# A Case Study on Case Studies

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ABSTRACT: Case study methodology is arguably among the most misunderstood and/or misused research techniques in architecture schools and practices alike, even if there are promising cross-, multi-, and trans-disciplinary exemplars. As architecture is not only inherently an interdisciplinary field, but also increasingly a knowledge-based discipline in terms of both the profession and the scholarship, this paper looks at the education of architectural research methods in general, and that of the case study method in particular, in order to detect the value of case study methodology in design research. It must be pointed out, though, that the case study method is not regarded below as an educational tool per se (like the case study models used in education of medicine, business and law among others), nor as a resource of web-based case study systems and other collections of antecedent building projects. The 'architecture' of case study research design is not the focus of this paper either, although it is briefly discussed with regard to data generation. Instead, the goal is to define the terminology and techniques related to case studies as an architectural research method in academia. Multidisciplinary perspective in embedded and holistic case studies is the primary framework of this paper, including both quantitative and qualitative research.

KEYWORDS: architectural research, case study, integrative evaluation, qualitative research, thick description

## INTRODUCTION

While case studies as research methodology have been controversial, to say the least, they have also been instrumental in many disciplines, such as law, business, medicine, psychology, sociology, cultural anthropology, engineering, and urban planning. In architecture, case study is a frequently employed term, yet, not particularly well defined as a research method. In architectural jargon, it seems to mean anything from a true case study to a simple precedent study, sometimes used even just as a synonym for an 'example.' Furthermore, on the AIA's *Architecture 2030 Challenge* website, for instance, the "Case Studies" are more project descriptions than holistic studies of cases in relation to the complex dynamics of their context, which is one of the definitions of a case study; not alone including other characteristics such as explaining causal links, developing or testing a theory, generalizing to theory, and using multiple sources of evidence (Groat and Wang 2002). Although case or precedent studies have successfully been employed as means of design research in architectural practices or educational tools in many architecture schools, we do not discuss this type of usage of case studies here. Instead, we focus on the definition of a case study as an architectural research method in academia. Therefore, to clarify and define architectural case studies within the interdisciplinary realm, the primary, though not only, theoretical framework of this paper is Roland W. Scholz and Olaf Tietje's *Embedded case study methods: Integrating quantitative and qualitative knowledge*, in which particularly the discourse on environmental sciences is relevant to architectural research.

Based on the above study, this paper looks at the two types of research designs, the embedded case studies and the holistic case studies,[1] from the perspective of design research with a focus on buildings, which Scholz and Tietje do not address. Supplementary, trans-disciplinary perspective is provided by the views of Pauwels and Matthyssens on the ontological and epistemological premises of case study method in international business. The goal of this examination is to find out whether case studies can successfully inform design decisions and solutions in the field of architecture, which is naturally an important part of evidence based design. Hence, we examine some studies conducted by architecture doctorate candidates, since those function as *cases in point* by demonstrating the role of various types of case study research strategies in design research, or practice-based research (PbR) like it is usually known in Europe. In addition, these studies represent a number of unexplored approaches and possibilities in the education of research skills. Those include such conventional data collection techniques as Post Occupancy Evaluations (POE), fieldwork, interviews, surveys, and the kind, but also embrace more novel approaches like memory sketching, Japanese *anime* and *manga*, and other visual means of analyses.

Unlike common case studies providing mainly quantitative data, this paper discusses qualitative research as a supplementary part of this methodology. For one example, instead of considering POE merely from the perspective of building performance in technical, ecological or any other tangible point of view, these case studies also emphasize the experiential aspects of architecture. In this respect, the emphasis is on phenomenological thick descriptions, as opposing to mere project descriptions. In other words, the focus is on deep understanding of a case within its context, analyzed from multiple points of view in order to provide means of holistic interpretations of empirical inquiries within real-life contexts.

## 1.0. INTEGRATIVE DATA EVALUATION

According to Scholz and Tietje, most skepticism about case studies is caused by nontransparent knowledge integration, especially in embedded case studies with multiple methods for data generation. They argue that this is why "integrative evaluation – an evaluation that integrates viewpoints from such diverse disciplines as ecology, economics, and sociology – is crucial component of case studies" (Scholz and Tietje 2002, 3). For this process, they suggest a synthesis of knowledge integration that can be divided into four categories: integration of disciplines, systems, interests, and modes of thought. As for methodology, they point out that case studies should not only use multiple sources of data and evidence, but also that the "methods should employ direct and participant observations, structured interviews, and surveys, and they can also include experimental design, focused interviews, open-ended interviews, archival records, documents, and scientific data from field and laboratory […] This remains true regardless of case design" (Scholz and Tietje 2002, 13). In other words, also in architectural case studies triangulation between methods, not just between sources of data and evidence, is crucial.

Additional reason for skepticism is, no doubt, the conventional call for scientific objectivity. In the context of multiple case study research in international business and the 'architecture' of such research design, Pauwels and Matthyssens discuss the ontological and epistemological premises of qualitative research "that departs from a time- and human-free objective reality towards a more context-bound intersubjective reality […], in which the social world is to be understood from the point of view of the individuals who are directly involved in the events that are investigated" (Pauwels and Matthyssens 2004, 127). They go on arguing that "Multiple case study research aims at closing the gap between the objective of the study and the object of the study. In this respect, we explicitly aim at capturing the subjectivity that is embedded in the object" (ibid). In architectural research, this can be seen as an invaluable approach in interpreting the interrelationship between the built environment and its users, from the perspective of the latter.

However, Pauwels and Matthyssens also point out the significance of reducing the researcher's subjective impact on the study. For this, they suggest principles of Four Pillars and a Roof (appealing simile for architects). Pillar 1, theoretical sampling, is based on selecting both typical and atypical cases, as opposing to a number of analogous cases. In this process, the analyses of atypical cases produce contrasting results, though for predictable reasons, and create theory-driven variance and divergence of data. Pillar 2, triangulation, is naturally one of the basic 'pillars' in qualitative research in general. For Pauwels and Matthyssens, it serves two purposes; it reduces random errors and increases internal validity of a study. Pillar 3, pattern-matching logic, is based on the fundamental scientific pattern model according to which, for instance, events can be explained in relation to sub-elements so that together they constitute a unified system. Pillar 4, then, deals with analytical generalization, meaning testing the validity of research outcome and/or theory development against extant theories. Finally, the roof encompasses validation by juxtaposition and iteration of the pillars that support it. In short, this amounts to deliberate, ongoing checks of validity and invalidity through concurrence of data and findings, both existing and emerging theories, case selection and data collection, and other internal and external reference points (Pauwels and Matthyssens 2004). These principles are reminiscent of Scholz and Tietje's integrative evaluation with emphasis on multiple sources of data and evidence. For our purposes, they indicate that architectural case studies, too, should accurately employ the four pillars and the roof. As pointed out by Pauwels and Matthyssens:

> The omission of one of these pillars has a baleful influence in the methodological quality of the study and causes the roof – the ongoing validation process – to collapse. Yet, these pillars are only qualifiers: relying upon them is necessary though not sufficient. Each of the pillars should be operationalised and interwoven in a way that best fits the research questions and gives an optimal answer to the operational challenges of the study (Pauwels and Matthyssens 2004, 131).

One example of an embedded case study, in which the researcher combines quantitative and qualitative data, is an ongoing doctorate project with the initial topic of inquiry whether the impact of a building, in this study that of a house, on its users is actually the same as the architect claims/ wishes; as a comparison group the researcher has analogous user-designed-and-built houses (i.e., the atypical cases). The research design includes such quantitative strategies as performance analyses, census information of the occupants, correlational questionnaires among them, interpretive-historical analysis of the context, and visual scrutiny of

pre- and post-occupancy floor plans, supplemented by qualitative data from critical analyses of writings on these buildings, open-ended interviews among the occupants and the architects, as well as participant observations in the target buildings. In a significant role of knowledge generation in this POE is naturally case study method, as the houses are the cases, including fieldwork, followed by an open-ended survey with which the researcher is seeking to understand the occupants' own perception of their real-life setting. How successfully this bricolage can be integrated, interpreted, and evaluated is challenging and remains to be seen.

Another example of an ongoing embedded case study deals with a relatively wide topic of looking at Chinese geomancy (*fengshui*), environmental psychology, and biophilic design. In this instance, too, the area of interest is the users' perception of buildings and their own setting, though the primary objective is the architect-client relationship and communication during the design process; in other words, this is a pre-occupancy evaluation focusing on the future user. In addition to a very comprehensive literature review of these three separate schools of thought with examples of their design principles (pillar 1), the thesis goes on identifying differences and similarities of these principles (pillar 2), pattern models underlying the logic of all three (pillar 3), and then testing the conclusions against extant phenomenological views on perception of place (pillar 4). The 'roof' is a design project on a real site for a real family (though hypothetical as client) testing and validating the research results attained by the four 'pillars.' Thus, this design research case study highlights feedback from the client and the impact of that on the design. The goal is to validate the research results and design solutions based on – or perhaps better with this metaphor, resting on – the theoretical framework by juxtaposing them with the extant theories on *fengshui*, environmental psychology, and biophilic design, as well as general theories on architecture and perception. As in the previous example, the challenges are considerable in not only crossing many disciplinary and cultural boundaries, but also in integrative data evaluation deriving from these diverse fields.

## 2.0. THICK DESCRIPTIONS

In an article "Experimental Cultures: On the End of the Design Thesis and the Rise of the Research Studio," David Salomon refers to Michael Joroff and Stanley Morse's essay "A Proposed Framework for the Emerging Field of Architectural Research" in a 1984 compilation of articles titled *Architectural Research* in which they ranked the research methods used by architects, from the least to the most objective: "1. ad hoc observations, 2. design, 3. review of precedents/ current knowledge, 4. manifesto, 5. normative theory, 6. development/ scholarship, 7. social science research, and 8. laboratory/ physical science research" (Joroff and Morse 1984, cited in Salomon 2011, 34). In other words, the required level of objectivity was a pre-denominator in this classification of architectural research methods. It is worth noting that case study method was not even mentioned. As Salomon continues, "Eighteen years later, Groat and Wang's survey *Architectural Research Methods* expanded upon and fleshed out Joroff and Morse's list, stressing the importance of qualitative methods" (Salomon 2011, 34).[2]

Well, it has now been more than ten years since Groat and Wang's survey was published and has been used as a textbook in numerous architecture schools across the world. It, together with general paradigm shift in academia, seems to have had some impact on architectural research, in which qualitative paradigm with emphasis on the interaction between the researcher and that being investigated is accepted, in contrast to the now almost thirty-year-old view above focusing on subject-object distinction. However, despite the substantial and increasing amount of publications on architectural phenomenology and perception of place during the past three decades, added with Groat and Wang's extensive discussion on qualitative research and case studies in architecture, certain lack of precise definitions (or imprecise usage of those) still remains in the discipline of architecture with regard to terminology, methodology, and validation of case studies. This is particularly true with holistic case studies in which knowledge integration "is ruled almost exclusively by the principles of qualitative research" (Scholz and Tietje 2002, 13). Moreover, as Scholz and Tietje stress, there is a fundamental difference between embedded case studies, discussed above, versus holistic case studies. While the former typically involve an analysis of more than one case and are not limited to qualitative analysis alone, the holistic case studies almost always rely on a single narrative of phenomenological descriptions and interpretations (Scholz and Tietje 2002). Again, for the purposes of this paper, we could conclude that the distinction of architectural case studies depend on the topic of inquiry and whether that requires multiple of single case studies.

One example of a holistic architectural case study that relies on interdisciplinary approach, narrative of interpretive-historical research, and phenomenological thick descriptions, is a doctorate project that focuses on ways of creating sense of place in elementary school environments. The primary proposition of this study is that because the age when children attend elementary school is also when their identity and view of the world through cognitive development is at its height according to numerous studies in numerous disciplines,

architects should have a profound comprehension of these factors. Hence, in addition to many other issues for which space does not allow discussion here, the argument of the study is that sense of place is created and strengthened by diverse functional aspects, conceived realm with aesthetic value, personal participation and achievement, thermal comfort, and articulated spatial distinctions within, not between, indoors and outdoors. The chief technique of data generation in this study was memory sketching method with which the researcher was exploring the perception of their own setting among students of three elementary schools. Based on the findings derived from these case studies and extant theories, such as those by Hegel, Heidegger, Lynch, Relph, Norberg-Schulz, and Tuan, the researcher came up with five "place generators": edge, boundary, center, path, and threshold (Rieh 2007) for further applications in design. In this occasion, the researcher was already well versed in phenomenological premise (which could be challenging for some doctorate candidates), while the primary challenge was the age of the target subjects in elementary schools. Like always in qualitative field research with the focus on people and how they make sense of their own setting, the study required consent from the university's committee of human studies and, due to the age group, considerable efforts in the scrutiny of the research throughout its duration was required as well. In many schools, the researcher also faced resistance from the administration and parents for allowing the fieldwork in certain premises which narrowed the selection of cases.

The holistic case study above deals with three actual sites, though, as previously implied by Scholz and Tietje, multiple case research design is not necessary in this category. An example of a holistic single case study is one focusing on the interpretation of a particular neighborhood in Tokyo called Ikebukuro, even if the ultimate aim is to offer a new method to interpret Japanese urban context in general (i.e., generalizing to theory). In very short, this study was a result of the researcher's long-term interest in and studies on Japanese culture, including not only Japanese architecture, but also and particularly Japanese popular culture of *manga* and *anime* (Japanese cartoons and animations), which served as the theoretical framework of the phenomenological interpretations and thick descriptions. After somewhat lengthy contemplations, it was decided that the methods of Japanese cartoons would be the most efficient way in interpreting the researcher's own experiences in Japan, perceptions of her informants there, and a way to re-present those experiences and perceptions to the audience. Among many other methods not discussed here, the ultimate means of interpretation was, therefore, a cartoon with which the researcher both explores and communicates the results of her fieldwork in Ikebukuro by integrative evaluation with an emphasis on the multisensory experience of the environment and the time-space quality of this context (Weatherford 2011).

## CONCLUSIONS

A common denominator in both embedded and holistic case studies discussed here – without evaluating one better than the other – is the role of fieldwork in ensuring multiplicity of data and evidence as well as comprehensive descriptions of the setting. Since fieldwork has often been a valuable means in cultural studies, it quite naturally is a method in cross-cultural or culture-specific architectural research as well. Moreover, field studies have been successfully incorporated in scholarly, strategic, and applied research, as well as in case study and design research on numerous architectural phenomena; either as quantitative or qualitative research for background studies on contemporary issues, historic preservation and other forms of design scholarship.

First of all, since the above studies deal with cross-cultural, culture-specific, and/or interdisciplinary research, they exemplify the definition of architectural fieldwork with regard to other multi-, cross-, or trans-disciplinary views, providing new insight into the language of architecture and expanding the discipline's research resources. Second, fieldwork is an integral part of these studies, emphasizing such regional issues as climate-specific sustainable design, community involvement and participatory design, indigenous cultural values and context, and sense of place. Hence, they serve as examples of a paradigm shift in architectural research by representing not only changes in the applications and approaches to technology, but also changes in architectural interpretations, that is, a non-Euro-America centralized perspective. Third, this emancipatory paradigm, focusing on the dynamics of power (between social, cultural, ethnic, gender, and other sub-groups), underlines the global-local distinction of critical regionalism, accompanied by the holistic nature of the discipline of architecture. In short, while the online "global villages" might offer an interesting alternative, fieldwork in physical environment still is a valid data collection technique especially in case studies, although it should pursue toward new paradigms and diverse views.

Characteristically for qualitative research, this paper, too, is open-ended in terms of conclusions. Further, not only is it an ongoing project itself, but so are some of the example case studies above. The aim, in addition to defining some key concepts in architectural case studies, is to seek feedback from the discourse in a conference on architectural research. In summation, all the above examples are descriptive, not just

exploratory case studies. Contrary to the goal of the latter, that is, to gain insight into a setting or phenomenon, they use "a reference theory or model that directs data collection and case description" (Scholz and Tietje 2002, 12) which is one of the definitions of descriptive case studies. Yet, while all of the characteristics of case studies, whether they represent embedded or holistic case studies, can be found in the examples discussed, none of these studies alone includes all of them. In doctorate projects with limited time and resources, the comprehensive strategies, such as replication logic is naturally difficult to employ, while integrated data evaluation is definitely the most challenging task for doctorate candidates. In architectural education, however, the distinctiveness of case studies should be a task regardless of the difficulties in executing those, exactly because of their challenging nature.

Due to the aforementioned shortcomings, it appears that architecture schools should apply much more interdisciplinary approach with regard to the education of architectural research methods in order to ensure true integrative data evaluation. This might be stating the obvious, but it still deserves attention from the standpoint of architectural case studies. Also, although some of the studies above demonstrate interesting new approaches, one challenge in teaching architectural research methods definitely is over-emphasis on established methodology (as rules to follow) and under-emphasis on the role of creativity and intuition in research, even innovation of new methods. As Scholz and Tietje argue: "It should be mentioned that, as in architecture, developing projects in the field of the environmental sciences is an art. One must have a special feel for it to do it well, and the importance of this should not be overlooked; in many such cases, the artistic design is a determining factor for success" (Scholz and Tietje 2002, 26-27). From the perspective of design research, particularly that of building design addressed in this paper, it could accordingly be argued that the process of architectural research, including architectural case studies, should be as creative as is the design process itself.

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## ENDNOTES

[1] A holistic case study is based on a qualitative approach that relies on a narrative, phenomenological description and understanding of a case. An embedded case study, in turn, is not limited to qualitative analyses, and usually involves multiple cases or units (Scholz and Tietje 2002, 9).

[2] In this reference, a secondary source is intentionally chosen in order to inform the audience about the development of architectural research tradition within the past three decades.