Chapter 8
Creative and Visualization Tools in Context of Design

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ABSTRACT
The chapter in the broader sense will look in the area of creativity, creative process, and creative product. Specifically we shall look at the aspects of a creative product, discuss on thought process of the designers with focus on creative and visualization tools. Creative tools will be looked in context of changing mindset or assumptions, redefining problems, developing ideational fluency and bringing flexibility in thinking. Visualization tools such as sketches, storyboards, rough models, developing scenarios for the usage of proposed concepts etc will be discussed in parallel to creative tools + serving as aids to externalize thought processes. Creative and visualization tools complement each other in enhancing the designer’s creativity as well as help them come out of the stuckness feeling that they encounter while addressing design problems. Practicing the tools rather than being aware of them is important and the chapter will demonstrate the application of these tools with examples.

BROAD OVERVIEW OF CREATIVITY
The dictionary meaning of creativity is the “ability to create”. In the words of de Bono (1992) who popularized lateral thinking “Being creative means to bring into being something that was not there before”. Lubart (1997) views “Creativity as the production of original (novel), socially valued (appropriate) works resonated by Jones & Murray (2003) as “A creative idea is generally considered to possess two main qualities: appropriateness and originality”. Csikszentmihalyi (1996) defined creativity as the production of an idea, action or object that is new and valued, although what is considered creative at any point depends on the cultural context.

There are two aspects interpreted from the above statements:

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• of novelty/newness/originality and socially valued/appropriateness in something hinting about the quality of an idea or product to qualify as creative idea/product and it also hints that a creative idea/product being new means bringing change.
• words ability and being creative refer to the ability of an individual and we will refer to this as creative thinking.

Howard-Jones & Murray (2003) in view of the main qualities of a creative idea such as appropriateness and originality state that creative problem solving will involve less focused generational process, allowing access to remotely associated concepts (originality) and more focused analytical processes (appropriateness). Based on Freud’s (1949) proposal of two modes of thinking primary process and secondary process, they further state that in primary process thinking is more concerned with defocused, more freely associative thinking whereas secondary process is concerned with conscious, focused and logical analysis. The generational thinking mode is referred to as divergent and the analytical as convergent.

Although both divergent and convergent thinking abilities are needed for creative thinking, divergent thinking mode is regarded as a key aspect of a person’s creative thinking ability. Guilford (1950) regarded divergent thinking as an ability to generate multiple alternative solutions to a given problem. Divergent thinking is a key capacity underlying creative thought. To add to Guilford’s views several others such as Christensen & Guilford (1958), Wallach (1970), Torrance (1974), Pellegrini (1984) have regarded ideational productivity, as a key sign of a person’s overall creative ability. McKim (1980) regarded fluency and flexibility as two important attributes of ideational productivity. He further states that fluent ideation is demonstrated by a thinker who generates many ideas; fluency being measured in terms of quantity and not quality. Flexible ideation is exhibited by a thinker who expresses diverse ideas, the measure in this case being variety. An example to demonstrate this concept is, looking at the task of generating alternative uses for a newspaper. The various uses stated are ‘shade from the sun’, ‘clean a dirty surface’, ‘cover food items’, ‘shelter from rain’, ‘serve eatables’, ‘holding nuts’, ‘as a fan’, ‘hit a fly’, ‘hit someone’, ‘pretend reading to avoid someone’, ‘pack items’, ‘use as light fixture’ etc. Uses such as cover food items or a lighting fixture, holding nuts, provide shelter from rain/sun shade belong to the same functional set (covering) and are regarded as less diverse when compared with one another. Such a set of ideas are rated low in terms of flexible ideation or diversity.

Boden (1998) viewing creative idea from the perspective of an individual and history states “A creative idea or product may be novel for an individual, referred as P-creativity (P for Psychological). This creative idea when found to be novel historically (unique and produced for the first time by anybody) is called H-creativity (H for Historical)”. In the above example of alternative uses of a newspaper, an individual may feel excited that he/she has been able to list so many uses of newspaper getting the sense of P-creativity, but none of these uses are novel historically.

Sternberg (1999) has proposed several methods for measuring and developing creativity:

• The pragmatic approach, develops creativity with methods and tools like Edward de Bono’s Lateral Thinking, Osborne’s Brainstorming, Gordon’s Synectics etc
• The psychometric approach measures creativity by means of Guilford and Torrance Tests etc.
• The Cognitive approach concerns the mental representations and cognitive processes that are involved in a generative and exploratory phase using methods like retrieval, association, synthesis, transformation, analogical transfer etc.