*

Wolfgang Jonas

Prof. Dr., Braunschweig University of Arts, Institute for Transportation Design, Braunschweig, Germany
jonasw@hbk-bs.de

Abstract

"Design Thinking" is promoted as *the* new approach to advance the "great transformation". Though having its source in more traditional contexts, Design Thinking, as propagated for example by HPI, has abandoned its narrow origins and claims the potential as "General Problem Solver". What they describe are typical design processes. But the subjects are "bigger", ranging from food production for the poor via sustainable mobility to climate change adaptation strategies. Traditional design is left behind as a disdainful profession of commodity supply, or as a cute arts&crafts niche for self-discovery, or as ... whatever.

Do we own this new concept and vision? Or are we just trying desperately to catch the new BIG train, without being sure that it is OUR train at all? Maybe we miss it anyway. My hypothesis is clear: Design Thinking *should be* the common vision. Protagonists have been propagating this for long. Yet, a rationale for our ownership of this concept is still missing, an argument which relates it to accepted trajectories of design theorizing and which is open enough to integrate the broader issues raised by the notion of Design Thinking. This rationale should build on and extend the few basic concepts that are existing in design.

One of these is Bruce Archer´s triad of *product – process – people* as subject matters of design, which – surprisingly? - is very much comparable to Alain Findeli´s Platonic sequence of *aesthetics* → *logic* → *ethics* as the shifting focus of interest in design. I suggest to exchange the notations by more developable ones, namely *forms - processes – knowledges* instead: Design is a *process* which uses *knowledge* to generate new *forms* and new *(forms of) knowledge.* The essay elaborates on these 3 central concepts: *Processes:* Get rid of the myth of creation and control. Acknowledge the transient and evolutionary character of design processes.

---

* Painting in the background: Bignia Corradini, *Schwindel* (vertigo), 1983.

Forms: Get rid of the narrow concept of autonomous formgiving in design. Devise more appropriate and flexible concepts of form.
Knowledges: Open up the closed concept of expert knowledge. Get rid of the scientific bias in design research.

If design does not want to disappear in insignificance, it has to clarify its role / function in a much more radical manner than before. Design has the potential to become the *practice of transdisciplinarity.*

Keywords: Design Thinking, subject matters of design, transdisciplinarity

A Sense of Vertigo?

This essay is inspired by a linguistic peculiarity: The German translation of vertigo (Schwindel) means not only dizziness, but also hype (Rummel) and fraud (Betrug). The call speaks of

> *"a sense of vertigo permeating contemporary culture as a whole, and design in particular. So much so, that we often find ourselves wondering if design as we have known it still matters."*

Design, so the diagnosis, is branching into a multitude of concerns and activities formerly situated well beyond its scope. On the other hand it becomes interesting for many professions outside its area of expertise. And further:

> *"... This dissipation of a discernible territory of practice could seem like a loss at first, until we gradually came to understand that Design is, after all and despite the contextual noise, a deeply human activity, and, as such, any circumscription of its potential would, in itself, be an artifice, an operational and transitory device; and that, rather than being devalued by this apparent dilution of its area of expert operation, Design suddenly has the opportunity to expand and mature as far as its context, content and purpose are concerned."*

Design as a professional and academic culture is in permanent crisis and transition. This is not new and not worrying. We can live with this vertigo and use it as a driver. Design owns the vital talent to jump on every bandwagon, or – in another image – to act as a more or less friendly interface-building parasite between co-evolving systems.

Well then? Does this mean there is no problem at all? Maybe no real problems, but definitely irritations from outside, which design has to face. The text concentrates on one aspect: The BIG claims of Design Thinking and its consequences for the design discourse.

A distinction: design thinking and / or Design Thinking

For a couple of years now there is the new and rapidly spreading hype concept of "Design Thinking", which is promoted as the new medium / method / tool to advance what is sometimes fuzzily labelled the "great transformation" towards the better.

First of all, we have to make the distinction between the domain of research into the cognitive and social processes of designing (design thinking, lower case) and the new and massively propagated normative strategic concept (Design Thinking, upper case).

	design thinking	**Design Thinking**
aims	A research program aiming at understanding designerly processes and activities.	A strategy aiming at improving innovation processes in general.
origins	Related to a series of Design Thinking Research Symposia (DTRS) since 1991.	Related to Stanford d-school, 2005 and HPI Potsdam 2007. Origins reach back into the 1970s.
protagonists	Nigel Cross, Norbert Roozenburg, Kees Dorst, Ömer Akin, ...	Larry Leifer, Terry Winograd, David Kelley, Tim Brown, ...
character	descriptive	normative

Table 1 - design thinking and Design Thinking.

The two discourses are complementary; they combine the notion of design as a cognitive process and the notion of design as a purposive endeavour. But obviously they hardly communicate / interact with each other. Burnette (2009) can be read as an attempt to integrate the two.

Though having parts of its sources in more traditional design contexts (such as IDEO), Design Thinking as propagated today, e.g. by HPI Stanford and Potsdam, has moved away from its narrow disciplinary origins and claims the unique potential as (my words, referring to Herbert Simon, W.J.) "General Problem Solver" for all the big social and economic deficiencies of the world.

Even these broad claims are not new. Weaver (1948) introduces the concept of "organized complexity", in addition to "simplicity" and "disorganized complexity", and claims that the new approaches of dealing with problems of organized complexity (multi-disciplinary teams and computing machinery for the main part) will contribute decisively to solve the problems of mankind within the next 50 years. Simon (1969), less declamatory but positively minded, subsumes all the making disciplines under the generic term design.

The phenomenon is different from what Klaus Krippendorff once called the "colonization" of design by foreign discourses. The promoters of Design Thinking are not really interested in the traditional field and its long-winded academic debates; they are just doing design. Hence it is rather the "kidnapping" of the friendly, vulnerable, orphaned and hardly defined central term "design" for exploitation in a new context. Furthermore, the research program "design thinking", as indicated above, is mostly neglected.

The processes they describe as Design Thinking are unspectacular and well-known; they are typical design processes. But the subjects to be designed and problems to be

solved are "bigger", ranging from food production for the poor via sustainable mobility to climate change adaptation.
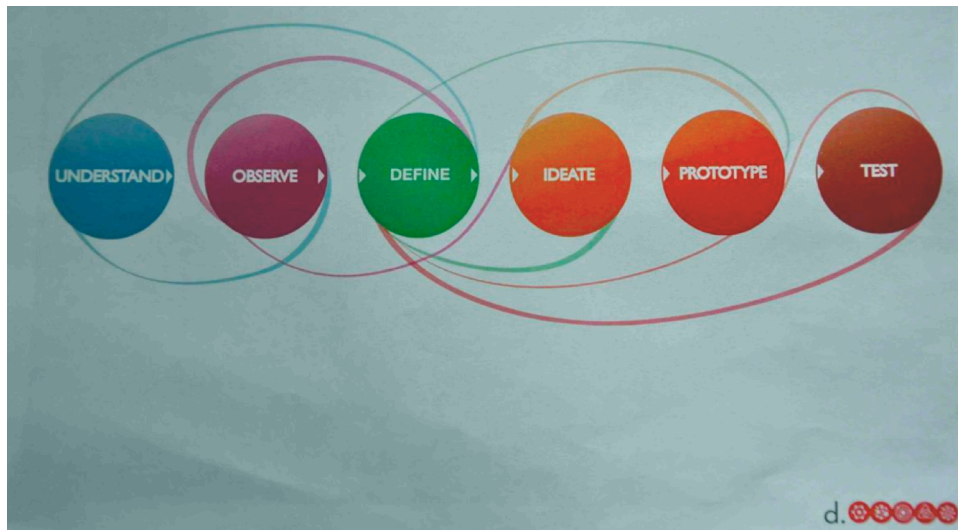

Figure - Design Thinking process, according to Stanford d-school.

Design Thinking is leaving the traditional field of design behind as a disdainful profession of commodity supply, divided and dissipated in hundreds of specified sub-fields, or as a cute arts&crafts niche for self-discovery, or whatever.

The CUMULUS organization is jumping on this trendy bandwagon in their flowery and somewhat loudmouthed KYOTO DESIGN DECLARATION 2008:

> *"A statement of commitment by the members of Cumulus to sharing the global responsibility for building sustainable, human-centered, creative societies. ...*
>
> *Human-centered design thinking, when rooted in universal and sustainable principles, has the power to fundamentally improve our world. It can deliver economic, ecological, social and cultural benefits to all people, improve our quality of life and create optimism about the future and individual and shared happiness."*

Critical voices have already interpreted this as a new Western imperialism (Nussbaum 2009): Colonisation by Design Thinking.

Many questions and a hypothesis

Apart from this paternalistic tone: Is it as easy as CUMULUS suggests? Do we own this new concept and vision? Who is "we"? Which is "our" contribution to this discourse? Are we legitimized to claim this as our field? Or are we just trying desperately to catch the new BIG train, without being sure that it is OUR train at all? Maybe it is TOO LATE already? Maybe we miss this train anyway.

The above-mentioned dilution and diffusion of *"design as we have known it"* may cause *vertigo*. The *hype* of "Design Thinking" may turn out to be a *fraud*. In any case the situation presents a challenge to the mainstream design discourse, which, for the

main part, is still circling around notions of academic credibility, regarding theoretical and methodological standards.

My hypothesis is clear: We should definitely "think bigger" (Brown 2009). Design Thinking with all its positive connotations, as apposed to plain "design" with all its consumerist and stylish appeals and aftertastes, can / should be our new leitmotif for the transformation of design itself. Protagonists have been propagating such a broader notion of design for long (..., William Morris, ..., Warren Weaver, ..., GK van Petter, to mention just a few - probably controversial - names). We should try hard to catch and capture the train in order to develop design.

Donald Norman (2010) calls Design Thinking a myth, but concludes:

> *"So, long live the phrase "design thinking." It will help in the transformation of design from the world of form and style to that of function and structure. It will help spread the word that designers can add value to almost any problem, from healthcare to pollution, business strategy and company organization. When this transformation takes place, the term can be put away to die a natural death. Meanwhile exploit the myth. Act as if you believe it. Just don't actually do so."*

Integrating Design Thinking into the discourse

We should not only exploit the myth but integrate its essential ingredients into our discourse. And even try to meet its claims. A rationale for our ownership of this design concept is still missing; an argument which relates it to accepted trajectories of design theory development and which is open enough to integrate the broader issues raised by the notion of Design Thinking. This rationale should be designed by building on and extending the few central / basic concepts that are existing and established in design. An intentionally conservative approach, I admit.

One of these concepts is Bruce Archer´s triad of *product – process – people* as subject matters of design, which – surprisingly? - is very much comparable to Alain Findeli´s Platonic sequence of *aesthetics → logic → ethics* as the shifting focal areas of interest in design. Even their definitions of design research show similarities and reveal a broad, almost unlimited, field of subject matters.

> Archer (1979): *"Design Research ... is systematic enquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value and meaning in man - made things and systems ."*

> Findeli (2008): *"Design research is a systematic search for and acquisition of knowledge related to general human ecology considered from a 'designerly way of thinking' (i.e. project-oriented) perspective."*

Without going deeper I suggest to exchange the "trinities" by more developable ones, namely *forms - processes – knowledges* as the new general concepts: Design is a *process* which uses *knowledge* to generate new *forms* and new *(forms of) knowledge.*

authors	Subject matters / areas of interest		
Platon	The beautiful (τὸ καλὸν)	The true (τὸ ἀληθές)	The good (τὸ ἀγαθόν)
Vitruvius	The beautiful (Venustas)	The solid (Firmitas)	The useful (Utilitas)
Immanuel Kant	judgement	reason	moral
David Pye (1978)	The beautiful	The efficient	The useful
Bruce Archer (1979)	products	process	people
Nigel Cross (2001)	Phenomenology study of the form and configuration of artefacts, the 1920s	Praxiology study of the practices and processes of design, the 1960s	Epistemology study of designerly ways of knowing, the 2000s
Alain Findeli (2008)	aesthetics	logic	ethics
Wolfgang Jonas	**forms**	**processes**	**knowledges**

Table 2 - Triads of subject matters in design: "man-made things and systems" or "human ecology".

Implications for the design discourse

The suggested re-consideration of three basic concepts may appear trivial as a starting point. But the current attempts in the design discourse to imitate science are a dead end, if we are aiming at relevant contributions to the improvement of the human condition. Therefore we should come back to and build on these simple and generally accepted theoretical concepts in order to develop / transfer design into a medium of socially situated and contextualized knowledge and form generation. The aim is to relate the design discourse closer to the emerging discourse of *mode-2 science* and *transdisciplinarity studies*.

a) Processes: Get rid of the myth of creation and control. Acknowledge the teleological as well as transient and evolutionary character of design processes.

This refers to much of what I have argued for in the last couple of years: Socio-cultural development is an ongoing process of redesign (Michl 2002) with episodes of conscious design in between. Doing and experiencing design can be described as the *co-evolution*

of autopoietic and allopoietic *systems*. Artefacts function as temporary interfaces / fits between them. *Cybernetic* theories of learning and observing serve as explanatory models. Learning and development are conceived as co-evolutionary processes of mutual adaptation. Effective "steering" processes require systems thinking and contextuality as well as the reflection of stakeholders´ perspectives. Playful use of observer positions is essential.

Design research, like design, tries to improve the probability of good fits between the co-evolving systems (or the quality of the prediction of behavioural change, as Terry Love puts it). Research Through Design (RTD) (Jonas 2007) is the appropriate model of Design Thinking processes. It conceives the research process as a situated / contextualized design process aiming at knowledge generation for the improvement of situations. Design thinking and systems thinking seem to be closely related.

authors	phases / components / domains of knowing in design research		
Jones (1970)	divergence	transformation	convergence
Archer (1981)	science	design	arts
Simon / Weick (1969)	intelligence	design	choice
Nelson&Stolterman (2003)	the true	the ideal	the real
Jonas (2007)	ANALYSIS	PROJECTION	SYNTHESIS
Fallman 2008	Design Studies	Design Exploration	Design Practice
Brown (2009)	Inspiration	Ideation	Implementation
Transdisciplinarity studies	**System knowledge**	**Target knowledge**	**Transformation knowledge**

Table 3 - Triadic concepts / domains of knowing in design research, indicating a generic model of the designerly research process (Chow and Jonas 2008, 2010).

b) Forms: Get rid of the narrow concept of autonomous formgiving in design. Devise more appropriate concepts of form.

Form has mostly been defined in distinction from an oppositional concept. We know the Platonic concept of form as idea (Urbild) opposed to the image (Abbild), or the more tangible Aristotelian concept as form opposed to matter. The most common one is the opposition of form and content. Content is not just matter but already formed (Hegel), form can become content and vice versa.

One of the most generally agreed and shared traditions, among practitioners and theoreticians, is the understanding of *design as formgiving* (Formgestaltung). This should be taken as a common ground and be reflected more deeply: which counter-concept is implicit carried along when we speak of generating forms?

form / content still appears to be the most common distinction. Form represents the content, gives meaning to the content, wraps the content. Priority can change. This refers very much to design as applied art, the interface doesn´t really matter (the eternal desire for authorship...).

Content and the more designerly notion of function have comparable meaning. Function means the inner structure and performance of artfeacts and relates to its purpose(s).

form / function implies the optimal relation of aesthetics and technology, often with a priority of function over form as in "form follows function". It refers to design as generating rational solutions, people have to adapt to interfaces (the modernist paradigm...).

form / context is a considerable step forward, because it explicitly introduces the interface concept of design. First formulated by Christopher Alexander (1964) and Herbert Simon (1968) it relieves the design concept of its close connotation to shaping artefacts in a geometric and visual aesthetic sense. Design, so the assumption, generates interfaces between artefacts (forms) and the contexts in which these forms have to function / survive. It refers to interfaces adapted to people (the paradigm of Human-Centered Design...).

form / medium is the up-to-date distinction in media theory, introduced by Niklas Luhmann, following Fritz Heider. The distinction of medium and form rests upon the loose or strict coupling of material and non-material elements (words of a language, dancing steps, gestures, symbols). Initially loosely coupled elements form transient interfaces, which increasingly organise themselves. The interfaces, or better transition zones, between form and medium are fuzzy, ephemeral, mainly self-organizing, only partially controllable. The concept refers to businesses, web-based communities, health-services, discourses, etc.

This latter unfamiliar meaning of form is becoming more and more significant for the design problems that are tackled under the label of Design Thinking. Hybrid networks of human and non-human actors are subject of design activities. This means an enormous challenge for design theorizing. And moreover: precious concepts such as ´author´ or ´opus´ lose significance.

c) Knowledges: Open up the concept of knowledge. Get rid of the scientific bias. Towards mode-2 science and radical transdisciplinarity.

In design we still fiercely debate the dualism of "scientific" vs. "designerly" approaches – an idle endeavour. The suggestion, probably the most radical one, is to extend our notion of knowledge towards mode-2 science and transdisciplinarity.

Gibbons et.al. (1994) argue that a new form of knowledge production started emerging from the mid 20th century which is context-driven, problem-focused and

interdisciplinary. It involves multidisciplinary teams brought together for short periods of time to work on specific problems in the real world. Gibbons and his colleagues labelled this "mode-2" knowledge production. This is distinguished from traditional research, which they labelled "mode-1", which is academic and discipline-based knowledge production. So mode-1 knowledge production is investigator-initiated and discipline-based while mode-2 is problem-focused and interdisciplinary. One can also speak of 'context-driven' research, meaning research carried out in a context of application, arising from the very work of problem solving and not governed by the paradigms of traditional disciplines of knowledge. John Ziman (2000) drew a similar distinction between academic science and post-academic science. In 2001 Helga Nowotny, Peter Scott and Michael Gibbons published *Re-thinking science: knowledge in an age of uncertainty* in which they extend their analysis to the implications of mode 2-knowledge production for society. Nowotny (2006) states transdisciplinarity as a central feature of Mode-2-Science.

Transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond each individual discipline. Its goal is the understanding and – as in Mode-2-Science – the changing of the present world, of which one of the imperatives is the overarching unity of knowledge. When the very nature of a problem is under dispute, transdisciplinarity can help determine the most relevant problems and research questions involved. A first type of question concerns the cause of the present problems and their future development (system knowledge: ANALYSIS, see above). Another concerns which values and norms can be used to form goals of the problem-solving process (target knowledge: PROJECTION). A third relates to how a problematic situation can be transformed and improved (transformation knowledge: SYNTHESIS). Transdisciplinarity requires adequate addressing of the complexity of problems and the diversity of perceptions of them, that abstract and case-specific knowledge are linked, and that practices promote the common good. See also http://en.wikipedia.org/wiki/Transdisciplinarity.

Open transdisciplinarity as suggested by Valerie Brown (2010) implies the synthesis / integration of different knowledge cultures in a collective learning / designing cycle of the Kolb type:

Individual knowledge: Own lived experience, lifestyle choices, learning style, identity. Content: identity, reflections, ideas.

Local community knowledge: Shared lived experience of individuals, families, businesses, communities. Content: stories, events, histories.

Specialized knowledge: Environment and health science, finance, engineering, law, philosophy, etc. Content: case studies, experiments.

Organizational knowledge: Organizational governance, policy development, legislation, market. Content: agendas, alliances, planning.

Holistic knowledge: Core of the matter, vision of the future, a common purpose, aim of sustainability. Content: symbol, vision, ideal.

Ethics is implicit in this model of knowledge production. And disciplinary experts turn out to be co-producers in a larger culture of knowledge production. It also suggests a

conceptual shift from thinking in ontologically fixed "categories" to epistemologically more flexible "topics".

Conclusion: design as the practice of transdisciplinarity

If design does not want to disappear in insignificance, it has to clarify its role / function in a much more radical manner than before. We elaborated on three core design issues and argued for:

- using process models that match the teleological and at the same time evolutionary character of design,

- developing appropriate concepts of form that cover the new hybrid and transient subjects of designing,

- acknowledging the various knowledge cultures that contribute to designing.

Design should discover the "beauty of grey" between scientific and designerly methods, between "proper" research and Research Through Design. Without any doubt we have to acknowledge that this new practice raises questions of quality and quality control which have to be addressed: the debate of rigour and/or relevance is symptomatical here. Nonetheless, we should have in mind that mode-2 and transdiciplinary approaches are shifting their quality criteria from *scientific reliablity*, which is no longer sufficient, towards the context-dependent criteria of *social robustness*. Design and science are approaching each other. Mode-2 science is design-like.

Neither design nor Design Thinking will become General Problem Solvers, but design might become the *practice of transdisciplinarity...*

References

[1] Archer, Bruce: 1979. "Design as a Discipline" in *Design Studies* Vol 1 No 1 1979 pp17-20.

[2] Brown, Tim (2009) *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation: How Design Thinking Can Transform Organizations and Inspire Innovation*, New York: HarperBusiness.

[3] Brown, Valerie A.; Harris, John A. and Russell, Jacqueline Y.: 2010. *Tackling Wicked Problems through the transdisciplinary imagination*, London Washington DC: Earthscan.

[4] Burnette, Charles: 2009. A Theory of Design Thinking. http://independent.academia.edu/CharlesBurnette/Papers/136254/A_Theory_of_Design_Thinking, accessed 03.03.2011.

[5] Chow, Rosan and Jonas, Wolfgang: 2008. "Beyond Dualisms in Methodology – an integrative design research medium ('MAPS') and some reflections", DRS conference *Undisciplined!*, Sheffield, 07/2008.

[6] Chow, Rosan and Jonas, Wolfgang: 2010. "Far Beyond Dualisms in Methodology – an integrative design research medium 'MAPS'", DRS conference *Design&Complexity*, Montréal, 07/2010.

[7] Cross, Nigel; Dorst, Kees and Roozenburg, Norbert (eds.): 1992. *Research in Design Thinking*, Delft: Delft University Press.

[8] Cross, Nigel: 2001. "Designerly Ways of Knowing: Design Discipline Versus Design Science" in: *Design Issues* Volume 17, Number 3 Summer 2001: 49-55.

[9] Findeli, Alain: 2008. "Searching for Design Research Questions", keynote at Questions & Hypotheses, Berlin, 24-26 October 2008.

[10] Gibbons, Michael; Limoges, Camille; Nowotny, Helga; Schwartzman, Simon; Scott, Peter and Trow, Martin: 1994. *The new production of knowledge: the dynamics of science and research in contemporary societies*, London: Sage.

[11] Heider, Fritz: 1926. *Ding und Medium*, Nachdruck Berlin: Kulturverlag Kadmos, 2005.

[12] Ison, Ray: 2010. Systems Practice: How to Act in a Climate-Change World, London, Dordrecht Heidelberg New York: Springer.

[13] Jonas, Wolfgang: 2007. "Research through DESIGN through research - a cybernetic model of designing design foundations", in: *Kybernetes* Vol 36 No 9/10, special issue on cybernetics and design.

[14] Kyoto Design Declaration: 2008. http://www.cumulusassociation.org/index.php?option=com_content&task=view&id=308&Itemid=109, accessed 30 December 2010.

[15] Michl, Jan: 2002. "On Seeing Design as Redesign. An Exploration of a Neglected Problem in Design Education", Dept of Industrial Design, Oslo School of Architecture, Norway.

[16] Nelson, Harold G.; Stolterman, Erik: 2003. *The Design Way. Intentional change in an unpredictable world* Englewood Cliffs, New Jersey: Educational Technology Publications.

[17] Norman, Donald: 2010. "Design Thinking a Useful Myth", http://www.core77.com/blog/columns/design_thinking_a_useful_myth_16790.asp, accessed 25 June 2010.

[18] Nowotny, Helga; Scott, Peter and Gibbons, Michael: 2001. *Re-Thinking Science. Knowledge and the Public in the Age of Uncertainty*, Cambridge, UK: Polity Press.

[19] Nowotny, Helga: 2006. "The Potential of Transdisciplinarity", in: *interdisciplines*, May 2006.

[20] Nussbaum, Bruce: 2009. "Is Humanitarian Design the New Imperialism?", *Co Design* 07 July 2010 imperialism, http://www.fastcodesign.com/1661859/is-humanitarian-design-the-new-imperialism, accessed 04 December 2010.

[21] Pye, David: 1978. *The Nature and Aesthetics of Design*, Bethel CT: Cambium Press.

[22] Simon, Herbert A.: 1969. *The Sciences of the Artificial,* 3rd ed. 1996, Cambridge, MA: MIT Press.

[23] Weick, Karl: 1969. *Social Psychology of organizing*, Reading, MA: Addison Wesley.

[24] Ziman, John: 2000. *Real Science. What it is, and what it means,* Cambridge: Cambridge University Press.