Structured Creativity

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The test of first-rate intelligence is the ability to hold two opposing ideas in the mind at the same time and still retain the ability to function. One should, for example, be able to see that things are hopeless yet be determined to make them otherwise. F. Scott Fitzgerald, The Crack-Up, 1945

Roger Martin starts his book the Opposable Mind [ref 1] with the above quote and I think it raises the question of how can we address this in a structured way. First we need to consider the definition of creativity and innovation. Ackoff positioned innovation as the adoption of an approach that someone else has previously used and where the innovator is aware of this while creativity is to production of an idea that someone else may have used before but where the current creator is unaware of this [ref 2]. The former is necessary to maintain competitive positioning with ones competitors while the later is needed to provide true differentiation and competitive advantage.

TRIZ was developed during the cold war period by Genrich Altshuller and his colleagues in Russia and is a systemic approach to inventiveness. It is based on analysis and classification of thousands of patents. The approach works by categorisation of specific problems based on a set of principles. For each of these categories there are a set of typical solutions. These solutions are then mapped to create a specific solution for the problem. This why approaches such as TRIZ [ref 3], while allowing you to be innovative, are not necessarily going to lead to competitive advantage as they look to adapt existing solutions. They will keep your head above water but you in reality treading water.

The definition given above come from Ackoff's approach to problem solving. He maintained that there were four approaches to problems – absolution, resolution, solution or dissolving. In absolution the problem is ignored hoping that it will go away. Resolution is about applying an approach that has worked in the past while solution is undertaking analysis and determining an approach that will eliminate the problem. The final one is where the problem is address through changing the system. While the first ignores the problem, resolution and solution tend to lead to innovation but only the later leads to creativity.

Roger Martin in his book on design thinking [ref 4] refers to the concept of the opposable mind in which the paradox is held between the left and right half of the brain that leads to break through solution. This is what Charles Peirce referred to as abductive logic [ref 5], where you are not going from the general to specific (deductive) or specific to the general (inductive) but making a leap of imagination or a guess. By keeping both aspects of the a problem in mind such as you want a portable design but it you must be able to type on it comes design breaks troughs.

Ackoff maintained that creativity comes from suspending assumptions and that the there is a structured approach -

- Identify an assumption that limits the possible number of alternative choices
- Deny the assumption

- Explore the consequences of the denial

An example is Dyson who created a digital motor that allowed them to build a small vacuum cleaner and enter the Japanese market [ref 6]. The small motor also allowed them to build and enter the hand dryer market with an innovative solution. The speed of the motor, 104,000 RPM compared with 35,000 for a conventional motor, allowed the air to circulate fast enough to dry hands without the need to heat the air. In the development of the hand dryer they also found that the air stream drawn air in from the surrounding environment. This in turn led to the development of the air blade bladeless fans.

Creativity came from addressing the paradox - need to have a small, light, faster and longer lasting motor versus the constraints of existing motors. Addressing the assumptions led to development of a new technology. The rest flowed from there and where exploitation of the resultant technology.

How is that keeping these paradoxes or opposing desires in mind lead to break thoughts? This is explored in Jamshid Gharajedaghi's article on dichotomy or dialectic [ref 7]. The essential idea is to try to align the conflicts to a higher level objective and move from a zero sum *or* to a *and* where both desired positions can be met. This is exactly what the Theory of Constraints Evaporating Clouds supports doing in a structured way [refs 8 & 9]. Evaporating Clouds are one of the thinking processes that is used to find break through solutions.

An evaporating clouds is drawn as five interconnected boxes along the following lines. The two conflicting desires are placed in the D and D' boxes. The A box should contain the higher level objective that is desired and the B and C contain the requirements (needs that must be satisfied) that are related to each side of the conflict. The process then looks at the underlying assumption associated with the conflicting positions, the paradox in Martin's language. If one of these assumptions can proved to be invalid then the conflict is resolved and the cloud evaporated.
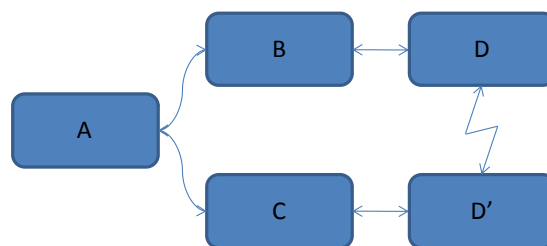
An example based one Roger Martin relates about the breakthrough that lead to the creation of the ubiquitous blackberry will demonstrate the approach. The intention was to create a portable email device but to do this there was a need for the device to have a full qwerty keyboard that would allow people to type emails. In addition the device had to be small enough to fit in a jacket pocket otherwise it would not be considered a truly portable device. The objective, conflict and the needs are shown below. The breakthrough came from realising that not all your fingers are needed for typing. If your thumbs are used, as with texting, the size of the keyboard could be shrunk but still support a full qwerty keyboard layout.
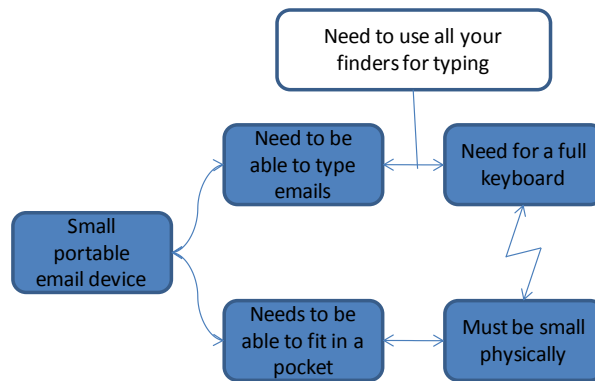
This approach supports true creativity versus the innovation of traditional approaches such as TRIZ. As such this technique should creating solutions that truly improve the competitive positions of companies. I hope it also demonstrates that it is possible to hold to opposing ideas in your mind and to make them otherwise.

References

1. The Opposable Mind: How Successful Leaders Win Through Integrative Thinking. Roger L. Martin, 2007
2. Differences That Make a Difference: An annotated glossary of distinctions important in management. Russell L. Ackoff, 2010
3. Breakthrough Innovation in Conflict Resolution, Marrying TRIZ and the Thinking Process. Ellen Domb and H. William Dettmer, http://www.goalsys.com/books/documents/TRIZPaper.pdf
4. Design of Business: Why Design Thinking is the Next Competitive Advantage. Roger L. Martin, 2009
5. Abductive Reasoning, http://en.wikipedia.org/wiki/Abductive_reasoning
6. EXCLUSIVE: Dyson Digital Motor UK Press Launch, http://dustfluffgrit.blogspot.com/2009/06/exclusive-dyson-digital-motor-uk-press.html
7. Dichotomy or Dialectic, Jamshid Gharajedaghi - http://www.interactdesign.com/dyn.html
8. Thinking Smart: Applying the Theory of Constraints in Development Thinking Skills, Khaw Choon, 2005
9. Clouds and Silver Linings, Kelvyn Youngman - http://www.dbrmfg.co.nz/Thinking%20Process%20Cloud.htm