EXECUTIVE SUMMARY

Purpose of the report

The purposes of this report are to (1) discuss the opinions of Horst W.J. Rittel and Nigel Cross with respect to design reasoning and design thinking and (2) to compare and contrast the two methodologies employed by the authors.

In his article, The Reasoning of Designers, Rittel does not hesitate to stress that design is not a monopoly of those who call themselves “designers”. He even insists that characteristic commonalities among designers distinguish design from other forms of surviving the hurdles. Cross, however, focuses on the fact that design is exclusive to humans, and how humans design. “Research in design thinking” is concerned with how it is that people do design.

The Reasoning of Designers

Within the last few years a much stronger emphasis and a strong wave of interest has been placed on imperative activity of design. Perhaps, the rush is due to prevalent frustration associated with the activity of design and necessarily just to satisfy the intellectual curiosity.

In general terms, design by definition has a wide range. It could vary from designing electronic circuits to Sunday’s dinner design. As stated earlier, design is not a monopoly of those who called themselves “designers”. Everybody designs something; nobody designs always. There are such characteristic commonalities which isolates design from other forms of dealing with difficulties. Intending to intervene into the expected course of events by premeditated action, avoiding mistakes through ignorance and having the luxury of thinking before acting are among the commonalities that are mentioned. After all, design takes place in the world of imagination, where one invents and manipulates ideas and concepts instead of the real thing. And of course, not far from the world of imagination resides the designer’s fear! The fear of the plan not accomplishing
what was initially intended for, or when the execution of the plan causes undesirable effects.

With regards to design as argumentation, the main concern would be the issue of reasoning or logic. Could one apply reasoning or informal logic to design? The designer’s reasoning is much more disorderly. That is not due to sloppiness, but rather to the character of design. Stated differently; the ‘constantly-evolving” nature of design does not allow for reasoning or informal logic. Often the designer’s reasoning is similar to a process of argumentation. The designer might ponder with himself/herself or others, discusses pros and cons, and finally makes up his/her mind towards a position.

There are three tasks that are essential to science of design:

1) To further develop the theories of design, to learn more about the reasoning of the designers.
2) What the effect of the plans are in comparison with what the designer initially intended.
3) The design should actually support designers in their work.

Research in design thinking
While machines and animals do not possess the ability of designing, humans are the only form of intelligence that can design. The natural ability of designing is part of human population which might have been passed on through some genetics inheritance or through social and educational development.

A number of different research methods have been applied to ‘design thinking’. Here is an abstract of the research methods applied:

1) Interviews with designers, which are renowned for their well-developed design skills.
2) Observation and case studies with a specific focus on one particular design project at one time.
3 Protocol studies, typically applies to artificial projects due to stringent requirement for protocol recording.
4 Controlled tests; where subjects are required to perform a specialized task.
5 Simulation trials; which challenges the machines with artificial intelligent to imitate human thinking.
6 Reflection and theorizing which involves the theoretical analysis and reflection upon the nature of design is thinking.

While the quantity of research in this field is not vast and the patterns may not be confirmed by repeating the methods, there may still be enough evidences to draw up a conclusion. The author interprets the patterns in three main areas:

Problem formulation

Solution Generation

Cognitive strategies