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Graphical ways of researching

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This paper investigates the ways in which graphic design can be understood as a process of inquiry. Although the use of visuals has been widely accepted in research in various fields, researchers in sciences and humanities tend to position graphic design as a communication tool rather than a research strategy. Thus, the main purpose of adopting graphic works is often for visual presentations. As an emerging discipline with a lack of theoretical engagement (Noble & Bestley 2011), graphic design is overshadowed and its functions and implications have not been fully recognized.

This essay aims to explicate knowledge from the graphic design process and understand the term 'graphic design' as a research strategy. In so doing, a clear distinction between two research areas which use visuals in their methodologies needs to be identified. The first is graphic design research which directly links to visuals and graphic design practices. This can refer to a practice-led paradigm so that the designer researchers can discover knowledge through their practices. The second is the research that uses visual data and/or visual presentations. This type of research can vary from the sciences to humanities. In order to reposition graphic design in research methodology, it is important to clarify the difference between these two categories. This would offer potential for graphic design to be accepted as a discipline that has its design methodology.

What is graphic design?

To clarify how graphic design can be adopted as a research methodology, it is essential to both define the meaning of graphic design and identify how graphic design might offer implications to research. The term 'graphic design' was coined by Addison Dwiggin, an American typographer, to explain the aesthetics of the arrangement of texts and visuals (Newark 2007). Newark explains that graphic design has been used as a method of communicating beyond verbal communication to deliver messages to audiences. From its use as a basic communication tool,

graphic design has been further developed and applied in various media, hence the many possible approaches to engaging with it. Most people would be exposed to graphic design only through its use as a communication tool. These designs are usually in advertisements, logos and symbols that are published in various types of media, using visuals for a multitude of purposes. When the graphic design can itself be called a 'product' then its role is to '... persuade, inform, identify, motivate, enhance, organize, brand, rouse, locate, engage, and carry or convey many levels of meaning' (Landa 2014, p. 1). In this sense, the purpose of graphic design is strongly connected to business and persuasion (Faison 1996; Hollis 2001) and the role of designers through that notion is to transfer a message into a communicative form for delivering information to the targeted audiences (Poggenpohi 1993). This is why graphic design is often emphasized as a tool of communication. However, such outputs cannot display a complete picture of graphic design. Focusing only on the outputs leads to limitations in perspectives about it. Erlhoff and Marshall (2008) point out that both product and process are equally important components of graphic design. Without an understanding of its design process, graphic design can only be seen as an object so it is important to re-examine graphic design as a process as well.

Graphic design is a field of a larger discipline of design. A better understanding of the term requires a link to the word 'design' as the key concept. Design is widely accepted as a problem-solving process (Erlhoff & Marshall 2008) to change from existing situations to a preferred or improved one (Lawson 2012). Lawson explains that design brings to the world not only what designers produce but the creative activities behind it. In other words, the graphic design process is not just the process involved in the production, but it is a process of problem solving relating to visual sensitivity with skills and knowledge from graphic designers (Australian Graphic Design Association 2012). The graphic design process can therefore be more than a communication tool and this is an important dimension that I will investigate further in order to demonstrate it as a research methodology.

What is the graphic design process?

As discussed earlier, graphic design comprises two components, its product and process. This section discusses what is the graphic design process and how it can be compared to research process. This is to highlight possibilities of using graphic design as a research methodology. Design process is traditionally understood as the way 'designers are expected to define problems that can be solved in a step-wise

manner' (Erlhoff & Marshall 2008, p. 128). It is applicable to a wide range of design-oriented projects in professional design practices; for instance, architecture, product design, graphic design and fashion design. In the field of graphic design, the design process is not only a production process. Rather, it is a widely-used working map for professional graphic designers to direct their practices through their projects in order to reach the targeted solutions. The majority of graphic design practitioners tend to understand the graphic design process as the fundamental requirement and a how-to guide to successful design for working in the profession (Ambrose & Harris 2009; Landa 2014; Newark 2007; Shaughnessy 2010). Thus, graphic design practitioners are able to adapt the graphic design process in their practices but may not necessarily theoretically identify it. A number of theorists in design disciplines have attempted to investigate relationships between design process and research methodology. Lawson (2012), for example, suggests that design knowledge is tacitly embedded in design process while Cross (2006) highlights that the knowledge can be explicated through designer practices. However, graphic design process needs clarity and criticality in order for other academic disciplines to understand precisely what the graphic design process is and how it can be linked to other cross-discipline knowledge (Noble & Bestley 2011).

From this point, it can be argued that graphic design can be connected to research methodology as the way research problem(s) or question(s) can be unraveled through its process. Nini (2006) proposes a model of the design process (Table 1) which aims to provide a clear insight into a graphic design practice that is often ignored by designers. This is because they regard such a process as a mere routine practice. Nini's model for solving design problems is presented in two phases. The first phase is *Investigation and Planning* which allows the designers to examine the problem, gather information and develop possible strategies. The next and final phase in this model is *Development + User/Audience Research*. This phase aims to produce concepts and prototypes of the design projects and subsequently test the prototypes and develop them in order to reach an acceptable solution. However, what is to be explored is how graphic design per se can be seen as a research methodology in practice-led paradigm. In order to gain a better understanding of this enquiry, it is worth re-examining Nini's model of design process and find what would be embedded inside this model.

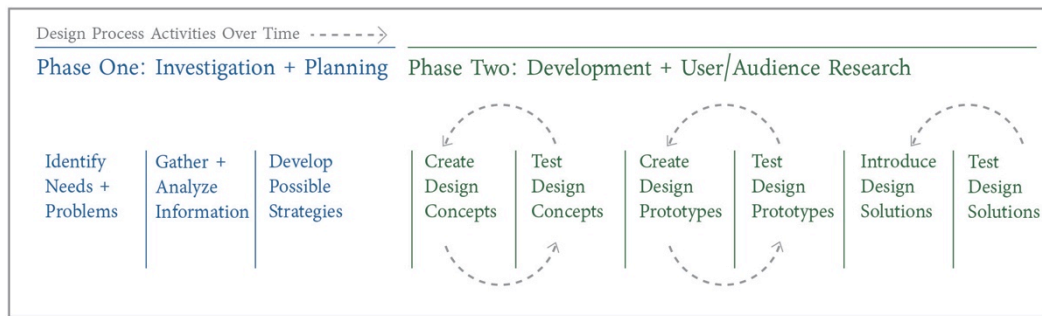


Table 1: Nini's model of design process (2006, p.118)

In this paper, I argue that there would be an alternative way to learn from this model to understand these creative activities in a design process, which can be linked clearly with problem solving. This diagram clarifies that the process of designing can be similar to research methodology. This is because it is the process of problem solving that includes gathering information, analyzing the data, testing and re-testing proposed design concepts and prototypes, and finally reflecting the whole process before generating the validated results. By adopting this model to graphic design process, it helps the designers not only to produce graphic design outcomes but also to explicate the design knowledge during their design practices. Thus, the outputs of a design project might include both graphic design artifacts and design knowledge, depending on the aim of the design project and the way in which the designers engage to their projects. To gain a deeper understanding how graphic design can be employed as a research methodology which is significantly different from qualitative and quantitative methodologies. The next section will discuss possibilities for graphic designers to conduct a design research through their own design practices.

Graphic design research in a practice-led paradigm

In a practice-led paradigm, it is important to explore how graphic designers conduct research through their design practices in order to investigate a role of graphic design process as a research methodology. Practice-led research is a new paradigm that connects theory and practice (Arnold 2012). It is non-traditional research that engages in knowledge through the different prisms and lenses of practitioners. Unlike other research approaches, practice-led research is an alternative approach that gives another perspective of design knowledge for design practitioner researchers. Rust, Mottram & Till (2007) state that practice-led research becomes more widely understood and established when design practitioner researchers step in to use this

paradigm. Archer (1995) explains that practitioners' activities undoubtedly contain tacit knowledge which emerges during practice. Similarly, Dilnot (1998) points out that design has its own research methodology to explicate this design knowledge. Therefore, this implicit knowledge needs to be accessed through a design methodology which allows designer researchers to reach and obtain the knowledge through the designers' views. The differentiation between design knowledge and knowledge in other fields becomes a key point when employing different research methodologies to obtain different kinds of knowledge. This also points to the position where graphic design process should be acknowledged in a research strategy.

Even though the graphic design process can be used as a research activity, not all design projects are research (Archer 1995). There are criteria for conducting research that can shift design projects to research projects. Dilnot (1998) suggests that the important issues are that the design knowledge from practice-led research needs to be transferable, applicable to other contexts and communicable. Although design research has emerged from practice and owns its specific methodology, it needs to provide knowledge that connects to other knowledge and allows academics to learn, use and gain benefit from it. This is a way design research can demonstrate its value for other academic disciplines. Similarly, Cross (2006) outlines five characteristics of good research conducted by design practitioners.



Figure 1: The five characteristics of good research

From these characteristics, it is important that the design research is conducted accurately, especially the methods that are employed. The data collection and evidence in design research need to be transparent and provable (Archer 1995). Interestingly, graphic designers who are undertaking their design projects might find

the provision of evidence is not required in their professional practice. They tend to make decisions based on what is appropriate for their clients and the project itself (Cross 2006) and this might lead to doubt in other academic fields in the research data and research results of such practice-led research.

It is possible for the designer researchers to use traditional data collection methods such as interviews and observations for their design research projects. However, there are alternative approaches available. According to Frayling (1993) and Downton (2003), there are three types of art and design research, which are research *into/about* design, research *for* design and research *through* design. These types can explain a system of research methods that designer researchers can use and they allow designers to make decisions on which design tools are suitable for their particular research projects. This includes a wide range of design skills such as drawing and sketching which are not only for data collection but also for data articulation and analysis in the 'designerly way' that Cross (2006) introduces. The design research suggested by Frayling and Downton guide designer researchers in reducing any doubts of validated methods in design methodology. In this context, it can be understood that the method for the use of graphic design research is not limited only to drawing or visualizing. According to Frayling and Downton, it is possible for the designer researchers to combine various types of methods in order to conduct the research through their practices, even if the researchers apply different methods to those traditional research methods in qualitative and quantitative research. Whether the designer researchers use traditional methods or design research methods, it is important to ensure that it is validated data and this leads to reliable outcomes.

From Cross's characteristics of good research to Frayling's and Downton's suggestions on research in art and design, they seem to strengthen design research in order to be accepted as a research strategy in practice-led paradigm. What graphic designer practitioners learn from these characteristics is that the practice-led research project is not always the same as the professional design process. The research project is the design process of inquiry and is systematically, provably and acceptably conducted. It is also conducted with critical reflection and articulation from which the designer researchers can gain a deeper understanding of the issue that they investigate. This is the design process that contributes to new knowledge through the practice of graphic designer researchers (Schon 1991). This addresses graphic design research as part of a practice-led paradigm which is a different

position from the visual research that most researchers have recognized. However, a question remains as to what actually differentiates graphic design research and visual research in terms of visuals and the making of visuals. The next section will discuss this issue to clarify the boundary between these two approaches of research methodology.

Graphic design research versus visual research

As aimed in this paper to understand how graphic design can be a research methodology, this section distinguishes graphic design research from other types of research, using visuals and visualization. Graphic design works are used in both quantitative and qualitative research. Researchers from a wide range of academic disciplines use graphs, charts, symbols, diagrams and photographs, all of which could be called 'visuals' or 'graphic design'. The question that should be addressed is whether the graphic designs that are used to support research that has been undertaken, can also be called research in and of themselves. As a practitioner, I argue that graphic designer researchers are standing in a different position from those in other disciplines who are using graphic designs. Research conducted into the use of visuals in a research study mostly uses traditional methods such as visual analysis for which artistic skills are not required. The focus is clearly on the product. This type of research might be viewed as similar to graphic design research but there are key differences. This is because only the graphic design product itself, the visuals, are used and not the design process which is the link to the designer practice.

To make a clear distinction between them, first, it is essential to understand what visual research is. The notion of visual research can refer to methods using visual materials and visualization. One of the common approaches that has been growing in sociology and anthropology is researching visual materials (Rose 2007). This is a way that scholars such as Elizabeth Edwards (2001), James Faris (2003) and Alison Griffiths (2013) investigate colonial and postcolonial social relations from visuals. Some academics explain this approach as a manner of visual research methods (Hamilton 2006; Margolis & Pauwels 2011; Miller & Brewer 2003) which is used in various types of research such as a study of social change by using visual documentation by Jon H. Rieger (2011) and a study of graphic design movements influenced by cultures and society from ancient to modern periods by Phillip B. Meggs (2012). In this approach, the role of the visual or graphic is significant evidence that the researchers can trace back to history, culture or activities of a

particular group. This approach allows researchers to consider visual data in the studies of society and culture (Pauwels 2011). Rose (2007) agrees that researching visual material is to investigate stories about humans as visuals and therefore as a part of social life. This research approach can use the data beyond recorded historical visual evidence or archives. It also allows the researchers to record visuals as documentation for their data collection from fieldwork studies. Later, the role of the researcher is to analyze the visual data in order to reach research findings.

Alternatively, visual research seems to be understood as visualization which can be used in various academic disciplines. The function of visualization is mainly to 'represent and interpret complex information, particularly text, at the intersection of knowledge, art, and cultural heritage' (Dzemyda, Kurasova & Žilinskas 2013, p. v). This indicates that visualization can be used as a method in various types of research to display qualitative and quantitative data. The means of visualization is communication, and images can be story telling (Tufte 1997). Tufte (2001, 2006) highlights that visualization is a very effective and powerful method to communicate information beautifully even though it may be presenting statistical or numerical data. By comparison, many scientists and computer engineers use visualization as an analysis process rather than communication. Schroeder and Martin (2011) explain visualization in a different way. They define visualization in scientific terms as the use of computer software to generate data into visual forms. Similarly, social scientists also use visualization as an analysis tool. This can be often seen in graphs, charts, tables and diagrams to display data and information. The researchers do not need to have artistic skills to create these graphic works as there are a large number of software programs available for data visualization such as Tableau Public, Google Charts and Stat Planet. These examples provide another understanding about visualization which is not what graphic designers might have imagined. However, this leads to the question of how visualization in other fields is different from graphic design research. In fact, graphic designer researchers also use visualization for articulation, analysis and communication. To indicate this difference, it needs to refer back to the notion of graphic design. It cannot be denied that visualization is typically another form of usage in graphic design products, and it is not the application of the graphic design process.

It is important to link back to the graphic design process as the key to distinguishing between graphic design research and visual research, and to examine more closely where the knowledge emerges from. I have already established that graphic design

research allows the designer researchers to obtain the knowledge from their practice in various ways. The knowledge can be derived from a series of creative activities that the designer researchers plan for their design research projects. In contrast, visualization is not limited to explicating the knowledge per se, and the role of visualization can be a method of data display or data generation in some parts of research. The diagram (Figure 2) shows where the knowledge can be obtained as well as where visuals can be used.

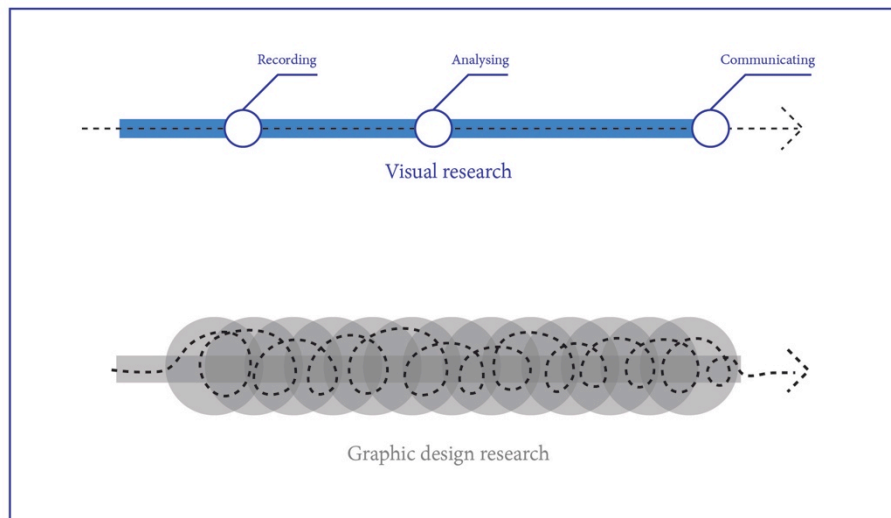


Figure 2: The comparison between graphic design research and visualization

As can be seen from this diagram (Figure 2), the knowledge from graphic design research comes from the whole design process where visualization is a part of. There is no separate section of visualization because every visual/visualization created in the research project is a part of the process to explore the research question. The methods of graphic design research are not limited to drawing or making a graphic work. According to Cross (2006), there are 'designerly ways of knowing' which can imply that designers have their own ways of obtaining knowledge from their practices. Similar to Cross, Schon (1991) adds that reflective activities on the designer's own ways can lead to explication of the tacit design knowledge. As discussed already, graphic design research can incorporate a wide range of methods, such as observations, surveys or interviews, and designer researchers determines how these methods are a part of the design research project.

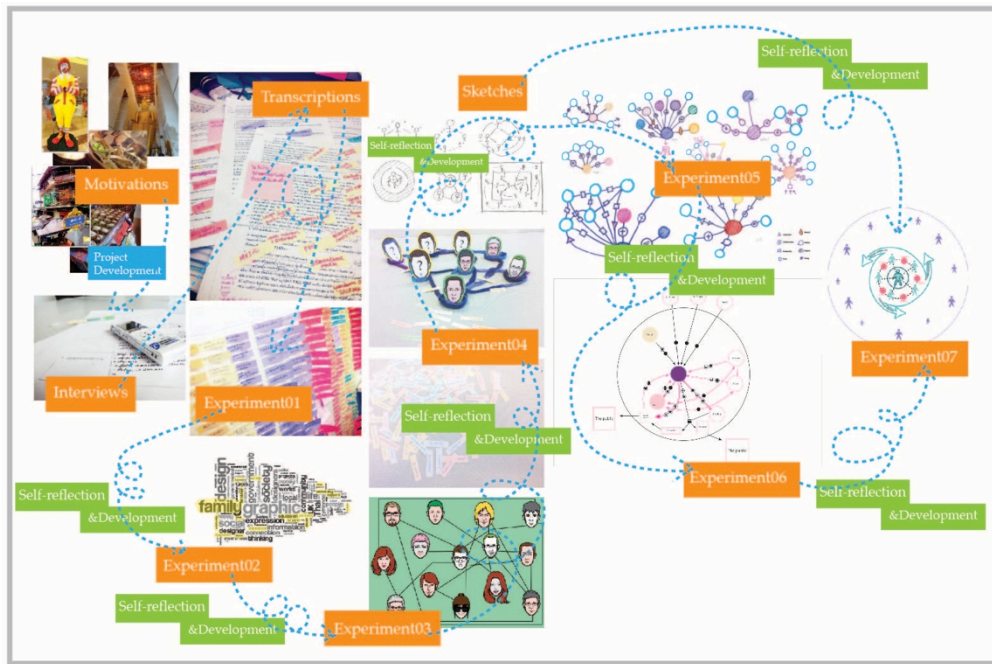


Figure 3: An example of graphic design research for investigating the network of practice in Thai graphic design

During conducting graphic design research, the designer researchers might produce numerous visuals and reflect on them in order to articulate and develop an understanding of the data until they reach the research outcomes. Every step of these creative activities in the research project demonstrates that the whole process cannot be separated into elements (Figure 3). The example of graphic design research presented in Figure 3 shows that through the complex design process the designer researcher needs visualization along with reflection and prototyping as practice-led research. In comparison, the use of visuals in visual research can be a separate section of the research methodology and each visual has an individual function such as recording, analyzing and communicating. From this perspective, graphic design products employed in visual research are not the process of problem solving but they are visual representations. Thus, this would have clearly identified a fine line that differentiates between graphic design research and other types of research relevant to visuals and visualization. In graphic design research, the graphic designer researchers would, therefore, be able to obtain design knowledge through their design processes and their practices.

Concluding remarks

There are many possibilities to employ graphic design in research. It can be seen that the application of graphic forms in much research may look similar; however, this paper has demonstrated how graphic design research differs from other visual methodologies. The main differentiation between these types of research is to understand two main components of graphic design, products and process, which are equally important. In addition, the pattern of graphic design process in professional practice can be recognized as problem solving, which is comparable to research process and designerly way of researching. In other words, the graphic design process is to help the designer researchers to discover knowledge embedded in their practices. To reiterate, this paper has offered a new perspective of using graphic design as a research methodology which is particularly for research in graphic design. This also opens up a new opportunity for graphic designers to conduct design research through their own practices. Even if graphic design is accepted as a research tool, it remains explorable. Further investigations can be pursued by exploring what can be research methods for this methodology and possibilities of using graphic design in various types of design research under a practice-led paradigm.

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