

Parallel Session 1

A-01

Doctoral research in Art and Design

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Abstract

Demand for design research creates questions about education for the design professions. When higher education for design moved into the university sector, issues arose about the compatibility of content of design degrees. If design becomes a university study what are the different requirements of a Master degree and a Doctoral degree? When funding of innovation through research becomes an issue questions are raised about the role and nature of research at degree level and at postdoctoral level. This study outlines the development of main characteristics for doctoral and university research applicable to design. It offers a focus on research philosophy for content and acceptability by listing key categories of research requirements. The paper refers to experience of developing a university research culture in Art and Design that generates PhD completions and recognition from funding councils and industry for post doctoral research projects. It draws distinctions among doctoral study as a symbol for scholarship in design, doctoral study for professional practice in design and doctoral study for research practice. The author is a member of the first international study group for Doctoral Education in Art and Design funded by the European Union.

Keywords

PhD, doctoral education, research, art and design

A-02

Emergent Form-Generation System Using Cellular Automata and Genetic Algorithm

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Abstract

The design methods based on reductionism are difficult to apply to the early stage of design process, where diverse candidates for design solutions are required. This study attempts to construct the design method obtains diverse design solutions. As a first step, emergent form-generation system that generates diverse forms without an initial form was proposed. Firstly, the form-generation method was proposed by using cellular automata. In the method, the diversity of organism was noted, and the rules imitating "induction" and "apical dominance" were inputted to the transition function of cellular automata. The proposed method is possible to generate diverse forms by repeating of generation start with a voxel. Secondly, the form-generation method was applied to the artifacts design and extended to the system by adding evaluation process. Moreover, to obtain diverse solutions efficiently, genetic algorithm was adopted as a search algorithm, and schemata of solutions were eliminated. Finally, the diversity of solutions and the efficiency of searching solutions were analyzed. As a result, design solutions were obtained efficiently with adequate diversity. That indicated the possibility of utilizing the system for the artifacts design.

Keywords

Form, Diversity, Cellular Automata, Genetic Algorithm