



# Tacit meaning in disguise: Hidden metaphors in new product development and market making

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**Abstract** This article explores the role of metaphor in product development processes and market making. Based on a sociocognitive perspective of innovation dynamics and required learning by market actors, the potential of metaphors for mental model development during new product development (NPD) processes is investigated. Three roles for metaphors as cognitive focusing devices for the co-evolution of producers' and consumers' mental models are inferred: mental model communication, mental model matching, and mental model creation. These roles are illustrated by examples that reinforce the need for creativity in applying metaphors as cognitive focusing devices in NPD and market making.

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## 1. A sociocognitive view of market evolution

Is there a business concept that can be more easily defined than 'market'? Hardly. A market represents a geographical space enabling the transfer of products between producers and buyers. In economic terms, cross-price elasticity is applied as a test for defining the relevant market. Accordingly, the *market-based view* of strategy advises corporations to enter attractive markets, achieve attractive positioning, and then exploit their positioning

by weakening cross-price elasticities (Bain, 1968; Porter, 1980, 1985). The underlying rational choice model of market transactions may be valid for mature markets; however, things are not so clear-cut regarding emerging markets. Deterministic market definitions fail when fundamental uncertainty forecloses individuals to optimize utility along established and stable preference functions, since they do not know what to optimize in the first place. This uncertainty imposes the need for interaction, discussion, and collective sense making.

The *sociocognitive perspective* describes the mutually dependent formation of producers' and consumers' mental models during market evolution. Here, markets are not given but socially constructed. In the beginning of the formation of a market, producers may not know what products they should develop, while customers may not

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know what they can use these products for. This holds because there are no entrenched mental models regarding what new products are all about. Thus, functional details and design aspects may change frequently, addressing fast-moving and heterogeneous customer preferences until a dominant design finally emerges (Utterback, 1994).

This process of market evolution requires continual and mutual consumer and producer learning. Besides producers' traditional conduct of research and development (learning by searching, as well as learning by unlearning). Durand (1993) describes three complementary forms of learning: producers' 'learning by doing,' consumers' 'learning by using,' and 'learning by interacting' as continuous feedback between producers and users. In sum, markets co-evolve with the sharing of product knowledge among market actors. Market narratives circulating between different market actors (e.g., manufacturers, customers, standard setting bodies, advertising agencies) act as catalysts for, as well as artifacts of, market evolution (Molotch, 2003). They are primary vehicles for the emergence of new, stable, and shared interpretations of product categories during processes of collective sense making (Rosa & Spanjol, 2005). Stories help market actors determine the value of new products, understand how to sell or use them, and understand how to position them relative to other products. Because of their potential to link disparate knowledge domains together, we posit that metaphors can be powerful cognitive focusing devices for market stories; metaphor acts as a device in a real or imagined discourse, shaping the mental structures of both producers and consumers.

In this article, we explore the role of metaphor in NPD, as explained by the sociocognitive perspective of market dynamics and required learning by market actors. We first portray how metaphors can bring life to mental models. Building on both the sociocognitive view and the description of how metaphor works, we then infer three roles of metaphor during NPD and market making.

## 2. Understanding (by) metaphors: How metaphor brings life to mental models

Traditionally, the study of metaphors belongs within the disciplines of linguistics, rhetoric, literature, cognitive psychology, and philosophy. Metaphors, however, are far more than just linguistic tools; they are the outcome of a cognitive process in which the literal meaning of a phrase or word is

applied to a new context in a figurative sense. Metaphor is pervasive in everyday life: in language, in thought, and in action (Grant & Oswick, 1996; Lackoff & Johnson, 1980).

The essence of metaphor is understanding and experiencing one kind of thing in terms of another (Coyne, 1995). Metaphors link two knowledge domains by performing a transaction between them; to speak metaphorically is to relate two entities or terms through the verb "to be" or the copula "is" (e.g., "the organization is a machine"). Further, there is ongoing discussion regarding how metaphors alter mental representations, i.e., cognitive maps of individuals (Cornelissen, 2005).

The *comparison view* holds that, during the cognitive processing of a metaphorical statement, certain and often preselected aspects of the source domain (i.e., the secondary subject) are mapped one-sided onto a target knowledge domain (i.e., the primary subject). By relating a secondary subject to a primary subject through metaphor, multiple comparisons may be made, differences may be noted, and paradoxes may be discovered. Metaphorically, crafting a metaphor is building an overarching mental bridge between two subject domains. By applying analogical reasoning, the metaphor can be explored, resulting in a cognitively enriched target domain (Tsoukas, 1991).

Inspired by the philosophical writings of Richards (1936) and Black (1962, 1977), the *interactionist view* stresses that *both* domains acquire new meaning as a result of a metaphorical process. The meaning of the primary subject changes, but the meaning of the secondary subject (i.e., the source) often changes, too. As Coyne (1995, p. 260) noted, "...some terms of a source domain appear to have greater currency in the new context. How often do we use the term 'desktop' other than as a descriptor for a computer screen?" Thus, the terms interact to give new meaning to both concepts. The metaphorical projection creates a new conceptual domain called the 'ground' or a 'blend'; therefore, interaction is also referred to as 'conceptual integration,' or 'blending.' As explained by Fauconnier and Turner (1998, p. 133), "In blending, structure from input mental spaces is projected to a separate, 'blended' mental space. The projection is selective. Through completion and elaboration, the blend develops structure not provided by the inputs." In interaction, only a few properties of the metaphor's two domains interact with one another; as such, there is a process at work that melds only select attributes of the map domain, while others are omitted. This process is mainly guided by the context in which a metaphorical utterance is made: "To understand meta-

phor is always to interpret it, and there are different interpretations according to context” (Coyne, 1995, p. 259). Thus, according to the interactionist view, metaphors alter the content of the mental models employed in the metaphorical process because of the emergence of a whole new conceptual domain, the ‘blend.’ In this context, metaphors are an “invitation to see the world anew” (Barret & Cooper- rider, 1990, p. 222).

### 3. Market evolution and the triple role of metaphors in NPD

Consumer and producer understanding of products and technologies is organized in “mental models” (Durand, 1993, p. 165), including meaning representations “such as attitudes, emotions and feelings, symbols, actions, goals, personal values, images, memories of past consumption events, consumption visions of anticipated experiences, and representations of sensory experience such as touch, taste, and smell” (Christensen & Olson, 2002, p. 478).

Metaphors have the power to trigger perceptual shifts in our understanding of a given knowledge domain; further, they enable the succinct transmission of a large amount of information simultaneously at a cognitive, behavioral, and emotional level. Moreover, metaphors are most powerful when they strongly evoke sensory and perceptual imagery; i.e., when they render vague and abstract ideas concrete, providing vivid images that are easily remembered.

As such, it does not come as a surprise that metaphors have been previously introduced in the marketing discourse as superior instruments for eliciting customer preferences for already existing products, and for enhancing the cognitive ‘aptness’ of marketing campaigns with respect to customers’ mental representations of products (Zaltman, 1997; Zaltman & Coulter, 1995). Unfortunately, by applying metaphor only for eliciting given preferences, the *constructive* potential of metaphors remains untapped. Furthermore, the current focus on metaphor’s role in NPD is restricted to late stages of the development process. We postulate that metaphors promise great potential for enabling and studying preference *formation* under uncertainty, and posit that metaphor can serve multiple, yet unexplored, roles in NPD and market making.

Depending on the degree of newness of markets (i.e., product categories), metaphors may serve different roles for the emergence of shared product knowledge (i.e., interdependent dynamics be-

tween both consumer and producer mental models). We infer three roles for metaphors as cognitive focusing devices for the evolution of producers’ and consumers’ mental models. Fig. 1 maps the three roles of metaphor within a space generated by the necessity for change in either consumers’ or producers’ mental models.

#### 3.1. Role 1: Mental model communication

Metaphors are used as communication tools to convey meaning in external marketing campaigns. This role is most appropriate when preferences for products, and market narratives about products and product categories, are already well established. By enabling a metaphoric transfer between previously unjuxtaposed knowledge domains, manufacturers can create new meanings in terms of features and benefits of other established products. A favorable new meaning can facilitate more successful positioning of the product (Zaltman, 1997); this is the role of metaphors most readily understood by marketing practitioners. Concerning NPD processes, it is applied during the later stages of the process (i.e., the commercialization of a new product).

#### 3.2. Role 2: Mental model matching

Metaphors are used as a shaping device to overcome producers’ internally entrenched perspectives or inertia as they seek to elicit and match (and possibly influence) already largely formed mental models of consumers. According to Leonard-Barton (1995), this function is targeted at omitting the ‘NIH’ (not invented here) syndrome or ‘core rigid-

Overview of three roles of metaphors in product development

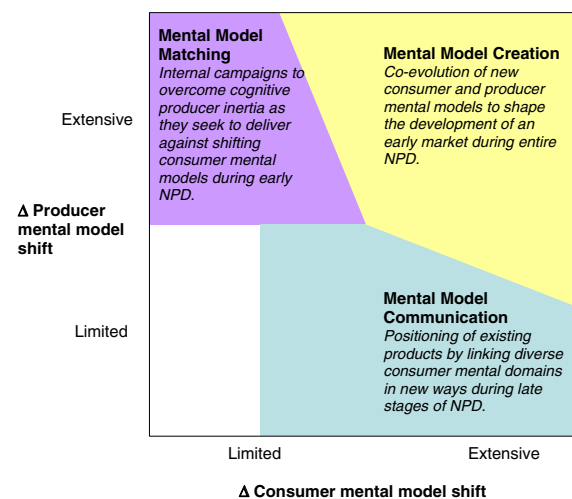


Figure 1 Overview of three roles of metaphors in product development.

ities'; i.e., entrenched belief systems based on excessive success with existing products marketed to an existing and well known customer base (Christensen, 1997). In this role, metaphors act as a galvanizing force within organizations to break up entrenched producer mental maps that are no longer in line with changing consumer mental representations of products and their uses. In this way, they help shape the early trajectory of an NPD project, from product ideation through pre-production.

### 3.3. Role 3: Mental model creation

Metaphors are used as cognitive exploration devices in the creation of new mental models of a product category or an emerging market, serving as vehicles for mutual understanding during the interactive definition of a dominant design among producers and customers. From a producer's perspective, this role is relevant during the entire NPD process. In the early stages of an NPD process, metaphor may enable collective sense making among producers and consumers by juxtaposing known product concepts with not yet connected knowledge domains, something that can prove important for the range of product features. In late stages of NPD, mental model creation enhances the chance that a product will be chosen as, or be in line with, the dominant design in a product category.

Firms should strive to learn how to use metaphors under varying circumstances and for different purposes during NPD. This talent could be referred to as a dynamic capability (Teece, Pisano, & Shuen, 1997) or an organizational routine (Nelson & Winter, 1982). The following examples provide a vivid description of such contexts for the different purposes.

## 4. Role 1: Metaphors for mental model communication

*Positioning of existing products by linking diverse consumer mental domains in new ways during late stages of NPD.* This role describes the use of metaphors in late stages of the NPD process, once a product has been developed and the producer seeks to activate purchase desire among target consumers. The metaphor acts to aid communication in accordance to the product's intended unique selling proposition (USP). The use of metaphor seeks to reframe consumer mental models by linking consumer references in new or unexpected ways, irrespective of whether the product itself fits

directly into a known or existing product category. The example of Red Bull is used to illustrate this role.

### 4.1. Flying bulls

Launched in a handful of continental European countries in the late 1980s, Red Bull is currently marketed in 120 countries, with approximately 2 billion cans sold annually. The beverage commands between 40% and 80% of the energy drinks market, holds 47% of the US market, and is growing stateside at an annual clip of 40% (Dolan, 2005). Developed in Austria and with product origins in Asia, Red Bull largely created the energy drinks market through its hyper-caffeinated product with added taurine. In combination with guerilla marketing tactics, Red Bull set out to create a mythology surrounding the largely unknown ingredient taurine, linking it to bull semen and, hence, virility and power. Although the taurine/bull link has been publicly dispelled, Red Bull has discovered a more compelling brand communication tool: the metaphor of flight. In the words of the company, "A can of Red Bull is a flight enabling device."

Through employing the metaphor of flight, Red Bull highlights the emotional and physical highs the manufacturer wants associated with the product. The tagline "Red Bull gives you wings" is consistently applied to the brand's advertising and has been a rich focus for consumer dialogue across multiple media. In linguistic terms, it represents an analogy that could be articulated as "A Red Bull is to a person what wings are to a bird." The company's 'fly days' (*Flugtag*) promotions illustrate how far a well-chosen consumer metaphor can extend. These events, held in cities around the world, invite the public to demonstrate home-constructed 'flying machines' to an open audience, thus creating occasions that generate plenty of free publicity linking Red Bull to the flight theme and connecting the brand to a core target audience. Furthermore, recent years have seen the construction of a spectacular glass and steel 'brand temple' called Hangar 7 in Salzburg, designed to house a bar and restaurant complex containing a 'flying bulls' fleet of 15 classic show planes.

This example illustrates how products can be given greater salience and desirability by linking them, through a cognitive metaphorical process, to a relevant and pertinent consumer domain. It highlights not only the use of metaphor to position a product through a relevant and media-friendly metaphor, but also the importance of evolving a metaphor during a product's life cycle. While the bull semen link was highly distinctive to a minority

of early adopters, under greater public scrutiny associated with growing product sales, the brand needed to find a less literal USP that would both stand up to enquiry and protect it from product imitators. After 15 years, the flight metaphor continues to help the brand reach new market heights, through ever-more inventive application.

In order for a metaphorical blending to be effective, the juxtaposed knowledge domains must be simple, known, and understood by the consumer. Existing research indicates that, in a given product category, there is typically a relatively small range of domains applied in advertising metaphors (Aaker & Babbes, 1998); however, the Red Bull example anecdotally indicates that this may merely reflect lack of imagination or courage on the part of producers. The choice of metaphor may need to be modified or experimented with during a product life cycle (e.g., the bull ingredient story was dropped in favor of the flight metaphor).

## 5. Role 2: Metaphor for mental model matching

*Metaphors as a shaping device to overcome producers' internally entrenched perspectives or inertia as they seek to elicit and match (and possibly influence) already largely formed mental models of consumers.* Since core competences may turn into core rigidities (Leonard-Barton, 1995), it is sometimes necessary for companies to unlearn in order to stay innovative (Hedberg, 1981). In the mental model matching role, metaphors act as a galvanizing force to break up entrenched producer mental maps that are no longer in line with changing consumer mental representations of products and their uses. In such cases, manufacturers need new metaphors to envision new products that come to grips with changed customer expectations. The following examples illustrate how metaphors can help organizations adopt new collectively shared mental models, thus allowing them to change how they think and act to shift to a new trajectory or paradigm.

### 5.1. Stepping outside the box

As Microsoft seeks to increase their role in household entertainment, the Trojan horse they are betting on is gaming. Historically, gaming consoles have served the purpose of providing entertaining gaming experiences to niche enthusiasts; however, this is no longer the case. Today, the capabilities incorporated in the next generation of consoles (from both Microsoft and market-leader Sony)

enable them to connect across the major devices in a home's living room, "changing the way you consume music, movies, photographs, and TV... (it creates) a miniature ecosystem with itself at the centre" (Grossman, 2005). In order for Microsoft to achieve their vision of controlling the home's 'ecosystem' through the console, the implication is that the whole family will relate to and engage with the hardware. Thus, a metaphorical projection is made: "A game console is a networked household device."

One look at the company's Xbox, however, demonstrated that Microsoft was far from creating this kind of universal appeal. With a large and chunky plastic form, an oversized X embossed on top, and ridged sides featuring a glowing, neon green disc in the center, Xbox was a statement in teenage male design. To quote Jonathan Hayes, Design Director for Xbox, "Xbox has this much testosterone and this much raw brute force" (Peterson, 2005). Additionally, in a relatively 'sticky' market where loyalty to console-specific games is high, Microsoft faced the challenge of only 22 million Xbox consoles sold globally (as of June 2005) compared to 87 million Sony Play Station 2 machines (Microsoft, 2005). As the console was not viewed any longer as a 'grown-up kids' gadget' but as a small community product, the main goal was to leave the entrenched game console design trajectory.

Although not known for designing and producing hardware, in order to gain entire household acceptance, Microsoft needed to fundamentally alter the Xbox design language, an effort that required fundamental change in how the development team approached console design. In the eyes of customers, the new Xbox is a product redesign; however, this project represented a shift in how Microsoft delivered one of the important product characteristics, that being physical appearance. Changing such entrenched belief systems regarding how Microsoft products look was quiet an ambitious task; therefore, we consider this example as neatly fitting the mental model matching role.

In order to prevent employees from following the existing design paradigm, rather than putting forward actual design options, Design Director Jonathan Hayes proposed four design themes: mild, wild, architectural, and organic (Peterson, 2005). Through these themes, the Microsoft team reasoned that the existing console could be categorized as 'wild architectural' (as personified by a Hummer vehicle), while the sweet spot identified through consumer trends and research could be labeled as 'mild organic' (as personified by the Porsche 911 or Apple Ipod). As such, the Porsche

and Ipod design language became the metaphor for the design challenge.

In recognizing the degree of design stretch required, the Microsoft team realized they needed a new way of working. “Guess how you get great design?” queried Vice President J. Allard. “You don’t do it with a bunch of computer scientists from MIT. You don’t do it the conventional way one would think about from a Microsoft point of view” (Grossman, 2005, p. 46). In other words, the new design language, expressed through the metaphor of ‘mild organic,’ forced an explicit acknowledgment of the organizational engineering required to shift Microsoft’s dominant mode of operation and thinking about the design of the Xbox.

The development team proceeded to work in partnership with a variety of artists and designers, led by a Rhode Island School of Design sculptor, two design groups from San Francisco and Osaka, and a color consultant from southern California. The ‘mild organic’ metaphor was at the heart of the effort, acting as a sounding board to redirect the teams. According to Hayes, “It took us a little while in every case to instruct the partner that we were going to go someplace different. . .we’d use phrases like ‘less Hulk, more Bruce Lee’” (Peterson, 2005).

The result of the design process was officially revealed May 12th, 2005 on MTV. The redesigned Xbox console is smaller, slimmer, less cluttered, and more feminine than its predecessor. According to Vice President Peter Moore, Microsoft’s research indicates they have achieved their goal:

“We knew we had finalized it when the research came back from Japan. We asked people, who do you think designed this? And they said, ‘it has to be from either Sony or Apple.’ That was the seminal moment”. (Peterson, 2005)

Thus, the new design metaphors helped Microsoft depart from entrenched belief systems and adapt its entertainment console to changing consumer mental representations.

## 5.2. Refillable wealth

Nestlé, an international name in the foods industry, generates approximately 10% of its global revenue from sales of its Nescafé brand instant coffee; however, this is not a healthy business sector in which to be. Due in part to a rise in premium street coffee shops (e.g., Starbucks) and corresponding shift toward the fresh-brewed coffee experience, the instant coffee category suffered declines of 7.3% in 2002 and 2.9% in 2003 (Nestlé, 2005). Instant coffee is a previous generation’s paradigm; the new

trajectory is ‘gourmet’ coffee. Nespresso, an innovative system encompassing a specialized duo of espresso machine and portion coffee as small cartridges, represents this new paradigm and is sold exclusively through highly specialized distribution channels (a club-based personalized website and upscale Nespresso boutiques in fashionable cities). At least three explicit innovations are present in the development history of the Nespresso system, with at least one of these acting as a galvanizing idea for substantial change in the organizational culture and marketing practices of Nestlé.

The first two innovations are inherent to the revenue model itself. First, the use of premium coffee refill cartridges to compliment the core machinery is a principle that, while radical in coffee brewing, had long been established in other consumer categories (e.g., razor blades). However, since the origins of Nespresso can be traced to a Swiss R&D institute, from whom Nestlé bought the technology rights, perhaps it would be misplaced credit to attribute Nestlé with this core product innovation. Moreover, since this technology principle was adopted into Nestlé’s R&D department, it would be hard to claim such a metaphor (e.g., “a coffee machine is like an inkjet printer”) led directly to shifting dominant organizational mental models. Second to consider is the hardware/software comparison. Just like Microsoft (with the exception of Xbox), Nespresso only produces and sells the software for their machines; in this case, the coffee pods. Development, manufacturing, and sales of coffee machine hardware are handled through established providers such as Krups and Magimix, leaving Nestlé to focus on the lucrative refill pods.

Of greatest interest is the third innovation. In 1986, Nestlé established a stand-alone affiliate for developing and marketing the Nespresso system, rationalizing that a division functioning at arm’s length would be better able to innovate outside the traditional way of operating. This stand alone unit produced the fundamental insight that led to the majority of marketing innovations that define the management and marketing of Nespresso today. Specifically, reflecting its premium price, Nespresso is not a mass market consumer good (like the vast majority of Nestlé’s product portfolio), but rather a luxury item that needs to follow marketing rules similar to those in the industries of fashion, jewelry, and cosmetics. In fact, a Senior Executive Vice President with the company likened Nespresso to a “Louis Vuitton fashion accessory” (Kashani & Miller, 2003).

If the metaphor “Nespresso is a luxury product” holds, consumers need to experience it as such.

Consequently, many of the critical initiatives supporting Nespresso's channel marketing programs reflect those utilized in the luxury goods world, including establishment of exclusive membership clubs (the Nespresso Club was Nestlé's first direct marketing experience), development of a network of company-owned boutiques for selling accessories (Nespresso cartridges are sold exclusively on-site, rather than distributed through normal retail outlets), and placement in elite environments (such as British Airways' first-class flights). All of these initiatives were radically different from the marketing practices previously employed by Nestlé and were driven by the single insight that Nespresso cartridges need to be treated more like a fashion handbag than a supermarket shelf filler. Today, Nespresso is a lead sponsor of the Louis Vuitton Act of the America's Cup and the brand's managers have progressed to positions with some of the world's most elite luxury goods brands (e.g., Daniel Lalonde, CEO LVMH watches and jewelry, was previously global COO for Nespresso).

While Nespresso remains small revenue by Nestlé's standards, at 389M 2004 turnover (Nestlé, 2005), revenues are increasing 25% per year without signs of flattening. Nestlé has undisputedly established Nespresso as the dominant brand in a comparatively small but growing market.

In effort to disrupt inertia and change entrenched consciousness, it has been claimed that producers need to renew or reorganize systems of knowledge (e.g., Argyris & Schön's, 1978 "double loop learning"), or that they should "unlearn" (Hedberg, 1981). The Microsoft and Nestlé examples prove that just as metaphors can act as an imaginary communication device between producers and consumers, so too can they serve as a real and tangible communication tool for internal campaigns (Burgelman, 1983).

In developing new products, both Microsoft and Nestlé needed to adopt new ways of working to internally shift preconceived notions based on historically appropriate, but now inappropriate, mental models. For both companies, the driving insight's wellspring was the matching of consumer expectations based on concepts (e.g., organic design principles and alternative distribution channels) that the companies did not experiment with before. Consequently, perhaps we should not be surprised that, in both cases, the metaphors employed were simple and tangible. Mental model matching is not about juxtaposing very distant knowledge domains in order to stimulate a 'surprise,' like in mental model communication. Rather, it is about matching the target consumers' existing consumption behaviors and mental refer-

ence points, no matter whether these represent a departure from current shared mental maps in corporations.

## 6. Role 3: Metaphors for mental model creation

*Metaphors as cognitive exploration devices in the creation of new mental models of a product category or an emerging market, serving as vehicles for mutual understanding during the interactive definition of a dominant design among producers and customers.* The establishment of new mental models on behalf of both producers and customers provides opportunity for market making, as producers conceive of products in a disruptively new way and consumers evaluate these products through a new lens. We posit that use of metaphor during the concept stage of the NPD process can lead to identification of ideas with high or even disruptive potential. The use of metaphor as mental model creation tools in early stages of NPD helps crystallizing dominant designs; i.e., dominant product architectures with the strongest market appeal for a critical mass of customers. Thus, metaphors may be conceived of by producers early in NPD, and used in later stages of NPD to influence customer mental models via means of market stories.

### 6.1. "No more need for coding" spreadsheets

At the end of the 1970s, the nascent field of personal computers experienced innovation rate booms for both hardware and software, with the former outpacing the latter. The resulting lag of software progress became manifest to PC users in several ways. Concerning functionality, as only programming languages were available at the time, users with complex problems needed to program their own solutions. Lack of general purpose software restricted early diffusion of PCs to hobbyists who were eager and able to develop programs for their respective needs, but put business people and laymen at a distinct technological disadvantage.

In 1978, Dan Bricklin invented the first commercialized spreadsheet package, called VisiCalc. By organizing and handling data in predefined rows and columns, spreadsheet software can process data mathematically by using formulas, operators, and logical statements. Formulas can be replicated; thus, even complex problems can be solved quickly.

In this case, necessity was truly the mother of invention, as Bricklin faced the need for a spread-

sheet package when preparing a case study as a Harvard MBA student. Under these circumstances, he conceived of a completely new software category by applying the metaphor “a spreadsheet is an electronic blackboard and electronic chalk in a classroom” (Power, 2002). Further, Bricklin made several analogical references to different knowledge domains, such as fighter planes and input devices for PCs, in order to refine the overarching metaphor into a more guiding mental representation of what he wanted to develop.

“Sitting in Aldrich Hall, room 108, I would daydream. ‘Imagine if my calculator had a ball in its back, like a mouse...’ (I had seen a mouse previously, I think in a demonstration at a conference by Doug Engelbart, and maybe the Alto). And... ‘Imagine if I had a heads-up display, like a fighter plane, where I could see the virtual image hanging in the air in front of me. I could just move my mouse/keyboard calculator around, punch in a few numbers, circle them to get a sum, do some calculations, and answer “10% will be fine” (10% was always the answer in those days when we couldn’t do very complicated calculations...)” (Bricklin, 2005a)

Thus, the metaphor of an electronic blackboard helped to envision a radically new market. As common as spreadsheet software seems today, in its infancy, the right stories had to build up consumers’ mental representations of this radically new product category. For this, the metaphor of the electronic blackboard was used once again. As described by Morgan Stanley’s Benjamin Rosen (who later founded Lotus and Compaq) in mid-1979, VisiCalc was a technological wonder.

“Though hard to describe in words, VisiCalc comes alive visually. In minutes, people who have never used a computer are writing and using programs. Although you are operating in plain English, the program is being executed in machine language. But as far as you’re concerned, the entire procedure is software transparent. You simply write on this so-called electronic blackboard what you would like it to do—and it does it” (Bricklin, 2005b)

VisiCalc became a huge success and enabled many people to create complicated solutions to complex problems in an efficient way, without having to know a programming language. Incredibly, this success story, later connected to Lotus and Microsoft Excel, began with little more than a metaphor of an electronic blackboard.

## 6.2. Shooting down the barriers of adult ice cream consumption

In the mid 1980s, the European ice cream market was fairly static, was characterized by limited innovation, and offered a far narrower selection of products than is currently available. At the time, the market could be divided into block ice cream tubs of standard flavors (e.g., vanilla, strawberry, chocolate, Neapolitan), kiddie popsicles, lollipops, and cones, and family treats such as Vienetta (launched in the mid-1980s).

The late 1980s, however, saw a rapid development of the ‘adult premium’ ice cream category, with an expanded rollout of Häagen-Dazs and the 1988 introduction of Mars ice cream bars. While Magnum trailed Mars by only 1 year, launching in 1989, within 2 years the brand had firmly established itself as the global market leader in ‘wrapped impulse buys.’ Although Mars simply translated its brands from one category to another (i.e., the Mars ice cream bar seeks to replicate in ice cream its chocolate bar experience), we believe Unilever’s success in the new product category within the established ice cream market lies in the explicit ‘magnum’ metaphor.

In convincing a new audience of adult consumers to view the consumption of ice cream in a fresh light, Unilever needed to find a way of appealing to them that broke free from pre-conceived notions of ice cream as a child-, family-, or holiday-oriented product. Looking at the likely associations with the name ‘magnum,’ it is readily apparent why these should be salient to this challenge.

A standard dictionary search for the word ‘magnum’ reveals two definitions:

- (1) A wine bottle holding twice the liquid of two regular bottles; and
- (2) High powered gun cartridges (due to larger charge and casing).

The root of the word is ‘magnus,’ Latin for ‘large.’ Add in the 1980s blockbuster television show that was a vehicle for Tom Selleck’s rugged masculinity and you have a metaphor that represents scale, power, virility, and adult themes. As such, it’s no surprise that ‘magnum’ has become a brand extension descriptor in a whole host of categories seeking these values, including Dodge Magnum police squad cars and Trojan Magnum XL condoms.

A look at the core Magnum ice cream marketing mix reveals a brand world largely consistent with the associations triggered by the metaphor: at 120



ml, the product was substantially larger than existing impulse products, the brand imagery is adult and sexual, and packaging and sub-brands serve to enhance the sense of scale and selfish consumption. Today, Unilever's Magnum ice cream brand sells over 1 billion units globally and is parent to a wide range of extensions, including Magnum Intense, Magnum 7 Sins, and Magnum Moments (Unilever, 2005). A decided success, analysts and brand managers continue to talk about the size of the ice cream 'hit.'

Unilever's recent 'Path to Growth' strategy focused the business behind power brands, as the company reduced its overall portfolio of brands from 1600 to 400. This process of consolidation can be seen as part of an overall trend among FMCG (i.e., fast moving consumer goods) players seeking to find points of leverage as they compete against ever-more powerful retailers, price discounting, and value brands (Braterman, 2005). Consolidation inevitably leads to fewer, but stronger, brands competing across more categories; however, the Magnum versus Mars development would anecdotally suggest that, to dominate a new product category, it is not simply enough to translate a known brand's attributes into a new product category, even if the brand brings relevant benefits. In this respect, Magnum stands as an example for mental *model* creation in a new product category. While it was not necessary to reinvent ice cream (as the interaction view of metaphors suggests), the use of a metaphor stimulated a new cognitive blend that worked for both consumers and producers. Extrapolating from the Magnum example, this may happen in different ways; for example, by using metaphorical projections on other industries' product designs or even past product designs, or simply by involving consumers in a dialogue to identify common beliefs about future market developments.

The example of VisiCalc illustrates another instance of the mental model creation role of metaphor during early and later stages of NPD. In this case, the metaphor served as the initial vehicle for sense making, absent any prior mental representations. Different knowledge domains (a fighter plane, blackboard, and calculator) were used as input domains. What resulted was a cognitive blend allowing for the conception of the radically new product category; furthermore, this blend has had a profound impact on the input domains. How many users today are unable to handle a traditional, handheld calculator because of the syntax used in spreadsheet software applications, which became the dominant mental concept for automated calculations?

## 7. Employing the potential of metaphors: A call for creativity

Given the importance of market stories in the emergence and development of markets, cognitive linguistics devices like metaphor should be paid greater attention in NPD literature, especially that focusing on the fuzzy front end of innovation. Existent literature about analogical reasoning in early new product development stages (Dahl & Moreau, 2002; Perkins, 1997) seems to be closely related to the issues this article seeks to address; that is, the portrayal of the role of metaphor during the entire new product development process. Two fundamental differences apply here, however: (1) as discussed in Section 2, metaphor goes beyond analogical comparison, and (2) previously analogical reasoning is studied as a creativity method from an *internal* perspective only.

The examples cited in this article illustrate that metaphors can stimulate learning processes, either within a company or externally, and possibly both. Summarizing the conceptual discussion and provided examples, we capture key insights that can be derived from our argument.

Of the three roles of metaphors identified in this article, their use in mental model communication occurs furthest downstream in NPD processes. This is the role that is most readily understood and documented, as it is the one most commonly used in everyday marketing practice. Since the basic direction of an NPD project's trajectory is determined in the early stages, it is important to draw on metaphorical producer–customer interaction techniques before a product is developed and fine-tuned for later market introduction. As such, a first and central claim of our argument is that the use of metaphors should not be restricted to late NPD stages, or already established markets or product categories. Rather, it may be envisioned as a sort of process for connecting the three roles introduced. First, metaphors may help elicit deep and valid customer preferences as mental model matching tools. If these preferences do not coincide with the shared assumptions within a manufacturing firm, they may help break up entrenched assumptions that are no longer valid. Second, during later stages of product development, metaphors may be used as mental model communication tools. In order to develop successful innovation streams, companies should try to enable the emergence of radically new markets or product categories; toward that end, metaphors can act as mental model creation devices. In such cases, it may be wise to select potentially advantageous metaphorical content (i.e., to relate aspects of a new product's USP or

long-term capability advantage to an existing knowledge domain).

A second claim is that, due to the different cognitive processes triggered, metaphors for mental model communication have far more impact than merely the communication of physical product attributes. For example, in many industries, it is not mandatory to provide extensive product detail; however, if a product is threatened by comparison to rival products or if there is significant pressure from price competition, changing customers' mental representation of a product can help sustain a price premium. Thus, when planning communication and market introduction campaigns, the use of metaphors and the use of functional product UPS descriptions should not be seen as a trade-off. Rather, investing a large amount of money in functionally oriented communication may actually call for the use of metaphor to secure the investment in 'traditional' marketing activities.

Third, it is important to consider how the emergence of shared product knowledge by shaping product metaphors collectively (i.e., as an interactive process between customers and producers) can be facilitated. In this respect, much more research is needed to investigate metaphorical interdependent mental model creation techniques. For the moment, this is more a concept than a method that can be shrink-wrapped and sold over the counter. As the VisiCalc example indicates, however, the very same metaphor of the electronic blackboard served initial product envisioning, as well as early communication of its selling proposition. Conversely, customers could also metaphorically inform producers about latent preferences for not-yet invented or developed products. These metaphors may be refined mutually before serving as the reference point in an early NPD project.

These far more reaching roles of metaphor require further exploration. For example, there is the question of familiarity (i.e., how recognizable a metaphor needs to be to be effective). Further, in this article, we have not distinguished between targeted and adaptive metaphors. Targeted metaphors are appropriate only if the envisioned future is known and can be explicated. Adaptive metaphors are appropriate when goals cannot be clearly specified and imply an evolutionary process of testing, exploration, searching, and learning (Sackmann, 1989). Such distinctions in metaphor type and potential role require further review; nevertheless, our explorations to date indicate a substantial potential for further systematic applications of metaphors earlier in the NPD process, something we suggest would help unlock new market opportunities. This can be achieved through

creativity in applying metaphor's potential, along with a more differentiated view of its potential roles.

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