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Design research studies for the new needs: balance in theoretical study and design practice

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Abstract

This paper briefly reviews current design research studies. Taking current design research programmes in China as case studies, the paper criticises the programmes as they lack a balance between theoretical study and design practice. The paper identifies the need for change ― reform ― in design research studies in a country which faces continuous social, economical and industrial changes. It then discusses the advantages, limitations, difficulties, opportunities, and possibilities of having this balance in design research studies. By proposing some directions for the programme implementation and further development, the paper expects to stimulate further investigations and discussions in order to bring a higher quality of design research studies.

1. Introduction

In recent years, design research studies around the world have gone in two major directions. Some of the programmes have focused on theoretical studies while some have focused on practical performance in a particular area of design. For example, some programmes emphasise on the theoretical review, investigation and analysis of history and theories. This situation is particularly significant in some conventional universities and design schools in that they expect research students to be strong in theoretical argument. The students' research outputs (such as thesis and journal publication) are expected to generate design knowledge to influence design theoretical study and design practice. On the other hand, some programmes aim to nurture students to do research and then provide information (or, generate knowledge) for design application. These programmes highly value and encourage students to participate in practical projects, including sometimes in collaboration with external parties and organisations. The students are expected to gain experience through projects and then generate information (e.g. archive, finding, insight, experience) for design. Sometimes, the programmes expect the students to generate practical and applicable outputs through the execution of projects. Different from traditional thesis, research application is accepted in some

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programmes as a kind of research study output. Thesis sometimes is considered as a kind of research report or compilation of research papers instead of a comprehensive theoretical writing.

Design has received more attention in Asia, including China, in recent years (Design Task Force, 2003; Leung, 2004; Siu, 2003, 2007). Design research studies (i.e. design research programmes) are new in China. From the early 1980s to the mid 1990s, many so-called higher level design research studies (such as doctoral programmes) ran in a non-organised way in that directions, objectives and requirements of studies were not well defined. In fact, more organised programmes with well defined objectives in design education did not start until the late 1990s (Siu, 2009a). Moreover, in the 1980s and 1990s, most of the claimed design programmes were only arts and art oriented. Even these programmes added the term or title of "design" in the programme titles and some traditional fine art schools and academies changed their names to design schools and academies, yet the nature and objectives of the programmes were still similar to conventional art (and, fine art, arts) programmes. In addition, most of the professors and tutors were also the same staff that had taught fine art before and then transferred to the new programmes (Siu, in press, 2009b, 2007). Rarely had any of them received formal education and obtained practical experience in design as defined by the western world. Some people may argue that design in China may have its own way and practice, and its education system is different from the "west". However, when these kinds of so-called design programmes are carefully reviewed, it is not difficult to notice that many of the core elements of these programmes lacked design elements (Siu, 2007, 2009a, 2009c).

This paper briefly reviews the current design research studies in China. It identifies the limitations of these research studies in that they lack a balance in theoretical study and design practice. Based on the case studies in China, the paper criticises the current curriculum arrangement. It then attempts to identify the need for change — reform — in design research studies in a country (similar to many contemporary cities/countries) which faces continuous social, cultural, economical, and industrial changes. The paper then discusses the advantages, limitations, difficulties, and possibilities of such reform in design research studies. In addition, the paper expects to stimulate further investigations and discussions in order to bring a higher quality of design research studies.

2. Case studies in design research studies

Several case studies related to design research studies in China (i.e. mainland China) were conducted from 2003 to 2008 (Siu, 2003, 2005a, 2007; 2009a, 2009b). Several universities with design research programmes were selected for focused studies. The major reason for initiating the studies was due to the change in the university system in mainland China. Many of the universities, including design institutes and academies, were combined to form larger universities in the mid 1990s (Siu, in press, 2009b). Some of these design institutes and academies (or renamed as design departments after combining with the universities) have still maintained part of their internal organisation structures and also autonomy for setting up programmes, though these institutes are under the umbrella of their governing universities.

In the mid 1990s, some design institutes and academies took the opportunity to reform their programmes (Feng & Siu, 2009). They went through serious review and reallocation of resources and then re-established the directions of design research programmes (for China's earlier education reform, see also Pepper, 1990). In addition, while these design institutes and academies are now under the university system instead of the conventional institute system, they have gained more resources to plan and implement design research programmes (Siu, in press, 2009b, 2009c; for education reform, see also Gornitzka, Kogan & Amaral, 2005).

The case studies included reviews of the programmes documents (for example, programme objectives, structures, graduation requirements). The studies also included interviews with the programme leaders (or, coordinators) and professors (or, study supervisors) and most of the interviews were conducted in a semi-structured way. Such kind of interviews could ensure the invited interviewers to prompt questions for more in-depth understanding. Besides, different design institutes and academies might have different structures and requirements where such kind of semi-structured interview format was more appropriate and effective to invite interviewees to give further comments on the existing design education in China.

Design research students were randomly selected from the list provided by the design institutes and academies. Male and female students were also randomly selected. The students were interviewed by using semi-structured questions. The questions are about their nature of studies, research activities, learning difficulties, and their comments on the research programmes, and other arrangements and matters related to their studies.

The nature (i.e. quantitative and qualitative) of students' research outputs was also reviewed. For example, the nature of the thesis and the number of paper publications were reviewed. These outputs were compared with those produced by the students of some selected design schools in other cities/countries, e.g. Hong Kong, United Kingdom, United States, Australia.

The programme leaders and professors were invited to participate in the analysis process. The structures of other universities programmes (such as those in western countries) were provided for the leaders and professors as references for in-depth discussion and comment during the analysis process.

3. Two categories of programmes: key issues

The findings of the case studies illustrated that the design research studies (i.e. programmes) lacked a balance in theoretical study and design practice. This situation was more or less related to the nature and characteristics of the programmes. According to the case studies, the design research programmes in China could be briefly defined into two categories:

1. Design research programmes mainly related to the disciplines of arts, fine art, humanities, and social sciences, etc.
2. Design research programmes mainly related to the disciplines of engineering, information technology, technology, etc.

The first category was widely accepted as design-related research programmes, while the second category was sometimes considered as design-related research programmes and sometimes considered as engineering-related research programmes. Thus, when people talked/mentioned about "design research studies", most of the time they meant the first category instead of the second category. Nevertheless, up to the present moment, there is no clear definition on "design research studies". As some of the interviewed programmes leaders mentioned, sometimes the natures of the programmes were more related to the nature (and title) of the schools and departments (e.g. school of design) instead of the titles of the programmes.

Regarding the first category of design research programmes, the findings indicated that many research students lacked practical experience (design practice) during their studies. The key findings are as follows:

*   Some students had got fairly good design practice experience if they graduated from design programmes, while some had weak design practice experience if they graduated from other disciplines, such as social sciences, arts, etc.
*   Some design research programmes provided little experience for research students in that the students spent most of their study time on theoretical review.
*   These students spent a major portion of their time studying (and reviewing) foreign/western design, philosophical and social theories.
*   Their theses were theoretical reviews and arguments on some particular design, art and social topics. Most of the time students would like to use/apply reviewed theories to support their arguments. In other words, their arguments and discussion lacked support from practical experience and experimental findings.
*   Students' background (i.e. weak in, or lacking design experience) was one of the causes of the situation mentioned above. This group of students had low incentive and motivation to participate in practical (design) projects. Thus, they lacked the chance to collect data and gain experience from projects.
*   The background of supervisors was another cause of the situation. Most of the time students' projects were arranged and/or assigned by their supervisors. However, some supervisors had poor connection with the external parties and organisations. Some of them had low motivation to participate in projects. A ripple effect occurred in that the students under the supervision of these supervisors would have low chance to participate in projects. The result was that these students lacked the opportunity for design practice.
*   Regarding the quality of the research outputs, most of the time their analytical outcomes and recommendations were commented on as being "too theoretical" and "impractical" by the design industries.
*   The duration of the study mainly depended on the ability of the students.

Regarding the second category of design research programmes, the findings indicated that a significant percentage of students got practical experience (design practice) during their studies. The key findings are as follows:

- Some students had got fairly good design experience if they graduated from design programmes. Some had got good project experience but their experience might not relate to design aspects. For example, some science and engineering students got experience in lab experiments but without any understanding of design projects.
- Some design research programmes provided chance for research students to participate in projects.
- Some research students spent a large portion of their time on projects, while some spent little. This situation depended on the nature and arrangement of projects.
- Nearly all of the students' projects were arranged or assigned by students' supervisors. Thus, the nature and expected objectives of the projects mainly relied on the arrangement of the supervisors.
- Students' spent most of their time on projects, in particular in the first few years of study.
- Most students had little time to prepare their theses, or only had time at the final stage of their study to compile their theses.
- Sometimes the arranged or assigned projects were not related to the research topic of the students. Students found it hard to finish their theses, or some of them might need to change their research topic at the end.
- Most of the theses were mainly the reports of the projects. The key content of the theses were generated from the findings and experience of the projects.
- Universities and supervisors had higher expectation of these kinds of students to have papers published.
- Students' background was one of the causes of the situation mentioned above. This group of students had higher incentive and motivation to participate in practical projects (i.e. might not be design related projects).
- The background of supervisors was another cause of the situation. Most of the time students' projects were arranged and/or assigned by their supervisors. (Supervisors in China in recent years have had more chance to work with external parties and organisations, including some consultancy projects. Supervisors have also received more grants for their own research projects. Thus, they like to appoint or assign research students to take up research projects.)
- The nature and content of the projects was highly related to the projects of the supervisors in hand. Thus, sometimes research students were required to participate in some projects which were not related to their study topics.
- Students were more willing to take up projects since students could gain support/allowance from their supervisors so that they could support their own studies.
- Regarding students' research outputs, thesis became only part of the consideration/element. Journal papers most of the time would be considered as a kind of significant output, in particular more design schools expected their staff and students to have more refereed outputs, e.g. journal papers, international conference papers.
- The duration of the study depended both on the ability of the students and the nature of the projects. Sometimes students needed to defer their study if their contribution to the projects was too heavy (i.e. too demanding). The students might not have sufficient time to complete their studies and theses. On the other hand, some students found it difficult to complete their studies if their assigned projects did not relate to their study topics.

4. Discussions

As per the discussion above, two different categories of design research programmes existed due to different matters, e.g. backgrounds, practical situations, educational objectives, universities' and schools' particular requirements on research studies (see also Brew & Boud, 1995). According to the findings of programme reviews and interviews with the programme leaders, supervisors and research students, some key issues related to

advantages, limitations, difficulties, opportunities and possibilities of a balance in theoretical studies and design practice are as follows:

4.1 Advantages

- Design is a discipline (or, area, subject) which emphasises the understanding of theory and experience in practice. A balance in theoretical study and design practice is important in design research studies. It allows research students to have in-depth knowledge contribution in design and have practical experience in design. No matter if working in the academic area or the industry after graduation, students can bring the greatest benefit to their working environment (for the relationship between the industry and design students, see Siu, 2003, 2005).
- Theoretical study can bring a better fundamental understanding on important and essential design issues. On the other hand, practice can generate more practical/concrete evidence to support (i.e. verify and falsify) theories. Moreover, practice is the best way to implement and actualise theories.
- Design research is more an action research activity. Findings of theoretical study and design practice can be developed and reviewed to bring "action benefit" for design research studies.
- The society has a higher demand on the outcomes of design research studies (Gilbert, 2009; Siu, 2003, 2005, 2009c). Thus, outcomes cannot only serve the needs of "ivory tower" (see Berry, 2005). On the other hand, outcomes also cannot only serve the industry needs (for the university's responsibility to the society, see Neave, 2000).
- The society undergoes continuous changes. Having a good foundation in design theories and knowledge about the design practice can help students face the changes.
- Although students will focus their career development in particular areas (such as theory exploration, or design application), a balanced understanding and experience both in theory and practice can give benefit to them to work with other working team members.
- A balance in theoretical study and design practice can initiate more collaboration among different disciplines and areas, such as conventional basic research departments and recently eye-catching applied research departments.
- Practical projects (as well as their outcomes) can attract more attention and interest from the industry and other kinds of funding bodies to put investment in research (Siu, 2009c; for higher education collaboration with industry, see also Caro, 2007). This would support more research studies.

4.2 Limitations and difficulties

- Particular backgrounds of individual students restrict some students to carry out a balanced consideration in theory and practice in their research studies. For example, some conventional design and engineering students are good at practice but weak in theoretical studies. On the other hand, some conventional fine art, arts and social science students feel comfortable with theories, but find it difficult when asked to handle some practical projects.
- Particular backgrounds of supervisors (and also the missions and visions of universities) affect the directions and modes of studies of the students.
- The incentives and motivations of supervisors and/or students significantly affect whether and how a balance in theoretical study and design practice can be achieved.
- Design research studies most of the time are bounded/restricted by time (e.g. three to five years). Students may not have sufficient time to have a balanced development in theoretical study and design practice.
- Sometimes time management in design projects is difficult (Boyle, 2003; Gray & Larson, 2008; Kerzner, 2009). For example, some environmental design projects (e.g. urban redevelopment design projects, community design projects) may last for many years. However, nearly all of the students expect to graduate on time.
- Availability and possibility of practical projects block students to have the chance to take up practical projects during their study period. This situation is particularly significant when the economy declines. Many of the external parties and organisations are unwilling to offer projects/chances to research students when the economic situation is not good.

- Many design schools or supervisors with less resources (or connection with the industry) prefer to ask their students to focus their study on design theories. It is easier in research logistics and management. However, this situation causes big gaps in research directions and outputs among different universities/schools.
- Many new design schools today prefer to put more time on design projects. This is because projects can generate more eye-catching research outputs. Series theoretical study has gradually become less considered.
- Findings generated from design practice are relatively more objective and straight-forward in nature. On the contrary, findings explored/extracted from theoretical study most of the time are more arguable and identified.
- Considering theoretical study and design practice together causes difficulty in assessment (for the details of effective assessment, see Banta, Jones & Black, 2009). In addition, the weighting between two areas is still an arguable matter/topic today.

4.3 Opportunities and possibilities

- More people have considered the importance of a balance in theoretical study and design practice in recent years (Wisker & Brown, 1996), including the government and external research funding bodies.
- More people have considered the importance of integrated skills of university students (Design Task Force, 2003; Fallows & Steven, 2000).
- Design research studies are open to a wider spectrum of students. In other words, more students from different disciplines can and are more willing to enrol in design research programmes (Hickman, 2005, 2008; Leung, 2004; MacDonald, 2005; Siu, 2009a, 2009b).
- More resources are invested in design research programmes (Hickman, 2008; Scrivener, Ball & Woodcock, 2000). This provides a more flexible environment for the development of the programmes and the programmes can have different natures, directions and requirements.
- More younger supervisors with good academic research and practical design experience are available (or, have the possibility) to supervise research students (for the changes and trends of doctoral education, including the faculty of the future, see Ehrenberg & Kuh, 2009).
- Reference materials are more available and more convenient to be accessed.
- More external parties and organisation, e.g. the industry, social organisations, communities, are willing to have collaboration with design schools (see Ikeda & Takayanagi, 2001). They also value the contribution and outputs of design research students.
- Assessment of design research studies has undergone changes around the world. More researchers and educators consider that design research studies should bring knowledge contribution and practice benefit to the design field and the society.
- Assessment of design research studies is more learner-centred (Mentkowski, 1998). Research students are no more the "cheap labour" of the supervisors. This situation allows design research students to select theoretical topics and projects freely.
- Collaboration is encouraged more in design research (Design Task Force, 2003; Guimaraes, 2001; IEEE Computer Society, 2000). Design research students do not work alone, and they are expected to work with people in different areas and with different strengthens. Thus, students can get support in their weaker areas.

5. Conclusions

For the past twenty years, design research studies have been developed rapidly. Now is a critical time to re-think carefully how it should and can go further. As discussed above design is a discipline which must have a balance in theory and practice. Design research studies should also go in the same way in that students should gain knowledge and experience in theory and practice. They should also generate outputs which can bring knowledge contribution and practical application in design. A balance in theoretical studies and design practice in design research studies has its advantages. However, it also has its limitations and difficulties. However, this should not be used as an excuse to stop researchers and educators from having serious consideration and propose appropriate reform on design research programmes to meet the continuous changing needs of society.

Some opportunities and possibilities have been identified in the paragraphs above. It may be obvious that most of the opportunities and possibilities are associated with the current society's situation, such as the industry and if more external parties and organisations are more willing to have collaboration with design schools as well as design students. In fact, as stated above, opportunities such as resources may change or be lost one day. However, such kind of changes should not affect our correct direction that design research students should not hide in ivory towers to produce some theses and then put them on library book shelves with no or little contribution to the society. Of course, design research students should not also be the cheap labour or money generating machine of the industry. They should not forget the high level of mission in research and that they must enhance fundamental understanding, generate design knowledge and new directions, and bring new insight for more design research and discussions. As stated, only a balance in theoretical study and design practice can bring real benefit to the academia and the society.

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