

‘Landscape Architectural Design as Scientific Inquiry’?

This presentation discusses ‘landscape architectural design as scientific inquiry’ and exemplifies this with the description of a design process within climate-responsive design leading to new design knowledge.

‘Research and design’ are issues that need increasing attention within landscape architecture academia. Substantial contributions on ‘research’ and ‘design’ exist within architectural theory [1,2,3,4]. However, within landscape architecture, there are only few publications on this topic. In those publications, either the definition of ‘research’ was not clearly stated [5] or from the onset, design was not considered to be research “*by definition*” [6]. This is in contrast to several assertions within architectural theory where design is considered as scientific research. So the question remains: can landscape architectural design also be scientific research?

Here, it is stated that design can be scientific research when the design method is similar to a ‘scientific’ method and the aim of the design process is the generation of new knowledge. This requires that research questions are clearly formulated and a systematic, transparent and reliable method of looking for answers is guaranteed.

Since there are various ways of conducting scientific research, consequently some ways of ‘design as scientific research’ can be thought of. For instance, ‘design as scientific inquiry’ can mean that design is done similar to action research- as a communicative process from which new knowledge can be gained [7]. But it can also mean that design processes are conducted similar to the methods in the classical empirical sciences. In this presentation, the focus will be on this latter method.

In the empirical sciences, normally the research process consists of formulating hypotheses, testing these hypotheses in experiments and generating new knowledge from that. To guarantee reliability, the results are controlled through peer- review. When design is considered an inquiry similar to empirical sciences, possible design solutions are treated as hypotheses and then tested. Zeisel and other authors [8,9,10] proposed this earlier, but they were not clear about the ways design can be tested. Yet, the reliability of testing design is crucial for ‘design as scientific inquiry’. Actually, nowadays modern computer simulation methods offer new avenues for testing designs. With such simulations, the expected effect of design can be tested for many different issues and they can be used within a ‘design as scientific inquiry’ to generate new knowledge. Design processes to generate new knowledge that use these techniques are also widely found within engineering research and development.

In this presentation, a similar ‘design as scientific inquiry’ process will be illustrated by an example- a process of climate responsive design to generate new design guidelines for microclimate responsive design of urban squares. This process consisted of generating various design alternatives- or hypotheses- that were expected to be a potential design guideline. These design alternatives were fit for mid-sized urban squares within a Northwest-European maritime climate context. They were all assumed to improve microclimate in the problematic situations: too windy spring and autumn and very hot summer circumstances. The design alternatives were composed of different configurations of vegetation and other elements like pergolas or wind screens that were expected to bring about microclimate improvement. These

alternatives are tested with microclimate simulations and the alternative that shows the best effects can be considered as new design knowledge.

This design process which had great similarity with scientific research processes can be considered an example for 'landscape architectural design as scientific research'.

- [1] Lang, J. 1987. Creating architectural theory, Van Nostrand Reinhold Company, New York
- [2] Cross, N. 2007. Designerly ways of knowing, Springer, London
- [3] Laurel, Brenda, ed., 2003, Design Research: Methods and Perspectives. Cambridge: MIT Press
- [4] de Jong, T.M. and Van der Voordt, D.J.M., 2002, Ways to study and research urban, architectural and technical design, Delft University Press, Delft
- [5] Milburn, L.S. Brown, Mulley, S.J., Hiltz, Steward G., 2003, Assessing academic contributions in landscape architecture, Landscape and Urban Planning 64: 119-129
- [6] Milburn, L.S. and Brown, R.D. 2003, The relationship between research and design in landscape architecture, Landscape and Urban Planning 64: 47-66
- [7] De Jonge, J.M. (2009) Landscape Architecture between Politics and Science. PhD dissertation, Wageningen University. Blauwdruk, Wageningen
- [8] Zeisel, J. 2006, Inquiry by design (revised edition) W.W. Norton & Company, New York
- [9] Cross, N., Naughton, J., Walker, D. 1981. Design method and scientific method, Design Studies vol 2 no. 4 pp. 195-201
- [10] de Jong, T.M and van der Voordt, D.J.M. 2002 Criteria for scientific study and design, in: de Jong, T.M. and Van der Voordt, D.J.M. (eds.), Ways to study and research urban, architectural and technical design, Delft University Press, Delft, p. 19-30