

Creativity in Product Innovation

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Cambridge University Press, 2002

224 + xiii Pages ISBN: 0521002494 \$29.00

If product/process innovation is dependent on our ability to think creatively, to see our world differently, to tear that world down only to reassemble it in a unique and better way, then Goldenberg and Mazursky present an innovative process for product ideation in their book, Creativity in Product Innovation. Instead of reviewing and rehashing the traditional market research oriented methods of innovation, starting with consumer complaints, product flaws, and gap analysis, etcetera, Goldenburg and Mazursky suggest that we start by examining the product attributes through the lens of four creativity templates. These templates, they claim, can serve as a master or pattern from which most successful new product ideas can be drawn. Therefore, in lieu of developing new products to meet the articulated needs of the consumer, the authors suggest innovators think of these creativity templates first and then create and refine products to satisfy the future needs predicted by these templates.

To clarify this claim, we first turn to the S-Curve in diffusion-of-innovation theory and then to Darwin's theory of evolution. Based on the S-curve, the authors propose that market research conducted during the early stages of diffusion is unlikely to discover surprising ideas because knowledgeable respondents are rare. Even if we are lucky enough to sample these rare

informants, they would probably be cast aside as outliers. Furthermore, the duration of the middle portion of the S-curve is short and marked by rapid change; therefore, traditional market research is also doomed because it simply lags too far behind the rapidly changing market. Finally, as diffusion reaches saturation, all competitors will have equal access to information, so the extracted market information will not be innovative or surprising.

An analogy of Darwin's theory of evolution and natural selection is the idea that products can be thought to evolve in response to environmental pressures in the form of market needs, desires, and competitive actions. In a process resembling the survival of the fittest, products that fail to meet market needs die and disappear while those with a superior market fit survive and thrive until the next major market shift. Therefore, over time the products themselves become encoded with the market knowledge of past success, which is captured in a quasi-knowledge base of product attributes.

Goldenburg and Mazursky's creativity templates are well-defined operations that manipulate the knowledge base encoded in the product attributes to discover innovative new products. The first step of the process is to identify the internal and external determinate attributes. Then, you manipulate those attributes according to the four Creativity Templates following a systematic search pattern suggested by the forecasting matrix (discussed below).

A confusing idea at first, it is best explained using an example from the book. To illustrate their first Template, Attribute Dependency, Goldenburg and Mazursky use a lighthouse, built upon the orders of the king, that must be able to

last for many years—and there can be no recognition for architect in the structure. The architect, of course, feels that he deserves to be recognized for his work, but also recognizes that it is most important that the light house testify to his greatness after both he and the king have died. The architect's solution is to build the lighthouse so that his name is revealed as the top layer of stone erodes over time. The innovative solution of the architect is created by forcing a dependency between two attributes, time and recognition, where typically there is none. The authors have identified four such templates and one matrix to guide the search through each Template, which are summaries here with examples.

1. The Attribute Dependency Template: As discussed above, this Template seeks to make a functional dependency between two independent variable attributes. The imposed interaction is providing a creative solution to a design challenge or a creative new product. Examples: The color of ink on a coffee cup could be made dependent on the temperature of the cup, thereby revealing hidden message or a warning message. The strength of an antenna mast or telephone pole could be made dependent amount of ice that accumulates on it, thereby adding strength at the time it is most needed.
2. The Replacement Template: In the Replacement Template, one of the essential components of a product is removed and another component from the near environment is used to perform the function that the removed component previously performed. Note that the component is replace but the function remains and is performed by another

component. Examples: replacement of the antenna with the headphone cord on a Walkman™ or the replacement of a floppy drive with a writable CD drive.

3. The Displacement Template: The Displacement Template refers to the removal of an intrinsic component, including its function, in a way that causes a qualitative functional change in the product. In contrast to the Replacement Template a component is removed as well as the function it performs, creating a new product, often for a new market. Examples: the removal of the dial-out feature on cell phones or the removal of the floppy and CD drives to make ultra-light PCs.
4. The Component Control Template: The Component Control template is characterized by identifying and creating a new connection between a component internal (within the control of the manufacturer) to the product and a component that is external (not within the control of the manufacture). The term control is used because most of the time this new link is used to exercise control over the external component, thus, delivering an additional benefit. Examples: the addition of whiteners in toothpaste or the addition of skin moisturizers in suntan lotion.
5. The Forecasting Matrix: The forecasting matrix is a two dimensional matrix which provides a framework for the systematic application of templates. The columns of the matrix are labeled with the important internal attributes and the rows are labeled with the internal and external attributes. The cell of the matrix is populated with a number 1

if there is a dependency between the attributes represented by the row and column and a zero if there is no dependency. The search for new idea begins with a systematic investigation of all of the zeros in the matrix and then by asking the question, “what if there was a dependency between these attributes?”

Although each of the templates appears to be distinct, even the text admits that these concepts overlap on occasion and can be interpreted differently depending on varying points of view. The authors dedicate a chapter to the development and clarification of the four Templates and the matrix, which is followed by a section dedicated to application of the Creative Templates in advertising.

In addition to Goldenberg and Mazursky’s contribution of the Creativity Templates, they also provide a critical review of traditional ideation techniques. Brainstorming receives the bulk of the criticism, with a laundry list of potential problems cited as reasons to rethink brainstorming in today’s corporate culture (47-48). Lateral thinking, mind mapping, and random stimulation are also scrutinized. Fortunately, since we need a full creativity toolbox, most of their criticisms confuse bad facilitation and poor implementation of a creative technique with an inherently low yield technique. The merits of the Creative Templates are fully justified in the text without their contrast to other creativity processes. Therefore, save a little time and skip chapter three, unless you need a review of the pitfall of poor implementation.

Although the Creative Template approach is unique and creative, we can only speculate on the actual results produced by such a technique when facing the complexities of the real world. In a simple exercise, three people can easily brainstorm well over 75 attributes for a simple product such as a bread-maker or electric can-opener. All these attributes were determined and encoded into the product overtime by a process of natural selection. Is this knowledge base too large to manipulate using creative templates? If we trim the list to a manageable set, do we neuter the technique so that it is no longer able to bear creative ideas? We do not know the answer to these questions, but we look forward to trying.

Creativity in Product Innovation is thoroughly researched, with portions appearing in the Journal of Marketing Research [1], Marketing Science [2] and Science [3]. Each chapter has a rich reference section citing the major works for those that wish to dig deeper. Part IV of the book is titled “Validation of the Templates theory” and presents a stylized version of the hypotheses, methods statistical results, etc. which were originally published in [1, 4]. We believe Creativity Templates represents a significant new tool for those seeking to bring innovative products to market, and Creativity in Product Innovation represents the seminal text on the subject.

Reference:

1. Goldenberg, J., D. Mazursky, and S. Solomon, *Toward identifying the inventive templates of new products: A channeled ideation approach*. Journal of Marketing Research, 1999. **36**(2): p. 200-210.

2. Goldenberg, J., D. Mazursky, and S. Solomon, *The fundamental templates of quality ads*, in *Marketing Science*. 1999. p. 333-351.
3. Goldenberg, J., D. Mazursky, and S. Solomon, *Creative sparks*, in *Science*. 1999. p. 1495-1496.
4. Goldenberg, J., D.R. Lehmann, and D. Mazursky, *The idea itself and the circumstances of its emergence as predictors of new product success*, in *Management Science*. 2001. p. 69-84.

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