

Academic discipline and profession

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Chapter 10. Academic discipline and profession

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Abstract: *C.H. Doevendans, S. Malfroy 2003. Academic discipline and profession. USO-Built Report Series 2:71-77.* The development of the USO-Built organisation may be described in terms of H.S. Toulmin's work with the International Research Units (IRU) as the fora of discussion and scientific development, and USO-Built as a whole as their ecological niche. Both appear to be essential to the development of the disciplines of building sciences. USO-Built is in potential strong, but currently not strong enough. We have to better clarify our position and meaning as an essential part of the scientific or academic profession of the disciplines of architecture, urbanism and other building sciences. The criteria Toulmin for a compact discipline, may help us to set the standard for our unfolding activities and enterprises inside USO-Built to develop into a discipline.

Keywords: discipline; profession; discussion forum; rationality; change and development

The research position is not clear of architecture, urbanism, and related disciplines united under the umbrella of building sciences: structural and building services engineering, building physics, design methodology and building information sciences.

The research position of these disciplines have an increased importance nowadays. A tendency exists inside the academic world to stress the importance of research and even to judge the value of a discipline by its research achievements. Education, traditionally the main focus of architecture and urbanism in universities, academies and schools, is pushed to the back. Valued are achievements at the doctorate-level, scientific output in refereed journals, links with industry (contract research), and the gaining of an international position of excellence in certain fields. This development is indefinitely connected with the implementation of the bachelor-master-doctor structure, and the financial consequences of this operation.

More specifically our aim in this chapter is to investigate role and significance of an institution such as USO-Built, the doctorate-school under the CLUSTER-umbrella, to improve or even establish a firm research positions for the building sciences. This chapter then addresses the following issues (i) Is architecture a discipline or research domain?; (ii) Should the building sciences be only judged after their peer reviewed publications?

10.1. A Paradigm

Stephen Toulmin, especially his ideas on the philosophy of science, as developed in his book on Human Understanding⁴³ places the discipline debate within the debate on scientific progress. Well known contributors to this discourse were, in the 60 and 70ties: Thomas Kuhn⁴⁴ and Paul Feyerabend⁴⁵, Karl Popper⁴⁶, and Imre Lakatos⁴⁷, and later Bruno Latour⁴⁸. It is especially the work of Thomas Kuhn that functions as the anvil on which Toulmin forges his theories.

The most important notions of Kuhn's theory are threefold:

- (i) The essential meaning of paradigms in science;
- (ii) The progress of science by revolution;
- (iii) The sociological view on scientific progress.

Toulmin makes clear, that it was not Kuhn that introduced the notion of paradigm. The term originates from mid 18th Century when Georg Christoph Lichtenberg (1742-1799)⁴⁹ introduced this term in physics, in analogy with the linguistic sciences that emerged during this period. By a paradigm he meant the following: *'in physics (...) we explain puzzling phenomena by relating them to some standard form of process, or paradigm, which we are prepared to accept for the moment of self-explanatory'*.

⁴³ Toulmin SE. Human Understanding. Volume 1. Princeton: Princeton University Press; 1972. ISBN 0691019967

⁴⁴ Kuhn T. The structure of scientific revolutions. Chicago: University of Chicago Press; 1962

⁴⁵ Feyerabend P. Against Method: outline of an anarchistic theory of knowledge. 1975

⁴⁶ Popper KR. Conjectures and Refutations: The Growth of Scientific Knowledge. London: Routledge; 1963

⁴⁷ Lakatos I, Zahar E, Worall J. Proofs and Refutations: The mathematic of Logical Discovery. Cambridge: University of Cambridge Press

⁴⁸ Latour B. Pandora's hope: Essays on the reality of science studies. London: Harvard University Press. ISBN 0-674-65335-1

⁴⁹ Lichtenberg GC (selection by J. Teichmann). Aphoristisches zwischen Physik und Dichtung. Vieweg; 1983

Later Ludwig Wittgenstein⁵⁰, W.H. Watson⁵¹ (a student form Wittgenstein), Hanson⁵² and Toulmin himself applied the paradigm-notion, but '*it was never implied that changes of paradigms necessarily took place in an abrupt, discontinuous, or revolutionary manner*', as Thomas Kuhn had concluded.

Toulmin concludes that it is wrong to connect the notion of scientific paradigms to the idea of revolutions in science. He also states, that, as the notion of paradigm has already a long history in science, the real new thing that Kuhn brought into debate was the notion of scientific revolutions. And in this respect Toulmin disagrees with Kuhn. It is Toulmin's conviction, that science does not develop in a revolutionary, but in an evolutionary way.

However, the third assumption of Kuhn, namely that we need a sociological viewpoint if we want to observe and understand the development of a science, Toulmin is congenial to Kuhn. And this is important to us, for also USO-Built is an initiative that started from a societal point of view.

10.2. The Discipline

We introduced the notion of a discipline. What is it? Are architecture and urbanism disciplines? We know that in recent years this question has been raised regularly. And often we heard as answer, yes, architecture is, but it is a design discipline.

A distinction exists between a discipline and a profession, or: scientific discipline and scientific profession, as introduced by Toulmin. We could say that, where the discipline refers to the idea's, theories etc., the profession represents the sociological part of science: science as 'people's work'.

The view of Toulmin starts form the question of scientific development. According to Kuhn this development was an interchange of 'normal' and 'revolutionary' science. This means: constancy is normal, or: science is in principle an unvariable, coherent and logical system. In times of revolutionary sciences this coherence is turned upside down, and we go from the one paradigm (expressing this coherence) to the other paradigm: the well known paradigm switch or shift, and many people, also in architecture and urbanism debate the question: 'Are we experiencing such a shift nowadays?'

For Toulmin however, change is normal. But this change is an evolutionary process, it is a process of *variation* and *selection*, particularly the variation and selection of *concepts*. This notion has been and is still widely applied in architecture and urbanism. It points at the main idea's, assumptions, structures etc. of an architectural or urbanistic plan. But the notion is not precisely defined, and even if we read the work of Toulmin, we doubt if we could come to a precise definition. For Toulmin a concept has two aspects, the linguistic aspect (symbols, words, sentences by which the concept is indicated; in architecture and urbanism we should say: the way of representation), and the procedural aspect (how the concept is applied and used).

Having introduced this notion, Toulmin is able to define a discipline as a 'population of concepts'. Scientific development now is based on a process of variation and se-

⁵⁰ Wittgenstein L. Tractatus logico-philosophicus. 1918

⁵¹ Watson WH. On understanding physics. New York: Harper; 1959

⁵² Hanson NR. Patterns of Discovery: an inquiry into the conceptual foundations of science. Cambridge: Cambridge University Press; 1958

lection of concepts. Variation means: new concepts emerge. Selection means: out of these variants the scientific community chooses the 'relevant' concepts.

If we say: scientific community, then we are referring to the scientific or academic profession, being the population of research institutes, research groups, networks, etc. affiliated to a specific discipline. In reality many of these institutes and groups compete with each other to gain academic authority. However, this competition is balanced as long as the disciplinary goals and ideals, to which groups have to refer, exist and are protected.

It is important to understand, that the scientific discipline and scientific profession are essentially coupled, no discipline without a profession, no profession without a discipline. If we want to develop a discipline, then we need a well structured scientific profession that belongs to that discipline. *From this perspective we also have to analyze the meaning of USO-Built, but have to take into account the limited goal of USO-Built as a doctorate-, which means 'training'- organization.*

10.3. Variation and Selection

How does the process of variation and selection occur? According to Toulmin the development of a discipline takes place in a so called ecological niche. This niche is determined by several conditions: (i) disciplinary, (ii) professional, and (iii) societal conditions.

Three questions are to be reflected on: (i) scientific functioning, (ii) professional functioning, and (iii) societal functioning of a science.

Toulmin links the variation- and selection-process, the process of conceptual variation and intellectual selection. In this he differs from the traditional Darwinian view, where 'genetic mutation' and 'ecological selection' are autonomous processes. The linkage of variation and selection means that the process to generate concepts takes into account already the disciplinary requirements for concept-selection. For this process Toulmin uses the metaphor of filters.

There are two types of filters, the external filter for the professional, economical and social and cultural demands, and the internal filter for the disciplinary demands. Only those concepts that pass both filters, play a role.

It is not difficult to relate these filters to USO-Built. For the internal filter we have to think of: is the project related to built environments, is it user-oriented? For the external filter we could point at what is called societal relevance: user-orientation, knowledge-based society etc., this means: a definition of the disciplinary goals and ideals at the level of the whole organization.

10.4. Rationality of Scientific Development

This raises the question of the rationality of the scientific development. The evolutionary model is a causal model, so the question for reasons is awkward. Toulmin solves this first by the distinction between discipline and profession, and secondly by his focus on *change* instead of *constancy*, which means: if we ask questions on the rationality of scientific development, we should not focus on the coherence of a scientific system (cult of systematicity), but on how such a system changes. This means: the acts of the scientists should be studied, not so much their concepts.

Rational decisions on conceptual changes are made in so called fora of discussion. These fora have to meet certain (ecological) demands: (i) the threshold must be low enough to let concepts in, (ii) the threshold must be high enough, so variants cannot disappear too easily.

If we return to the position of USO-Built, then we face the question if USO-Built, or the International Research Units that form USO-Built can be interpreted as such ecological niches, and fora of discussion. We ask for position papers to clarify the three main questions for such niche's and fora: the scientific, the professional and the societal position (**Chapter 11**).

If we dare to answer the question if USO-Built is such an ecological niche, if the IRU are such discussion fora, essential to the development of the disciplines of architecture, urbanism and other building sciences, if we answer this question in the affirmative, then we face another question: how strong or how weak is this organization, what is its authority?

10.5. USO-Built analysis

Our analysis this moment is, we are in potential strong (look at the judgments of the Marie Curie-proposal content), but currently not strong enough. We have to clarify better our position and meaning as an essential part of the scientific or academic profession of the disciplines of architecture, urbanism and other building sciences. Connected to this analysis we have to stress, that at this moment there are (almost) no professional organizations in this field. Existing organizations are all part of the architectural and urbanistic practice. These organizations are of course important, because they (partly) represent the societal relevance of a discipline. But more academic organizations or institutions, as far as they can play a role on the scientific professional level, are commonly still absent. Architects take part in conferences of art historians, and urban designers go to conferences of urban planners. The same counts for periodicals, which are mostly professional in the meaning of 'practice oriented', or belong to a related discipline (art history, philosophy, geography, etc.), with its own scientific 'paradigm'.

When the disciplinary subject of a conference is appropriate, the focus is on education and not on research. Also the levels of the thresholds can be problematic: or you cannot enter a conference, a refereed journal or scientific funding program, because the decisions are in the hands of peer groups of related disciplines; or, for instance, the threshold for a conference is that low, that all abstracts for a conference are accepted and published in a book of abstracts with no further process of selection and consequently no scientific value.

Exceptions within the buildings sciences are the more 'hard' disciplines, such as building physics and structural engineering. They do have their academic journals, conferences and funding programs.

For the other disciplines hope can be put out of the analysis of Toulmin: the rationality whereon decisions are based is always timely, criteria have to be re-defined, and the goals and ideals of a discipline are in change. There is never a fixed authority, authority can be gained!

10.6. How to become a discipline

Toulmin analyses how 'disciplinable' certain efforts of human understanding can be. Are they all to the same extent 'disciplinable'? This is an important issue, for it is possible that within USO-Built the disciplines represented are not similar in their 'disciplinability'.

Toulmin defines disciplines as: '*All those human activities and enterprises that provide loci for rational choice - in which decisions are made, procedures followed, considerations taken into account, conclusions arrived at, new possibilities entertained, and reasons given for the resulting conclusions or actions*'. In this field we can distinguish, '*at one level, between those which are 'disciplinable', and those whose concerns and concepts do not, in the nature of the case, lend themselves to such 'disciplined' debate and improvement*', and, '*at another level: within the class of discipline enterprises itself: those which already have and those which have not yet achieved the disciplinart status the rightly aim.*'

Subsequently the following typology is made:

COMPACT DISCIPLINES: a rational enterprise whose conceptual repertoire is exposed at every stage to critical re-appraisal and modification by qualified judges, in the light of clearly recognized and agreed collective ideals.

DIFFUSE DISCIPLINES: disciplines conforming only loosely to these requirements.

WOULD-BE DISCIPLINES: disciplines that might in principle become fields for disciplinary cultivation, but effective disciplinary development has scarcely begun.

We quote the criteria Toulmin gives for a compact discipline, in order to know the standard if we want to qualify our activities and enterprises unfolded inside USO-Built as disciplinary, or rather characterize them in terms of the typology Toulmin has given.

A compact discipline has 5 connected features:

- (i) Activities are organized and directed towards a specific and realistic set of agreed collective ideals;
- (ii) These collective ideals impose corresponding demands on all who commit themselves to the professional pursuit of the activities concerned;
- (iii) Resulting discussions provide disciplinary loci for the production of reasons, in the context of justificatory arguments whose function is to show how far procedural innovations measure up to these collective demands, and so to improve the current repertory of concepts of techniques;
- (iv) For this purpose, professional fora are developed, within which recognized reason-producing procedures are employed to justify the collective acceptance of novel procedures;
- (v) The collective ideals determine the criteria of adequacy by appeal to which the arguments produced in support of those innovations are judged.

10.7. Conclusion: Architecture is rational but yet undisciplined

As an example of an analysis on the status of Architecture as a discipline, we add the considerations of Sylvain Malfroy⁵³ that have been published earlier. An activity can satisfy the need for rationality without necessarily being structured as a discipline or even for that matter having a scientific base. We feel that architecture is representative of this situation. It is important not to amal-

⁵³ Malfroy S. Le projet architectural: entreprise rationelle indisciplinee. Discipline, visez disciplinaire. Cahiers Thematiques (Lille) 2001; pp 124-137

gamate concepts of rationality, discipline and scientific quality as a set of interchangeable synonyms and, above all, great care must be taken to ensure that a non-discriminatory use is made of the concept of discipline, as this would question the credibility of all that does not fit neatly into the mould. Analysis, when carried out on the basis of the epistemological suggestions made by Stephen Toulmin, reinforces the conviction that architecture finds its rational justification in the role of the mediation that it plays between technical knowledge and the questions that humanity asks of itself. By placing these general considerations in abeyance and taking a closer look at the rational undertakings implicit in the architectural education reform program recommended by Saverio Muartori in the 1960s, we discover that contemporary architectural thinking represents a large number of analogies with the philosophy of science: both have acquired the conviction that rational thinking only becomes comprehensible when seen in the light of changes brought about by history.