing should be made clear: Architecture is a discipline that requires structured processes for problem solving. Through the centuries, architects have developed their own set of tools and methods for this systematic process. Some of these methods are analytical, some conceptual, but many are both: I think for example, of sketching and drafting, of mapping and model building, of plan and section, of perspective and axonometry, and of

2 <https://oll.libertyfund.org/titles/hume-essays-moral-political-literary-lf-ed>; based on: David Hume, (1987). *Essays Moral, Political, Literary*, edited and with a foreword, notes, and glossary by Eugene F. Miller, with an appendix of variant readings from the 1889 edition by T.H. Green and T.H. Grose, revised edition, Indianapolis: Liberty Fund, accessed April 6, 2020.

3 Translation: Oya Atalay Franck. German original: »Baukunst ist immer raumgefasster Zeitwille, nichts anderes«.

other standardized conventions of representation, yet also of morphological and typological study and classification.

Generally, large-scale tasks – such as developing a city neighborhood as opposed to designing an office building – are more complex than small-scale ones. This is certainly the case where the first two Vitruvian qualities are concerned, *firmitas* and *utilitas*. Quite a number of architectural problems are so complex, that they might be called »wicked«, as in mean or nasty. The term »wicked problem«, coined in the 1960s in the context of the social sciences and economics (Term coined by Horst Rittel, in: Churchman 1967: B-141), denotes a problem which is difficult to solve because of complex interdependencies between agents, muddled conditions and circumstances, and in general a resistance to resolution.

Difficult problems require stricter adherence to systematic analysis through research. There is a »natural inclination« of architecture – and of architects – toward research. I have heard many practicing architect-teachers at architecture schools claim, often a bit defensively, that the process of designing spaces and their defining structures is by its very nature a process of »research« and as such a quest for a specific kind of knowledge. However, these same architects would invariably say that the knowledge gained in an architectural process is highly specific, contextual and applicable only to a certain architectural, social or cultural setting, often only understandable to the »cognoscenti« and, in any case, difficult to communicate.

Unfortunately, because it does not benefit architecture as an academic discipline, there is a similarly strong disinclination toward applying the rules of scientific research to the design process. Rules such as careful and systematic observation, rigorous skepticism about what is observed and how the observed is understood, the formulation of precise hypotheses and of testable research questions, and in general, complete transparency and traceability of both process and results.

Practicing architects who also work in academia, who are therefore exposed to a scientific environment and who may be confronted with the demand for »scientific production«, are to some degree suffering under these demands. Architecture is in many ways an »intuitive« discipline that relies considerably on non-structured, improvisational processes. Typically, scientific research associated with architecture is exactly this: »associated« in the sense of »not located in its center« or in its »key process« – i.e. designing. Instead, research takes place at the »fringes« of the discipline, or – more precisely – at its intersections with other academic disciplines:

with engineering; with the natural sciences; with the humanities; or with the social sciences. This is a fundamental dilemma of architecture: how can methodological rigor and academic transparency be applied to a discipline which relies so heavily on intuition and on artistic creativity, on that which has to be felt but cannot really be explained?

As a panel member for the Swiss National Science Foundation and other funding agencies, I have reviewed quite a number of research grant applications from the fields of architecture and urbanism. Evaluations for scientific funding are usually based on certain key criteria, such as the scientific relevance of the project and the potential for the study's broader impact, the originality and topicality of the proposed project, the appropriateness of methods and the feasibility of the project plan. Many architect-researchers at schools and at institutes of architecture and urbanism face fundamental problems regarding third-party research funding for which they have to compete with other disciplines. I have observed a lower rate of success for grant requests from architecture than from other fields. This has often to do with certain »structural deficits« of the applications: a lack of clear definition of the research matter and of its delimitations; a lack in systematic preparation of the project according to scientific standards; and also a lack of stringency where processual structure and choice of methods are concerned.

There are several plausible explanations for these deficits, such as a lack of interest from the building industry in architectural research, no specialization in the scientific sense within the professional core of the architect-designer (the architect as »generalist«) and the artistic aspects of architecture. Additionally, and this may be the least noted but most important aspect: architects are not trained to conduct scientific research. I personally know of no school of architecture which has »Basic Research Methodology for Architects« or a similar course on its curriculum – not even as an elective. Like the tools developed by architects and builders for the professional practice of designing spaces and built structures, the scientists of the various academic disciplines have developed, tested and standardized their tools for research, and they continuously add new tools to the »methodological toolbox«. This »toolbox« is available for all: It has different sections, with for example different tools for qualitative or quantitative, experimental or observational studies. Some disciplines have a penchant for one group of tools or another. The social and the natural sciences as well as engineering like to gather quantitative data which can then be submitted to statistical analysis and other numbers-based methods. The humanities often use tools

from the qualitative section of the toolbox, focusing on non-quantitative data and reflecting on the meaning that can be attributed to such information.

In my opinion, if architects want to be more successful both in academic work and in professional practice, they also have to invest in the »professionality« of the analytical components of the design process. This includes a higher sensitivity for the complexity of even relatively simple research tasks and what this means for the organization of the work process. Architecture does not take place in a laboratory, where agents and factors can be limited, but in the »dirtiness« of the real world.

This is a problem in other academic fields as well – think of sociology or anthropology, or medicine.⁴ Furthermore, architects cannot subtract themselves from a problem as more or less neutral observers, because it is their objective and task to transform that which they study.

Architects have learned to work in teams including specialists from other fields, such as systems planners and engineers, sociologists and ecologists, and others. This must be twice true for architect-researchers. Some architectural tasks – especially at larger-scale levels: a neighborhood, a city, a metropolitan area – pose very complex, even »wicked« problems. Think, for example, of developing concepts for urban housing in noise-polluted areas, where you have to be able to reconcile such contradictory claims as density, light, noise-protection and community life. To understand these problems and to evaluate possible solutions for them, architects have to engage in even more careful and systematic research than usual. These complex and at times »wicked« problems often require knowledge from other disciplines, such as sociology, cultural studies, history, ecology and economics. Solving such problems, or – in the case of »unsolvable« wicked problems – finding the best possible compromise approaching a solution – requires

4 Think of the difficulties of a general practitioner who has to treat patients in all of their dimensions of health – biological, psychological and social – and not just as (for example) a »kidney problem«. The field of research dealing with basic health services is – appropriately called – health services research. It is to be differentiated from basic, translational and clinical research. Health services research faces similar problems as architectural research in that it deals with the highly complex and »dirty« situations of reality, with no possibility for randomized controlled trials. And, unlike basic and clinical research, where huge amounts of money are poured in, it is notoriously difficult for this field of medicine to get recognition and research funding.

interdisciplinary work. Only interdisciplinary collaboration, both in the analysis of the problem at hand and in the synthesis of solutions, will provide resilient and durable results.

The various disciplines each contribute not only with their experience and their factual knowledge, but also with their methodological skills. Architects, who often understand themselves as »generalists«, might be tempted to use such »foreign« methodologies for their own analyses. This is usually not a successful strategy, for unlike sociologists and cultural anthropologists, historians and natural scientists, architects are not usually trained in working with these tools of scientific inquiry. Generalists are not universalists, they are not the master of all trades, and they do not need to know all the facets of a problem and its solution. The task of the architect as a generalist is instead the organization of the interdisciplinary analytical and synthetical process and the translation of the knowledge gained from this interdisciplinary work into spatial manifestation.

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