

INDUSTRIAL DESIGN RESEARCH AND REFLECTIVE PRACTICE

(Donald Schön and his lifeworld epistemology)

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Lately, substantial concern in the design community has arisen about what the industrial design profession will look like in the near future. Industrial design schools restructure their curricula to develop soft skills, interdisciplinary problem solving and consideration for the environment to find a niche in a market which is characterized intrinsically by innovation and constant variation. Certainly, appropriate knowledge is critical to the industrial design profession's survival. Design research is one reliable source for new information that enhances the possibility to identify future trends, needs and patterns and validate decisions. But what kind of knowledge is important for today's design research?

This contribution discusses Donald Schön's suggestion to release industrial design from the paradigm of technological rationality and locate it within the dimension of "reflective practice". The purpose of the paper is to reason that industrial design does not belong epistemologically to the objective world presumed by the natural sciences but, by rather relates to a lifeworld epistemology in a Heideggerian sense. Schön rejects the positivist epistemology of practice too as the grounding of professional knowledge. In his book *The Reflective Practitioner* (1983) he points to a crisis for professional practice. This crisis relates mainly to the fact that professions such as architecture, and design but also medicine and psychology are strongly dominated by technical rationality (TR) and its positivist epistemology (PE) of practice. The problem is that PE cannot solve the dilemma of "rigour versus relevance" professionals are confronted with. This is because PE is based on analytical, empirical and logical propositions of truth within an objective world. However, professional knowledge involves experiences, feelings and subjective evaluations, which are non-existent for PE.¹

Thus positivist epistemology fails for Schön to integrate daily life experience and skills. Popper says in *All Life is Problem Solving* (1999), that the truth content of theories, cannot be verified but can only be falsified. In response to a given problem situation (PS_1), a number of competing conjectures, or tentative theories (TT), are systematically subjected to the most rigorous attempts at falsification possible. This process, error elimination (EE), performs a similar function for science that natural selection performs for biological evolution. Theories that better survive the process of refutation are not more true, but rather, more "fit"—in other words, more applicable to the problem situation at hand (PS_2).

$$PS_1 \rightarrow TT \rightarrow EE \rightarrow PS_2$$

¹ Some Definitions:

Technical rationality (TR): Professional activity consists of instrumental problem solving activity made rigorous by the application of scientific theory and techniques.(p.21)

Positivist epistemology (PE): Rests on three dichotomies. First, the separation of means from ends, since instrumental problem solving is seen as a technical procedure to be measured by its effectiveness in achieving a pre-established objective. Second, the separation of research from practice: Practice as application to problems of research based theories, verified via controlled experiments. Third, the separation of knowing from doing, action is only an implementation and test of technical decision. (p.165)

Reflection-in-action: Comprehensive conversation with the materials of a situation that allows to reshaping during the working process.

Reflection-on-action: "Lessons learned," reflection on tacit understandings and assumptions to achieve deeper understanding motivations and behaviors.

For Schön, however, problem solving (the selection of available means best suited to establish ends) is just a part of professional practice. Likewise important is problem setting, which is not considered by TR.

“Technical rationality depends on agreement about both ends (problem and solution). When the ends are fixed and clear, then the decision to act can present itself as an instrumental problem. But when the ends are confusing and conflicting, there is as yet no “problem” to solve. A conflict of ends cannot be solved by the use of techniques derived from applied research. It is rather through the non-technical process of framing the problematic situation that we may organize and clarify both ends to be achieved and the possible means of achieving them.”(p.41)

Schön’s claim for reflective practice in design research is based on two arguments. First, framing a problem consists of “knowing in action” i.e. experience, knowledge, skills and judgments, which cannot be accounted for in mere scientific terms: “... skilful action often reveals a ‘knowing more than we can say’” (p.51). Schön asserts that PE neglects this tacit lifeworldly knowledge. Second, knowing in action helps the practitioner to construct a new way of setting the problem – a new frame, which he imposes on the situation.

Moreover, the practitioner enters a dialogue with the materials of the situation. The designer makes tentative operational moves in the process and the materials ‘talk back’, constraining and shaping subsequent moves. They can even negate the initial frame of meaning.² Thus:

“If the model of technical rationality is incomplete in that it fails to account for practical competence in “divergent” situations, so much the worse for the model. Let us search, instead, for an epistemology of practice implicit in the artistic, intuitive process which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict.” (p.49)

Schön is close to Heidegger when he rejects TR as a model for design professions and advocates a reflection-in-action methodology, which is not only helpful to design a framework for problem solving but even more valuable when “intuitive performance leads to surprises, pleasing and promising or unwanted.”(Schön, p.56).

For Heidegger any kind of breakdown in normal routines triggers scientific and inventive action in general. The concrete world is a world of equipment – a world of the ready-to-hand (Zuhandenes). The equipment is not a thing or an object which gets additional qualities, but displays a structure of usefulness in itself. The objective character of the equipment is called the present-at-hand (Vorhandenes). The present-at-hand is just visible if a breakdown occurs: if something is destroyed, stands in the way or is not usable any more. Heidegger says that in these situations the mere present-at-hand character of the ready-to-hand appears.

Heidegger thinks that experiences of a meaningful world are the condition for the discovery of things as objects. The possibility of (scientific) knowledge of an objective reality is based on the world and experiences, even if it incorporates the possibility of objective knowledge of beings. The concrete world is not an accumulation of objects as perceived in the natural sciences but a world of equipment – a world of the ready-to-hand (Zuhandenes). The equipment as the ready-to-hand is not an object which gets additional qualities, but the structure of usefulness in a certain lifeworld is the being of the equipment.

Heidegger argues categorically against the primacy of an objective reality, defined by mathematics and natural sciences. From his point of view, natural science can not answer questions about Dasein, life, humans, artworks, language, and technology. On the contrary, if the existence of an objective reality is assumed, as the basis for our understanding of life and our world, the existence of a factual lifeworld, in which those questions arise, has to be denied

² Waks,L.J., Donald Schon’s Philosophy of Design and Design Education, International Journal of Technology and Design Education, 11, 37–51, 2001. 2001 Kluwer Academic Publishers, Netherlands, p.44).

epistemologically, because it cannot be described in terms of an objective reality. While the lifeworld is filled with meanings and values, these do not exist in reality-descriptions of the natural sciences. In 'Being and Time' Heidegger tries to show that the assumed superiority of an objective reality over a reality of daily life practice is in fact a misunderstanding, based on a concealed philosophical prejudice.

Schön has a similar ambition, expressed, however, not in the ontological but in the methodological dimension. His *reflection-in-action* involves looking to experiences, connecting with feelings, and attending to theories in use. The practitioner frames a situation or a problem and is allowed to experience surprise, puzzlement, or confusion in a situation which is uncertain or unique (p.68).

Background	Objective world	Lifeworld	Lifeworld
Actor	Scientist	Practitioner	Human being
Occurrence	Breakdown	Breakdown	Breakdown
Reaction	Falsification of theory to solve a problem	Reflection on action to solve a problem	Development of theory to solve a problem

Figure 1: Comparison of Popper, Schön and Heidegger

For Schön, knowledge and practice is inherently tied. Practitioners apply tacit knowledge-in-action, and when their messy problems do not yield to it, they 'reflect-in-action,' using the languages specific to their practices (Waks, p.40.) By using a certain terminology one becomes able to participate in a language-game (81), which also includes sharing the context and professional means within which that practice is done.

Schön clusters elements of the language of designing and he puts much weight on the notion of repertoire, which means that practitioners build up a language, a collection of images, ideas, examples and actions that they can draw upon. The familiar situation functions then as a precedent, or a metaphor, or... an exemplar for the unfamiliar one (p.138). Due her expertise the practitioner can step into the new problematic situation and impose a frame on it. By being open to the situations "talk back" she discovers simultaneously consequences and implications of the chosen frames (p.269).

An advantage of Schön's epistemology is that the reflection of a phenomenon and on its understanding may create new understanding of the phenomenon and a change in the situation (RP, 165). Another benefit of Schön's hermeutics is also to help practitioners to become aware of tacit frames, or create new links and relationships to the problem: "... and thereby lead them to the experiences inherent in professional pluralism (p.11)

However, reflective practice is also a slow process and it may lead to question the means and ends of professional practice in general. The demand to be open include further for the practitioner to examine own beliefs, values, and feelings, which may cause instability and doubt, hindering the professional progress. A student's view: "It's (the reflective practicum) is

a sort of Kafkaesque thing. At the end of the term, you listen to the inflections and the tone of the voice of your critic to see if anything is really wrong."³

Schön's goal was to "...to create a new kind of research that ... would be usable. That ... would be aimed at healing the splits between teaching and doing, school and life, research and practice, which have been so insidiously effective at deadening the experience of school at all levels."(ibid). It is not possible to assess if he reached this goal, but in fact many schools, colleges, and departments of education began designing teacher education and professional development programs based on the concept of reflective practice.

³ Schön in the presentation: "Educating the Reflective Practitioner" to the 1987 meeting of the American Educational Research Association Washington, DC.