DESIGN RESEARCH, DISCIPLINES, AND NEW PRODUCTION OF KNOWLEDGE

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ABSTRACT:

The paper discusses about the need to develop design research as a discipline. By using Gibbons et al. distinction between the traditional disciplinary Mode 1 knowledge production and emerging of Mode 2 knowledge production that takes place in the context of application it shows that design has unique characteristics that should not be given up when seeking academic acceptance. Mode 1 and Mode 2 are linked to other discussions identifying a change in relation between research and society that may benefit design research. A couple of potential existing discipline role models (IS and HCI) are examined and judged.

1. INTRODUCTION

One of the most persistent issues in design research has been the question on knowledge – what is the nature of knowledge needed for design, and correspondingly, what should be the nature of design research. One influential idea has been that to be legitimate the design research should imitate traditional scientific inquiry practiced in universities. This has been opposed on basis of the unique nature of design knowledge.
The relationship between design research and other, better-established research done in universities has always been somewhat strained. The “real research” done within the already established disciplines has looked more “scientific” and “serious” than the work done by design researchers. Development of a more serious and systematic approach to design and design research is not a novel phenomenon: the first wave took place already in 1960s with the design methods movement. Initially there was a quest towards a “science of design”, a prominent advocate of which was Herbert A. Simon: “The professional schools will reassume their professional responsibilities just to the degree that they can discover a science of design, a body of intellectually tough, analytic, partly formalisable, partly empirical, teachable doctrine about the design process.” (Simon 1969, p. 58). The initial prospect towards this new science was, however, found to be too ambitious, and the program of putting design onto firmer intellectual grounding is currently content with more modest formulations, such as making design a discipline: “Design is now becoming a discipline that may readily be applied to processes, interfaces between media or information artifacts as to tools, clothing furniture, or advertisements. To understand design as a discipline (…) means developing a general theory of design.” (Friedman 2003, p. 509). Susan Poggenpohl summarizes the current situation well in the introduction of a forthcoming book: “While it fundamentally calls for the transformation of design from its craft origins to an evolution into a discipline (…) … it also depends on design faculty that understands academic structure from a broader perspective and use institutional supports like research offices, peer-reviewed journals, interdisciplinary opportunities, and conferences to their advantage. This is in contrast to special pleading that design is unique and requires reinterpreted structures or special terms of assessment in academia. If design is to develop as a discipline and take its place among other disciplines, it must necessarily develop the three themes this book develops: research, method, collaboration.” (Poggenpohl forthcoming, unpaged). I fully agree with Poggenpohl's vision on design as an academic discipline, but I would like to continue discussion about how far existing disciplines in academia can and should be mimicked in the development of the design discipline. In this paper I would like to point to an interesting development within academy itself, which seems to be pointing into opposite direction – existing disciplines covertly if not overtly imitating the design way of producing knowledge. This can be conveniently studied by referring to the discussion around one particular book.

2. THE NEW PRODUCTION OF KNOWLEDGE

About 10 years ago Michael Gibbons together with his colleagues published a book “The new production of knowledge” (Gibbons et al. 1994). The main message of the book is that besides of the traditional disciplinary production (“Mode 1”) a new, quite different form of knowledge production (“Mode 2”) was emerging within university research. The authors claimed that although the Mode 2 knowledge in many ways deviated from the values and norms traditionally used to assess the quality of research, it was no less legitimate than traditional Mode 1 knowledge.
The Gibbons et al. book did gain a lot of popularity (it has been reprinted 9 times since publication) and it rapidly became the centerpiece of a heated debate (according to Google Scholar it has been referenced to more than 2000 times). The book was accused as an attempt to legitimate sloppy, consultancy-like research, while the defenders praised the attempt to bring the ivory-tower science closer to demands of real life outside the walls of universities. The authors continued the discussion with a new book (Nowotny et al. 2001), which also has been reprinted already five times, showing that the interest in the topic is still high.

Gibbons and his co-authors describe the Mode 1 type knowledge production as follows: “In this issue the term Mode 1 refers to a form of knowledge production – a complex of ideas, methods, values, norms – that has grown up to control the diffusion of the Newtonian model to more and more fields of enquiry and ensure its compliance to what is considered sound scientific practice. Mode 1 is meant to summarize in a single phrase the cognitive and social norms, which must be followed in the production, legitimating and diffusion of knowledge of this kind. For many, Mode 1 is identical with what is meant by science. Its cognitive and social norms determine what shall be count as significant problems, which shall be allowed to practice science and what constitutes good science. Forms of practice which adhere to these rules are by definition scientific while those that violate them are not.” (Gibbons et al. 1994, p. 2-3). They continue in summarizing that Mode 1 problems are both raised and solved within academic research community contexts, Mode 1 knowledge is sharply disciplinary and homogenous and it is “owned” by a particular sub community. Mode 1 is also hierarchical and preserves its form, and the quality control for Mode 1 knowledge takes solely place through the peer review judgments made contributions made by individuals.

In contrast to this the features of Mode 2 knowledge production are characterized as follows: knowledge is produced not in a detached laboratory but in a context of application; produced knowledge does neither belong to a single discipline nor is it distributed mainly through disciplinary distribution channels, but it is instead transdisciplinary and distributed to different stakeholders in the process of production itself; Mode 2 knowledge production is heterogeneous in terms of skills and experience people bring to it; the value of the knowledge is not only judged by intra-disciplinary peer review, but it must also be socially accountable in the context of application and in the eyes of a broader group of stakeholders.

While Mode 1 research in its purest form (“basic research”) is steered only by the human curiosity and any practical considerations are absent, Mode 2 research is always closely linked with usefulness of the potential results to somebody, either to a real stakeholder or to society at large. Moreover, Mode 2 knowledge would not be produced at all if interests of various actors were not included. Gibbons et al. use the expression that knowledge is produced in the context of application. Mode 2 knowledge production is often not, however, what is termed as applied research – application of results from basic research to practical problems – because there are neither such basic research nor results available.
While one of Mode 1 significant characteristics is disciplinary distinction of knowledge, in Mode 2 the solution needed for final problem is typically beyond boundaries of any single discipline. According to Gibbons et al. the knowledge needed is not, however, achievable by just bringing pieces of knowledge produced by different disciplines together, but must be integrated in the specific context of application. They call this sort of integrated knowledge as transdisciplinary.

Mode 1 knowledge is produced by academically qualified professionals in universities, but Mode 2 production is more heterogeneous and organizationally varied. In the context of application not only academic researchers but all participating stakeholders can and often will participate in the production of new knowledge. The production can also take place in other venues and organizations than universities, and even in temporary and transient formations.

The main accountability of Mode 1 researchers is towards their own disciplinary scientific community, but with Mode 2 a more broad social accountability permeates the whole process from the start. Mode 2 research is launched with a purpose outside the scientific community, and it is done in the context of a particular application having certain stakeholders, and these all have to be taken in the account. Researchers in university departments engage in Mode 2 knowledge production because of the reasons of relevance to some goals – relevance that Mode 1 knowledge production is often lacking.

Finally, the traditional form of quality control of knowledge produced in research is traditionally done in Mode 1 through a peer-review by other researchers belonging to the same scientific community. Reviewers are carefully selected internally to the community from members who have shown competence in earlier research, typically senior members of the community. In Mode 2 the context of application brings in a number of varied intellectual and other interests, such as social, political or economic ones, and it depend on situation which of these interests will be consider legitimate. Thus the both the criteria for quality control and the range of potential evaluators are much larger than with Mode 1.

When we look at these definitions, it is somewhat surprising to find out that that design is clearly an exemplary form of Mode 2 knowledge production – it fulfills each of the criteria discussed above. We can also see that at least some proponents of a “design research discipline” are not satisfied with the Mode 2; they would like to see design research moving more into the Mode 1 type of knowledge production to gain the academic respectability of well-defined separate disciplines. Thus the situation is quite interesting: if we agree with Gibbons et al. observations, knowledge production in universities is – because of needs of society – at least partially moving towards what already is the standard practice in design, while design research is at least to some extent trying to get into the opposite direction – against the current, so to say.
What could be learnt from this interesting anomaly? As suggested by a number of prominent design researchers (e.g. Buchanan 2001, Findeli 2001, Friedman 2003) some kind of change is taking place within the broad field of research and the whole society, and Gibbons et al are also reflecting to that.

3. CONTEXTUALISING THE NEW KNOWLEDGE PRODUCTION

To understand the change better, let us look at a couple of other testimonies – one by philosopher Stephen Toulmin, another by an eminent member of design research community itself, Richard Buchanan.

TOULMIN AND REASONABLENESS

In debates related to knowledge it is reasonable to search help from philosophy, and there is indeed an epistemological discussion going on, highly relevant to the issues discussed in the previous section. In this section we take a look at this discussion, using Stephen Toulmin's book Return to Reason (2001) as our guide.

The British-American philosopher Stephen Toulmin has been a productive author in many areas, and also active as a historian of science, but a connecting theme in all his work has been the importance of practical, worldly knowledge and reasoning as opposed to abstract, formal logic and theorizing so valued by the dominating school in 20th century philosophy of science, analytical and logical rationalism. Toulmin's book Return to Reason contrasts abstract analytical philosophy and formal logic with thinking in practical world – against formally logical rationality he sets practical reasonableness, hence the name of the book. For him the "Cartesian revolution" in scientific thinking has been a harmful 300 years diversion that should be corrected. In the book he studies the issue from the perspective of the history of philosophy and integrates several philosophical debates of the 20th century into a larger, continuing movement to correct the Cartesian diversion, and to "return to reason".

In the following I will only take one central line of his thought – that there is a long tradition emphasizing the practical knowledge, "knowing in the world", which is specific, local and temporal instead of general and timeless knowledge so highly valued by the dominant philosophy of science.

Toulmin starts with Aristotle, who in his Ethics of Nichomachos defines three forms of knowledge. Aristotle calls the first form "episteme", which is positively known and transferable "book knowledge" – highly valued by his teacher Plato, for example. The second form is called "techne" – the skill how to do something, the practical know-how. Most interesting from the point of view of this paper is the third form of knowledge that Aristotle calls as "phronesis". It is knowledge that enables a person to act in the world wisely and "right", pros ton kairon – according to the situation. It is really interesting to note, that the two first types of knowledge are well known to the extent that the terms used for them by Aristotle
have been a basis for related terms in the vocabularies of many current languages, but the third one has
not had such a continuity. Thus we are for example even in Finnish vocabulary the words
"epistemologia" and "teknologia", but there is nothing based on Aristotle's phronesis. It is this third
form of knowledge that Toulmin believes has been neglected by the scientific thinking and which now
must be resurrected.

According to Toulmin all the three types of knowledge were equally valued until the end of medieval
times, but the beginning of the "Cartesian revolution" brought with it the separation of episteme over
the two other types. In the book Cosmopolis (1990) Toulmin connects this change also with the
turbulent times in Europe in the end of the 30-year war. The war had brought a misery and chaos, and
there was no justification for it – human reason had failed. Neither was religion to be trusted as a source
of ultimate judgment, when killings and robberies against people having a different faith were equally
practiced and justified by proponents of both catholic and protestant doctrines. The was a search for
certainty, a need to find a firm ground upon which to construct such arguments that must be true
irrespective of any background differences discussants might have, truths that cannot be falsified. This
ground was found in mathematics and formal logic, and in axiomatic closed systems, which became the
norm for scientific knowledge against which all other knowledge was gauged.

This meant that knowledge of techne and phronesis type was devalued, and the process has been very
efficient. A good example is the status of rhetorics, which had long been an esteemed discipline in
universities, and highly valued as a representative of practical logic, but which term currently is in
everyday use depreciated almost as a synonym of cheating – something is "just rhetorics".

After hundreds of year's dominance in science the ideals of Cartesian thinking have filtered down to
shape our thinking and everyday experience and judgment as well. In the course of time the superiority
of Cartesian thinking and epistemic-only knowledge has, however, become more and more difficult and
finally impossible to maintain. Toulmin traces in Return to Reason the emergence and strengthening of
opposition in philosophy against the Cartesian rationality. This opposition has never been unified, but
more like a stream of different, often "life"-oriented philosophies, each attempting from varied starting
positions develop an alternative to the too limited Cartesian worldview Toulmin positions Heidegger
firmly among these opposition approaches but his champion among the opposition is not Heidegger but
Dewey, who in his study on the relationship between theory and practice "Quest for Certainty"
(1929/1988) has according to Toulmin developed the best founded and most convincing criticism
against Cartesian thinking. In the core of Dewey's argument lies the difference between the positions of
an external observer vs. a participant actor, and between the potential of holders of these positions to
acquire relevant information.

Toulmin sees that we may be currently witnessing a recovery of practical philosophy: in many areas
there is development towards balancing the former overemphasis of formal rationality with practical
reasonableness, and increasing and increasing recognition of the importance of phronesis-type of knowledge. He characterizes this movement as

Return to the Oral (from written and symbolically codified)

Return to the Particular (from abstract and general)

Return to the Local (from universal)

Return to the Timely (from timeless and infinite).

Toulmin demands strongly that philosophy must address questions relevant to its time, and addressing questions like this needs a philosophy whose subject area are worldly practices in all their messiness and ephemerality. Toulmin and Gibbons et al. do not reference to each other, but there is an obvious connection between their suggestions: in the phronesis-oriented philosophy Toulmin is opposing the limitations of Mode 1 knowledge production, and pulling together a grounding for Mode 2.

BUCHANAN AND THE NEW BATTLE OF BOOKS

Next we turn to a commentator closer to the field of design itself, Richard Buchanan, who in his paper (Buchanan 2001) starts developing his argument by a review of the history of design, in particular with respect to its relationship with science and academic world. He opens the paper with a passage from Galileo Galilei's "The Two New Sciences", where the character representing the author tells about the importance of the practical engineers in the Arsenal of Venice to the development and sharpening of physical thinking. After this practically oriented opening the book, however, Galilei turns away from practice and concentrates in purely theoretical explorations. According to Buchanan, the passage shows the emergence of a rift between practical design and theoretical knowledge. Buchanan then continues by discussing about Francis Bacon's "Project" -- people learning to master Nature and build artificial things to serve them better and better – and characterizes that as a clear design-oriented venture. Buchanan contrasts Bacon's design project with current conceptions about technological development and notices that although there was certain hubris in the way Bacon was praising the technological progress, his Project had still a clear connection with humanistic knowledge, emphasizing rhetorics, culture and learning. This humanistic undercurrent has been lost under the "new scientific", but the need for the connection is still actual in current design.

Buchanan continues his review by examining the disciplinary development of universities, and points to the rise of the value of science, as founded by Galilei, Newton and Descartes. He notes that the construction of artificial things did not belong to the objects of learning in universities, and in general human doings were in general excluded, and tolerated only in a very limited way in fine arts and literature, where it is difficult to escape the fact that the objects are produced by humans. In the
Beginning of the modern times the actual practical side of arts was studied in art schools outside the university system, and design in general was not accepted in universities, besides already mentioned fine arts and architecture. But even with them the practical side was seen to belong to a lower echelon of practical artisans who possessed practical skills and intuition but who were lacking the deep understanding, founded on "first principles". Buchanan mentions here the "Battle of Books" where the new "neoteric" knowledge based on the application of both methods and concepts developed in the rising natural science and corresponding setting of the questions to be solved were contrasted with the old "paleoteric" knowledge, based on experience and non-scientific principles. In the Battle of Books design definitely belonged to the paleoteric side with its principles like harmony and such.

Jurisdiction, medicine and theology had originally been in the core area of the universities, but the in the forming new universities their status started to decline because of the lack of scientific approach. In the 19th century the practical importance of engineering became so significant that it was necessary to start university-level education, but usually new technical universities had to be founded for that. And usually it was made (and often still is made) clear that these technical universities are only of secondary importance, because they only apply the results of science that are actually produced in elsewhere, by "pure research" in universities.

After the Second World War the situation has started to change and other proactive disciplines as decision science and computer science have appeared to the side of engineering in universities. During the 20th century design itself has been recognized as a specific discipline of its own, and it has finally made its way to universities as well, although still only a few universities are offering a doctorate in design. Anyway, times are changing, and Buchanan sees that a new Battle of Books may be emerging.

According to him, the new Battle of Books is fueled by the fact that although the scientific thinking that has been the foundation of universities during the modern times has indeed lead to great advances in theoretical knowledge, but on the other side it has led to a severe fragmentation of knowledge, so that the theoretical advances have only very limited usefulness in understanding larger issues, and in particular making informed changes in the world. New problem fields are constantly opening that do not fit with the old divisions of knowledge. In the new situation the old Battle of Books is turned upside down: the former new is now grown old, and some parts of the former old are now the new challengers. Design in particular is developing into a major force in the new neoteric learning, because it must deal with emerging new areas and solve their practical problems, and for that it must be able to integrate the fragmented knowledge. This will need also change in universities and disciplines: “But there may be a new kind of university that will also have value. It will be a university that prizes theory but does not disdain practice and does not ignore the distinct problems of, and the need for substantive knowledge about, making or production. (...) This new kind of university – and there may be only a few of them in the future – will discover a dynamic balance among theory, practice, and production, a balance that we do not find in the vision of most universities today.” (Buchanan 2001, p. 7)
Also this change seen by Buchanan can be related to a change in needed and accepted knowledge production modes: the initial success of science was related to the emergence of Mode 1, but now the pendulum is swinging back, and something else is needed.

4. DISCIPLINES, RESEARCH AND UNIVERSITIES

When the emerging design research discipline is seeking its role model among the existing university disciplines, two issues are useful to be kept in mind. Firstly, universities are far from monolithic and there is a great variety and flux among the existing and established disciplines, and during the history there has been many changes. Secondly, we may be witnessing one more change in the relations between universities and the rest of the society, which may lead to further changes in universities as well.

The development of disciplines in universities has not always been smooth and straightforward, as was discussed by Buchanan in the previous section. Closer to our time one can see that there has been a clear historical development in the ways how knowledge production has been understood in different disciplines. The 20th century has been characterized in universities by the increasing struggle by human and social sciences to legitimate a novel and totally different way of looking at the world, called qualitative research. Initially rejected as unscientific, qualitative research methods have gained an accepted and secure position in university practices. Although proponents of qualitative research still accept many basic theses of Mode 1 research, there are fundamental ontological and epistemological differences as well. So disciplines are far from monolithic, and qualitative researchers have shown that with persistence and a good cause one can made oneself legitimate and respected.

There are, however, design-oriented disciplines that already have become accepted in universities, and let’s next look two of them closer.

EXAMPLES OF DESIGN–ORIENTED DISCIPLINES IN UNIVERSITIES

There are already design-oriented disciplines in the universities which each has found some way to cope with the academic acceptance vs. relevance of research dilemma. I will draw from my own personal history: I did my PhD and started the publication career within a discipline called Information Systems (IS), and then I got position in Human-Computer Interaction (HCI) and have now supervised half a dozen PhDs there, so I know both of the disciplines and communities relatively well.

IS is in US and UK located in business schools, in northern Europe also in other universities under the label of “ informatics”. Fundamentally it is a design discipline: the basic issue is how organizational functioning can be redesigned and improved by using information technology. As a research discipline it is quite well established: it emerged already in 1960s and there is a number of high-quality journals
like Management Information Systems Quarterly, and a series of respected conferences like International Conference on Information Systems, some of them having a history of several decades. HCI is a newer discipline than IS, having been emerged in current form only in 1980s. HCI is even more directly design-oriented than IS: shaping the interaction between users and information technology. Also HCI is a well-established research discipline: there are a number of scientific journals, like ACM Transactions on Human-Computer Interaction, and a variety of respected conferences, like ACM CHI, which is just celebrating its 25th anniversary. Corresponding to both of these two university disciplines there are also two rather large communities of practical people working with the topics in industry and other organizations, and thus being the closest potential audience for the research done in universities.

Both IS and HCI have adopted a different strategy with respect to acceptance-relevance dilemma. IS has opted for academic creditability in the eyes of peers from older disciplines, and correspondingly it is leaning towards Mode 1 knowledge production. In the beginning this meant mathematical modeling and measurements, borrowed from the toolbox used by other disciplines in business schools. In 1980s and 1990s there was a long and painful struggle where qualitative methods were brought to be accepted by the research community. Despite this rather large change the Mode 1 orientation prevailed: the value and validity of research was fundamentally an issue of peer-review in publishing, within the existing community of researchers, most of them working in universities. Whatever the methods, the work has often a high scientific quality: it is scholarly, well founded, and reflective. There has, however, always been a problem that people working with IS in industry have not been interested in published IS research, and they are rarely seen in the IS conferences, and the quantitative-qualitative break did not cause any change with this respect. Thus we have a respected discipline which does not have a strong influence in practice, but which seems to be content with that.

The situation with HCI is drastically different, because it has largely opted for relevance of research, and creditability in the eyes of practical people in industry. The current HCI was born as a discipline in 1980s in a situation where the emergence of PC opened a new mass-market for PC software – if such software was easy enough to be used off the self, without extra training. Because practically all previous software had been made by order including training period in the end, this was a quite difficult problem (which is still far to be completely solved). So there was a strong need outside the universities to provide better methods for design, and this influenced the emerging discipline as well. There had been more academically inclined interests in universities, but they were largely pushed into marginal, and search for methods capable of practical solutions took the lead. The research community was not limited to universities, but a large number of people from industry were also contributing steadily, and some most influential findings actually emerged from industry laboratories. Because of this practical orientation also constructive, design-oriented solutions, like examples of novel interaction devices, became accepted as contributions besides more scholarly papers. A certain shift of balance between forums also took place: traditionally the scientific journals have been the core around which the
community activities are organized, but in HCI, and probably because of the large participation of industry people, the major conferences have become more and more important, and perhaps they are at the moment leading the field. More than half of the participants of the largest and most prestigious HCI conference, ACM CHI conference, are currently from industry. The HCI field in general is still expanding, and several new conferences and journals have been started recently. Although HCI research is largely operating according to Mode 1 rules, like the importance of peer reviewing, it has also characteristics of Mode 2 knowledge production, because of the large influence of industrial goals in defining the research agendas.

CHANGING RESEARCH ENVIRONMENT

There are clear signs that the environment where research is done in the universities is currently under a change. A good example of this is the research funding by European Union. EU is one of the largest public funding agencies of research in the whole world, so their policies will have an influence, not only to research done within European Union and directly funded by EU, but in the whole world as an example of a new relationship between public bodies and researchers.

EU research funding is openly selfish: the main purpose is to improve European competitiveness, either by directly improving the capacities of European industry, or by enabling European public system to deliver better services more efficiently, and thus indirectly improve the competitiveness conditions. Most of EU research funding is distributed through 5-years research programs, the current one is 7th in the series. A couple of times per year a call for applications is issued, targeted to some specific topics within the general program, and multinational research consortiums send in applications to compete against each other. To guide researchers towards the overall purpose of the research program, a rather radical departure from the general norms of research community with respect to evaluation has been taken. The applications are not peer-reviewed in the normal sense, but the evaluators are drawn from a “pool of experts”, where anybody interested in participating the evaluation can send his or her merits. From this pool EU officials select the reviewer teams for each call, and the rules of selection are not made public. Thus the background of reviewers can be and usually also in practice is in university, in industry, or in public bodies. There is no reason to assume this procedure as anything else than an attempt to get most competent experts available in a particular reviewer team, but in any case the team will be different than one consisting of most experienced researchers, as usually is the case in evaluations within the scientific community. Moreover, there are no automatically shared community values and norms guiding the selection process, but the evaluation criteria is clearly defined beforehand by EU, and although the scientific quality of an application is one of the main three criteria, it is only one: the two others are the quality of the consortium and its capability to perform the proposed project; and the expected impact of the project. During the last framework programs, the weight of the last criteria has been continuously increasing: in the application template of “small project” application for
the current 7th framework research program, 20 pages are reserved for the description of the project plan, while the suggested length of “impact and dissemination” part is 10 pages – half of what has been reserved to the project itself.

EU research funding is only one, although a large example of the more intimate relationships between society and research, and this development may be increasing further. As the example shows, society is no more fully content with the traditional Mode 1 quality control of research, but it is ready to rewrite rules and push the knowledge production towards Mode 2 type.

5. CONCLUSION

Design research is now defining itself as a discipline in a different situation and in a different world than older disciplines have done. It may benefit being an emerging discipline: many of the practice- and even design-oriented disciplines that have arrived in universities during the time when the pressure of natural science-type of rationality has still been in greater force, have not succeeded in resisting this pressure. To quote Simon again: “In view of the key role of design in professional activity, it is ironic that in this century the natural sciences have almost driven the sciences of the artificial from professional school curricula. Engineering schools have become schools of physics and mathematics; medical schools have become schools of biological science; business schools have become schools of finite mathematics.” (Simon 1969, p. 56). Design research has perhaps a real possibility to escape this and do something closer to its own character.

It must be remembered that design research is not alone: there is a number of design-oriented disciplines in universities. So there are potential role models to be observed, much closer to design than natural sciences. From my two examples I would strongly prefer HCI as a role model over IS. To some extent, HCI as a discipline has been able to bridge between university and society, between scientific acceptability and practical relevance. It is not the ultimate model, however: research in HCI often takes place in incremental way, following the development of technology instead of searching new openings. And discussion about fundamental issues and reflection upon them is largely missing – that is why I find the discussion within design research community attractive.

Because Mode 2 knowledge production is native to design, a change in general research climate towards Mode 2 will be beneficial to design research and help us in establishing a discipline. This discipline should adapt from existing university practices what is good in them, but it should not forget the strength given to it by the nativity of Mode 2 knowledge production and seek ways how that can be made academically creditable. Eventually it is in the hands of the design research community to define its own values and norms, what is considered to be good research – not less strict than previously, but maybe different. Perhaps Buchanan’s “balance between theory, practice, and production” can be found some day.
REFERENCES:


