

Theory, Research and Practice

Towards reflective relationship between theory and practice in architectural thinking

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At the present time researches and doctoral dissertations in architecture generally tend towards perspectives and methods which have been borrowed from other branches of science.

The doctoral dissertations resulting from this, scientific-analytical, generally presented in verbal form, have an important and established position in postgraduate studies in architecture.

Yet education in architecture still lacks a research model to cater for the special nature of the architects' praxis, especially the creative imparting of form. At the level of the doctoral dissertation there is no form of research within the education in which a direct, reflective connection with the practical business of the field could be achieved, and in which the special nature of architecture somewhere between art and science is duly taken into account. The present paper considers the need for new forms of practice- and architectural design-based researches.

At the present time research and doctoral dissertations in architecture generally tend towards perspectives and methods which have been borrowed from other branches of science. In principle it is feasible to approach any branch of architecture through philosophy, history,

culture research, sociology, semiotics, art research or theories and methodologies of the natural sciences. The researches and doctoral dissertations resulting from this, scientific-analytical, generally presented in verbal form, have an important and established position in postgraduate studies in architecture.

Many schools of architecture and conferences in the field¹ have recently begun to emphasise the second research approach emanating from the theoretical basis of architecture *itself* to reduce the dependence on related disciplines. The following comments have been made on an architectural approach to architecture:

The architectural research education system already from the start made the mistake of taking over methods and other intellectual tools from the established social sciences and of applying these tools in the field of architecture and urban design, without any reflection on the specific character of the problems of architectural and urban design. The results have – not always, but much too often – been something that might be labelled as second class sociology instead of first class architectural research. (Lundequist 1996,108)

Without its own body of knowledge architecture will scarcely be able to survive as an autonomous discipline and increasingly lose ground to associated disciplines. It is necessary to refine architectural knowledge in a way which commands public respect. (van der Voordt & van Wegen 1996,8)

If practitioners continue to reject an ongoing responsibility for understanding and explaining what they do and why they do it, others will gladly take over. (Livingstone 1988, cit. Powell et al. 1996,55)

The objective is to create a theory of architecture with far-reaching roots going back via Vitruvius, Alberti, Palladio, Le Roy, Durand, Boullée and Semper to Ruskin, Le Corbusier, Pevsner, Giedion, Lynch, Alexander, Rapoport and Norberg-Schultz to mention only a few. The theory of architecture is taken to include writing in the general debate which can be divided into three parts: design theory (e.g. Eisenman, Kipnis, Le Corbusier, Lynn), interpretation of architecture (e.g. Porphyrios, Rowe, Wittkower) and philosophy of architecture (e.g. Benjamin, Eco, Harries, Scruton). Mention might further be made of planning theory. Yet defining theory of architecture is not so simple, and ascertaining just what the theory of architecture is would merit research all of its own.

Yet architecture has lacked an approach, especially at the level of the doctoral dissertation, whereby a direct, reflective contact to the practice of the field could be achieved and in which the special nature of the architect's practice, the creative imbuing with form and design work are taken into account. Thus alongside these two research approaches we outline a third approach emerging from practice.

Research emerging from practice

Our view of the third research approach rests on a debate spreading in several fields on "practical rise in value" (Eskola 1997, 154), out of which two particular considerations emerge. Firstly it is thought that practices are complex, rich in meaning and thus virtually already theoretical. Secondly it is this very complexity in practices which renders them such interesting research objects, which challenges the researcher to arrive at means appropriate for the description and appreciation of the originality of practices.

Design is a way of relating to reality which is unlike any other way. (Nyman 1993)

There is a growing number of theoretical orientations in which the practical concept is an important theoretical point of departure. They include action theory, urban geography, sociology of science, critical sociology and pedagogy and cultural and social anthropology (see for example Engeström 1987; Wenger 1998; Giroux & McLaren 2001).

The appreciation in the value of practice reverts to Kant's transcendental philosophy and to the idea in the theory and philosophy of science of the *theoretical content* of observations and experiences (Hanson 1958). According to this notion we cannot transcend our thought categories or concepts, and therefore never make observations on facts themselves, but of events, objects and processes. That is to say that what we consider to be experientially true and possible is theoretically defined, theoretical. Likewise any practice, such as that of a doctor, teacher or architect, is theoretical; behind them there are various theoretical preconceptions which determine what practical action is understood to be and how we act in practice. Practical action is always accompanied by the theories, commitments and assumptions which define it (Karjalainen & Siljander 1997,67). Preconceptions, however, are frequently unarticulated and are taken for granted. Hence the need for theoretical contemplation of practice.

In many fields these practices have come in for scrutiny and reassessment. For example, in the case of schools questions have been posed as to what is done in schools today, how in his own work the teacher takes account of the children's and young people's experiences which differ from his or her own and reconciles these two experiential worlds. What is his or her relation to practice? If the students' meaningful learning experiences come increasingly from elsewhere than school, what manner of negotiation and communication skills does the schoolteacher need? Investigating these questions demands that we break free from the confines of theory of learning and expert-dominated practice relations. One alternative is a negotiative relation to practice in which the teacher participates in the construction of the social reality of the school together with the students in their shared but different daily practices. In negotiations the important resource is less a grand, readymade theory than theoretical ideas and experience which synthesises practice, *weighed up* as a relation to the world between theories and practice. (Suoranta 1999,102.)

The rise in the value of practice may be conceived of as a new paradigm, a turning or opening which admits new

scientific disciplines. In sociology and social policy there is mention of a new citizenship, in journalism and mass communication the theoretical debate has been augmented by the notion of citizen's journalism (e.g. Ridell 1998), in town and regional planning and in architecture there has been increasing talk of different ways of taking the user's perspective into account (e.g. Healey 1997).

From this perspective the skill and practice of the architect can be seen to constitute an area of their own, or 'ontological circle' which differs, for example, from the practice of the doctor or teacher.

(...) there are questions which constitute the core of a certain skill. Then come those aspects which form a less distinct circle *vis à vis* these core skills. All together, the core and its surrounding area, constitute in the experiential world in its entirety, in the practice of living, some sort of perceptible specific area of its own, at least seen from a distance.

(Varto 2000, 174–176)

Likewise each practical area gives rise to questions peculiar to it and in its own way endeavours to respond to them:

We think that such questions about skill could constitute an area of their own, posing its questions *in its own way*, and also seeking to answer them *in its own way*. It does not avail itself of the ways of others and so gives rise to research. Ultimately it generates its own discipline. Then the idea is that this area to be researched is an ontological circle: the phenomena, events and creatures pertaining to it are defined and comprehended only within this circle. They exist solely for the purposes of this. This mode of definition ontologically creates its own area from the perspective of existence (...) Circle ontology may be thought of as one means of conceptualising how some discipline is built up, how the people exerting influence in one discipline, the event and phenomena in a certain way just are this area. (Varto 2000, 174–176)

The architect's practice gives rise to different types of questions than does perhaps the teacher's practice. It is composed of certain concrete actions, *praxis*, which operates according to established, received and partly routine habits. But the other side of this should always be *theorising*, systematic, scientific examination of practice whose purpose it is to think, analyse and order practice and the theoretical commitments and assumptions behind this. It is justifiable to

speak of theorising rather than theory here because theorising does not, like theory, refer to a complete solution in which reality is explained by one direction defined in advance, but refers rather to the skill of active, critical and creative thinking.

Thus one may seek to renew practice as a kind of cycle of 'practice – theory/theorising – practice'. At the same time theory and practice take up a different order. The idea of Kurt Lewin "nothing is as practical as a good theory" assumes the form "nothing is theoretically so interesting as a well-functioning practice (Eskola 1997, 155) – except ill-functioning practice.

Practice is what motivates research and science. Practice is also a goal to which all attempts at orderliness owe their existence. Our purpose is to find something unexpected *vis à vis* earlier practice. (...) Solutions are generally found to practical problems: considerations, applications and justifications spring forth from practice. Solutions always and immediately alter the way in which we react to practice. This is an essential point of departure for research oriented attitudes.

(Varto 2000, 159–160)

Practice-based research

At least two research approaches can be distinguished in practice oriented research. We shall refer to the first as *practice-based research*. It has an external interest in the practice of architecture profiting from related disciplines. This research approach differs from those approaches of related disciplines mentioned earlier in that here the research departs from the problematic of some practice, and not from a readymade theory or theoretical perspective. Thus practice is perceived as of interest *per se*, and frequently the research of practice requires the application of research methods of the ethnographic type. The research objects of such research may be theory-laden categorisations of the practices, routines, habits or customs, different ways of seeing, cultural forms and social structures. Research which borrows from related disciplines has an approach reminiscent of research in the sociology of science, in which ethnographic methods are used to approach, for example, the practices of natural scientists (e.g. Latour & Woolgar 1979, Knorr-Cetina 1999).

In the same way the architect-researcher may approach his or her own practice, analysing its theoretical linkages

and also, for example, ways of resolving some design question in a specific way. These deliberations, reflections and theorising then constitute the research proper. The research may also include a design element demonstrating what new practice may be arrived at on the basis of the research. Thus general knowledge is abstracted from the research object to be ploughed back into practice, i.e. practical knowledge.

For the sake of comparison let us take a teacher who contemplates and analyses his own teaching practice and classroom situation. In order to create an academic thesis out of these there must be more data, something more than only the teacher's curriculum and timetable. The data must include more theoretical discussion on the teacher's practice empirical studies addressing the subject, an explication of the teacher's basis of thought, a description and analysis of his own work and an analysis of the classroom and school context in which the action takes place. On this basis he or she arrives at the theoretical analysis of teaching practice and ultimately transfers his contemplations back to practice, for example, in the form of a more developed and reasoned curriculum.

Likewise in order to analyse his practice a practising architect needs to lean on earlier discussion and consideration of the theoretical content of practice to support the analysis of the practice and to reform it. He or she also needs to analyse the background assumptions and operational context of the practice and to arrive at results which, derived from these, making a fresh approach to practice, get into new design solutions and methods.

Architectural design-based research

In the second research approach emanating from practice, to which we shall refer as *architectural design-based research*, the object of interest is likewise the practice of architecture. It differs from the former approach in that the architect-researcher does not concentrate solely on theorising his or her practice and on a possible design element which renders its findings concrete, but also uses the design element as a tool, a research tool in order to achieve a primary relation to the phenomenon researched.

Design as a research tool can be justified by the sociological perspective on science, in which scientific research is perceived as building on the *conceptual* elements (exemplified in theories, ideas and notions contained in text) and

also on the *material* elements (exemplified in test laboratories, research tools and questionnaires) and their multiple interaction (Miettinen 2000, 278). According to this knowledge and knowing in architectural design-based research merge in a complex dialogical relation of the conceptual elements which theorise practice and material elements, i.e. design or (test)designs. Such a study would not stick at the analytical or verbal level, but would result in two or three-dimensional or virtual models, which would be part of the entity of the research.

The design, the architect's main tool, evolves into the architect-researcher's research and testing tool.² The architect-researcher uses preliminary designs in the same way as another researcher would use questionnaires for purposes of empirical research. The design represents in this sense the empiria of design-based research, if and when empiria are defined as an important tool for the researcher's thought processes with which a relationship is established to the phenomenon under scrutiny. Here we detect links to the thinking of Foqué (1996; 1999; 2000). Foqué speaks of a special research approach, *research by design*, in which the architect delves into the design situation, creating hypotheses and solution models whose functionality is tested after realisation in relation to the design context. This is an admirable analysis of the design process and an appropriate basis for the design-based research approach. However, it differs from our present consideration in that Foqué perceives design as research, while we perceive design as theoretical practice amenable to research either through theorising (practice-based research approach) or as a dialogue between theorising and design (design-based research approach).

In practice design-based research may proceed in turns by conceptual elements (theorising practice) and material elements (design element). It may be continuous problem-solving.³ A suitable point of comparison is seen in the notion in the natural sciences by Latour (2000, 116). Latour describes friction, the surprising and the inflexibility of natural objects. The objects of laboratory experiments behave in an undisciplined manner, disappear from view and resist the assumptions made about them. Likewise in design-based research the importance of the design is in trying out the potential of theoretically vindicated possibilities. In other words, the problem emerging in some architectonic issues leads the researcher to examine various alternative solutions, the underlying reasons for friction and the theoretical reasons

for the dysfunctionality of an idea. The conceptual element, the theorising of the phenomenon, may in turn transfer the issue back to material outlining, design, a demanding question, which duly generates new questions. This is a reflective process of conceptual and material elements in the manner of a hermeneutic cycle.

The development of dialogue occurring *in the course of* such a research process has its meaning in that it unearths problems, compelling the researcher to learn:

The non-functionality of designs and modes of operation emerging in practical community activity compels us to change our views. It is the indispensable testing ground for objectivity and sets boundaries as to how we may construct institutions, modes of operation and objects.

(Miettinen 2000, 279)

From knowledge to knowing

What practice-based and design-based research have in common is that neither is limited specifically to the generation of new *knowledge*, but also engages in the promotion of *knowing*, that is the transfer of knowledge to concrete action, the improved management of some design assignment and better-functioning practice.

The distinction between knowledge and knowing is proposed by Cook and Brown (1999). They stress that the knowledge of the object of activity is not the same as doing or action. A person may have knowledge or tacit knowledge, for example, of cycling, but in order to convert that knowledge into concrete action he also needs *cycling*.

Learning occurs through experiences, reflection, conceptualisation and experimentation.

(Kolb 1984; Schön 1983; 1987)

What is essential is the interaction and integration of theory and practice and its connection to personal deliberation, reflecting.

(Tynjälä & Collin 2000)

Thus practice-based research occasionally and design-based research invariably entail both the generation of new knowledge (the reflection and theorising of the underlying assumptions of practice) and the transfer or experiment of knowledge thereby generated to practice. Thus a dialogical relation between knowledge and knowing comes into being.⁴

To be accomplished in a profession, discipline, or craft, for example, is necessarily tied up with practising it. This does not mean that its body of knowledge is useless to practice, only that it is not the same as the epistemic dimension of practice. (...) We must see knowledge as a tool 'at the service of knowing' not as something that, once possessed is all that is needed to enable action or practice. (...) Knowledge by itself cannot enable knowing. As a tool, knowledge disciplines knowing, but does not enable it any more than possession of a hammer enables its skillful use.

(Cook and Brown 1999, 388)

The action research approach

The contemplation and renewal of the architect's practice may also occur together with other actors, such as residents. In this case it is by nature action research. It is characteristic of action research that those involved together contemplate and develop their own work, for example, analyse how it is historically linked to the present, develop alternatives for the solution of problems and achievement of objectives and generate from this action new knowledge or theories (Heikkinen & Jyrkämä 1999, 25).

The objective is to develop the practice related to the situation defined or the situation itself. In practice solutions are sought to the problems identified, which are reassessed continuously in the course of the development process. The main focus is to encourage practitioners to become involved in their own practice, and to view themselves as researchers. (see for example Heikkinen et al. 1999; Syrjälä & Numminen 1988; Zuber-Skerrit 1993; Zuber-Skerrit 1997).

Action research is a communal and self-reflective research approach by means of which members of the social community seek to develop the practices of their community to be more rational and just, simultaneously seeking a better understanding of those modes of action and those situations in which action occurs.

(Kemmis & McTaggart 1988, 5)

The aims of action research are to improve a practice in a systematic way, and if warranted, to suggest and make changes to the environment, context or conditions in which the practice takes place. The basic assumption is that learning is experiential and reflective.

(Zuber-Skerritt 1993)

Action research is normally carried out as collaborative, critical (and self-critical) enquiry by reflective practitioners who are accountable and make the results of their enquiry public. The reason for this collaborativity is that the action research is directed towards studying, reframing, and reconstructing practices which are, by their very nature, social.

If practices are constituted in social interaction between people, then changing practices is a social process.
(Kemmis and Wilkinson 1998, 22)

As a research approach of the architect this means that he assesses his own premises, creates design hypotheses, implements them together with members of the local community, for example, and receives feedback on the situation. This leads to the adjusting of premises as the planning – acting – observing – reflecting cycle. In other words, the architect-researcher identifies a major problem or concern in his or her practice, design strategies for planned action (planning), implement the strategic plan for action, observes and evaluates the action, reflects on the results of this evaluation and makes the necessary changes for the solution of the problem or for the first step towards improvement step, followed by a new cycle in the action research spiral.

The learner is seen as an active seeker and *negotiator of meaning*, being involved in an active construction of knowledge and experience. The research does not begin with a clear question or hypothesis which requires a yes/no answer and must be replicable; instead, it begins with a vague question which is only gradually clarified and requires a complex answer depending on the situation and the people involved (Zuber-Skerritt 1993, 51, 55). There is a dynamic relationship between subjective and objective conditions and this relationship is produced by action (op.cit. 52).

The participants change their environment and are changed in the process. Action research integrates research and action, theory and practice. It aims at advancing knowledge as well as improving practice (...) by developing people as professionals and 'personal scientists'.
(op.cit. 56)

We could also speak of expansive learning as opposed to action research (Engeström 1991; 1995) in which an attempt is made to create a change in some action system. Expansive learning begins when some established action system ceases to work as practice. This leads to the analysis of the contradic-

tion in the prevailing situation as a collective and enduring event by which an effort is made to model and adopt a new mode of action. In developing work research

expansive learning is a polyphonic process in which the various perspectives and interests of the various workers, subfunctions, clients and management meet and clash. (...) This polyphony is also the source of disturbances and a great resource. Bringing different perspectives into dialogue and developing common tools is a prerequisite of expansive learning.
(Engeström 1995, 98)

Conclusions

Here we have described three parallel research approaches, each with its own justifications. The first and the second emerge from either the related disciplines or the architect's own theory, and they can be termed theory oriented research approaches originating in the scientific tradition. "Nothing is more practical than a good theory" (Kurt Lewin).

The third research approach emanates from the architect's practice, and in this sense it is practice oriented. One of the core sources of this approach is the reflecting and theorising of the architect's profession with the accompanying tacit knowledge. The objective is the development of more functional practices. "Nothing is theoretically more interesting than a well-functioning practice" (Eskola 1997).

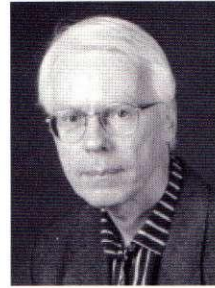
In postgraduate studies in architecture we believe there is a justified need for all three research approaches. Such research activity in its entirety aims either at building a theoretical foundation for architecture or at the further development of the architect's practice or at both.

So far theory-based doctoral dissertations departing from the related disciplines have, at least in Finland, constituted a majority. There is a clear need to consolidate the position of doctoral dissertations arising from the theoretical bases of architecture itself by raising awareness of the theoretical foundation of the field already in basic architecture education. If alongside this there should be a desire to promote the completion of practice- or architectural design-based doctoral dissertations, then this would require effort to be invested in creating a new research approach through concrete theses.

Notes

1. E.g. Doctorates in Design, Proceedings Volume 1 & 2 (1996); Dunin-Woyseth & Noschis (1988); Research by Design. Conference book (2000; Proceedings to be published in spring 2001).
2. Although a conceptual distinction between design and research is appropriate, we still contend that design can be a part of research on architectural practice. As a teacher may conduct research by creating a curriculum and deliberating it scientifically, and by being *aware of his or her actions*, so also can the architect.
3. Cf. the way in which action research proceeds, in which several actors *together* consider and develop, for example, their own work, analyse how it is connected historically to the present, involve alternatives to solve problems and produce new knowledge or theories about action (Heikkinen & Jyrkämä 1999,25). An endeavour is made to solve problems observed in practice, and these are constantly assessed *during* the development process. "Those involved change their environment and change with the change." (Zuber-Skerritt 1993,56). According to Kemmis & Wilkinson (1998,22) action research can also be something occurring *alone*, systematic reflection which as a notion is not far from the design-based research approach we have proposed, always assuming that "self-reflection" is not taken to mean merely the reflection of one's own ideas, but also that of the underlying assumptions of practice and other more profound theorising and activity which upholds the basic principles of scientific work.
4. When surveying the relation between theory and practice one might go back some two thousand years to the distinction drawn by Aristotle. The Aristotelian premise was that a person's natural existence and virtues include both theoretical and practical thinking. They are joined by practical sense called *fronesis*. According to the principle of *fronesis* problems originate in practice, which must be conceptualised, that is, through the tools of philosophy and science. But the approach must transcend mere general theory. After theorising the general knowledge abstracted from the research object should be ploughed back as practical knowledge of the practice from which it originally came (Varto 1992, 82). As Aristoteles (1989,1141b,15–20) writes:

"Practical sense is not confined to general truths, but should know the particulars, for its concerns action, and action is connected to particular matters (...) Practical sense is connected to action. Thus it embraces both sides [general truths and particulars] but more the latter."



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1. VITISPIVA, AETHIOPIA, HERBIFERA 1.

