

Development impetus through inter- and trans-disciplinary design processes within architectural design

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Abstract. With the aim of building an energy-efficient environment, the design and planning processes of buildings and cities become more and more complex. The current planning processes are even more multidisciplinary. If these are replaced by inter- and trans-disciplinary processes, new developments are taking place. In Forensic Design Strategy the effects of the various possible approaches of the individual planners are set as a function of one another in order to get the best overall solution and not the best single solution for each department.

Keywords. Forensic Design Strategy; Green Building design; environmental design; energy; inter- and trans-disciplinary design process.

New technological achievements make it possible to conceive an energy-efficient environment. At the same time, design processes become more complex. An increasing number of professional planners are involved in the planning of cities and buildings, while at the same time, builders, owners and users have more say.

Certification programs such as LEED show concrete ways to develop sustainable buildings. These reflect the prevailing fashion in environmentally conscious thinking and are often established by laws, decrees, bureaucratic programs, etc. The proposed methods and regulations are often limited to certain climatic zones and do not adequately cover the local conditions in detail. In addition, many important aspects are neglected, such as different (micro) climate conditions, the availability of certain building materials or cultural design aspects.

Common design practices come from analogous times. The planning processes are usually multidisciplinary (Max-Neef, 2005) and the design process is based on knowledge acquired from experience. Individual (planner) planners can offer the best solutions for a job in their specific area of expertise. These solutions raise new problem areas in other areas, which in turn are solved by the responsible specialist planners. This leads to a complicated, technically elaborate solution and is removed in small steps from the actual overarching goal (simply cost-effective to build ecologically). This new challenges with more sustainable requirements needs new ways of knowledge production and decision-making. In inter- and trans-disciplinary teams one can find new solutions.

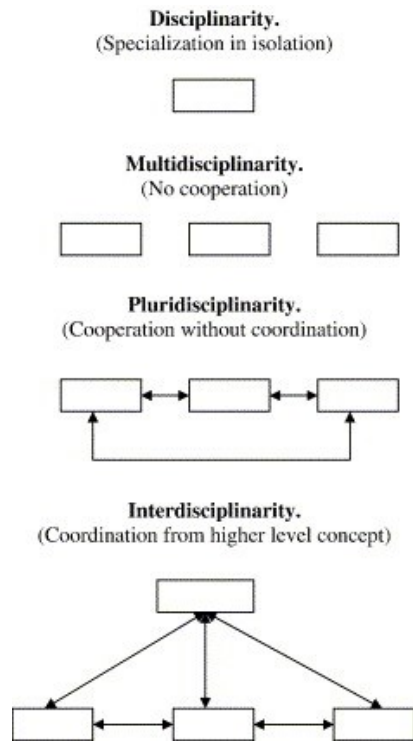


Figure 1
(Max-Neef, 2005).

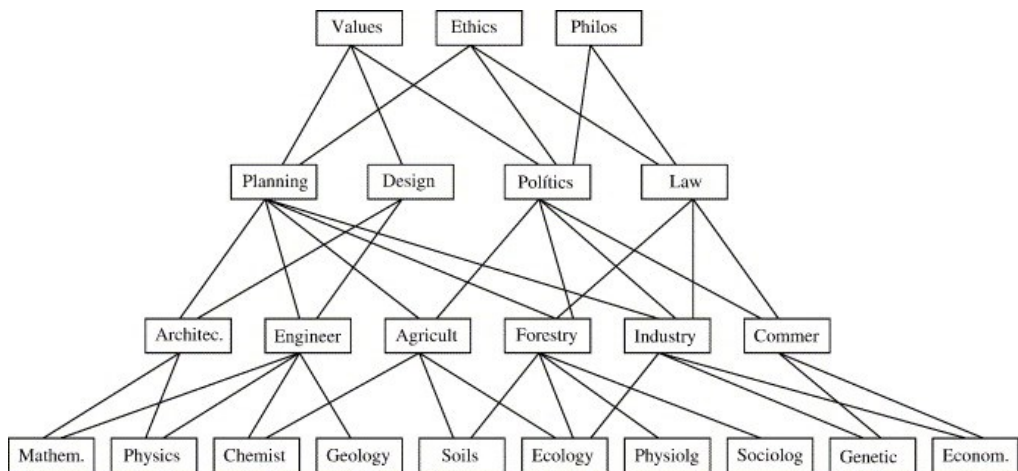


Figure 2
Transdiscipline. Reading the graph from bottom to top, the lower level refers to what exists. The second level to what we are capable of doing. The third to what we want to do. And finally, the top level refers to what we must do, or rather, how to do what we want to do. In other words, we travel from an empirical level, towards a purposive or pragmatic level, continuing to a normative level, and finishing at a value level. Any multiple vertical relations including all four levels, defines a transdisciplinary action (Max-Neef, 2005).

The long history of movement and counter-movement of styles within architecture reflects the change of society with its respective modest flows. [FIGURE 3] The change of fashion is also always shaped by the yearning for new, according to what one has not. Thus Adolf Loos, with his essay "Ornament and Crime", introduced a counter-movement to the mannerist Art Nouveau. A movement emerged, which more and more

subordinated design to the function and led to the international style. The following counter-movement, the critical regionalism, brought up the Postmodernism.

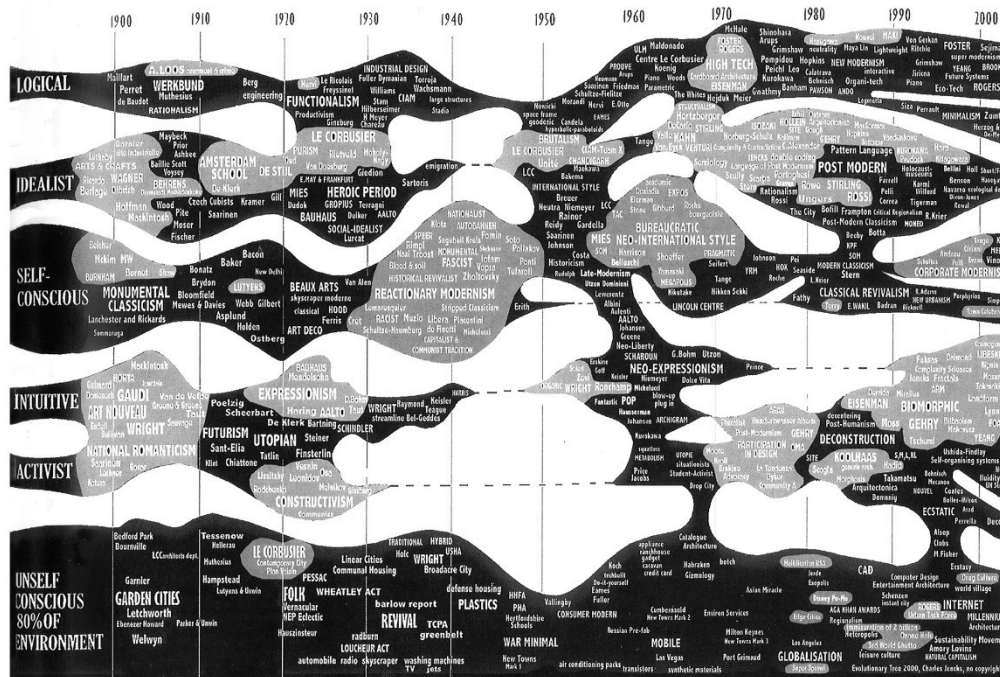


Figure 3
Jencks's 'The Century is Over, Evolutionary Tree of Twentieth-Century Architecture' with its attractor basins (Jencks, 2000).

The conflict between assigning the (planning) activity of architects between art and service has a long history and is, a consequence of the current multidisciplinary decision-making processes in the planning process, where the actual creative activity is terminated at an early stage of the process. Thus the task of the architect is transformed into an administrator of a fixed design concept. Ultimately it is about the importance of the work of the design and its assignment. The difference between architecture and art is that architecture has a function and therefore moves in the functional and technical corset of the building task. But one should assign designer activities to the field of art. The result of the design process is to delight people above all else, form identity through their uniqueness, etc, and thus form the defining characteristics of art. Buildings with which the users identify themselves have a considerably longer service life. As energy consumption decreases during the use of a building, a longer life becomes an increasingly important aspect of sustainability (does it?).

My studio, grundstein, sees the "sustainable concept" holistically, considers a building as a whole system and not as the sum of many individual parts. Blauvelt calls this designing method "relational design, obsessed with processes and systems to generate designs, which do not follow the same linear, cybernetic logic of yesteryear. (<http://designobserver.com/feature/towards-relational-design/7557>: Feb. 2017) Like Félix Guattari, the concept of "ecology" in "The Three Ecologies", where the three related ecologies of the environmental, spiritual and social worlds merge into a methodological practice (Guattari, 2000). Or Horst W. Rittel's "wicked problems," whose indissolubility is derived from his theory of complex social systems, which complicate the process of planning and design through an unmanageable set of relevant and conditional factors (Rittel, 1973). Implemented on our way of design, this means

that the process is affected by a lot of different layers and each layer contains a variety of solutions. Each solution influences the other layers. In the planning process, a decision must be made for the "best" solution for each layer.

While multidisciplinary methods are chosen for each individual layer, the best solution approach is chosen for interdisciplinary and trans-disciplinary approaches, the best solution approaches are sought depending on all layers with all their influences and dependencies. In the end, all of these individual layers must work together and form the building as a whole. They are the design, function and all technical aspects for now and the future, and they must operate with the climate, the location and all special conditions of the respective location, etc.

We call this process "Forensic Design Strategy" [origin of forensic: Latin *forēns* (is) of, from *forum*, public (see *forum*, -ensis) + *ic*] (<http://www.dictionary.com/browse/forensic>: July 2016). The term "forensic" is based on a form of political debate. "Forensics" is a word that is rooted in the classical experience of the Western world. The Greeks organized competitions for speakers who developed and recognized the skills that their society was central to democracy. These exercises acquired the title of "forensics". (<http://www.americanforensics.org/what.html>: July 2016).

In Forensic Design Strategy the effects of the various possible approaches of the individual planners are set as a function of one another in order to get the best overall solution and not the best single solution for each department. This design process in inter- and trans-disciplinary teams is process-oriented and has a common goal. Within these processes the traces of design decisions are inspired by various influences from different angles of different people from different disciplines. In the case of multidisciplinary decision-making processes, innovations are created only in the various specialist areas. Through inter- and trans-disciplinary working methods, all three types of knowledge (system knowledge, target knowledge and transformation knowledge) can be implemented in the development and design process. For Pohl and Hirsch Hadorn, furthermore, instead of being conceived of in a sequential order as in the classical technical model of problem-solving, these three forms of knowledge form a triangle reflecting the mutual dependencies [FIGURE 4] (Hirsch Hadorn, Hoffmann-Riem, Biber-Klemm, Grossenbacher-Mansuy, Joye, Pohl, 2008).

This increase in knowledge, the manifold inspirations of other disciplines, and the security provided by a coordinated approach by all relevant decision-makers lead to a development thrust for new solutions and developments through inter- and trans-disciplinary design and planning processes.

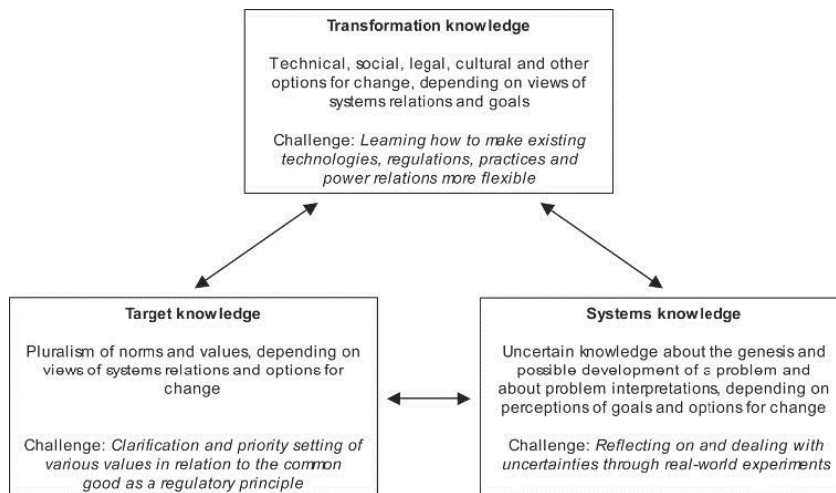


Figure 4
 Interdependencies between systems, target and transformation knowledge and their particular challenges (Pohl and Hirsch Hadorn 2007, p. 38), adapted.

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