



Calhoun: The NPS Institutional Archive

Faculty and Researcher Publications

Faculty and Researcher Publications

2008

Immortal firms in mortal markets? An entrepreneurial perspective on the "innovator's dilemma"

Dew, Nicholas

Emerald Group Publishing Limited



Calhoun is a project of the Dudley Knox Library at NPS, furthering the precepts and goals of open government and government transparency. All information contained herein has been approved for release by the NPS Public Affairs Officer.

**Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943**

<http://www.nps.edu/library>



Immortal firms in mortal markets?

Immortal firms
in mortal
markets?

An entrepreneurial perspective on the “innovator’s dilemma”

313

Nicholas Dew

Naval Postgraduate School, Monterey, California, USA

Saras D. Sarasvathy

*The Darden Graduate School of Business Administration,
University of Virginia, Charlottesville, Virginia, USA*

Stuart Read

IMD, Lausanne, Switzerland, and

Robert Wiltbank

*Atkinson Graduate School of Management, Willamette University,
Salem, Oregon, USA*

Abstract

Purpose – The “innovator’s dilemma” suggests that by listening to current customers leading firms often lose their markets to upstart newcomers as a result. The purpose of this paper is to understand how entrepreneurs successfully create such upstart firms and new markets, since this ought to have direct implications for theorizing about the innovator’s dilemma.

Design/methodology/approach – The paper examines implications of recent studies in entrepreneurial expertise that show expert entrepreneurs use an effectual logic of non-predictive control. It then connects these ideas to notions of firms and markets as artifacts of entrepreneurial action. Finally, it describes the implications of these concepts for the innovation strategies of large corporations, and specifically for firms periodically facing the innovator’s dilemma.

Findings – The findings suggest that the practical answer to the innovator’s dilemma is not to predict technology trajectories more accurately, or otherwise strive to build immortal firms in mortal markets. Instead, innovation managers should focus on building new markets. This will inevitably involve pluralizing decision-making technologies by including some aspects of effectual decision making (used by expert entrepreneurs) into the decision-making processes of large firms.

Originality/value – It is the basic contention of this paper that the innovator’s dilemma is not the story it is usually portrayed as, i.e. technology commercialization. Instead, the core issue is investing in and building new markets. The paper brings a novel theoretical framework (from entrepreneurship) to bear on this problem.

Keywords Product innovation, Entrepreneurialism, Market driven production, Customer orientation

Paper type Conceptual paper

Ever since Schumpeter seeded the idea of market-to-market competition and its equivocal creative and destructive consequences, scholars have attempted to better

The authors would like to acknowledge their debt to two anonymous reviewers of this paper who suggested the research questions.



understand this fundamental economic process. One of the latest wrinkles in this tapestry is Christensen's (2000) "Innovators' dilemma", which points to cases where entrepreneurial firms touting inferior technologies disrupt established firms producing superior technologies (Daneels, 2004). The "innovator's dilemma" consists in the fact that by doing the "right" thing (i.e. by listening to their customers) well-established and well-run companies can end up losing those customers to relative new-comers – upstart firms that bring to market new technologies for which "no customers as yet exist" (Christensen and Bower, 1996, p. 197). Christensen has taken his insights gleaned from his empirical study of the disk drive industry and directly translated them into far-reaching prescriptions for practice. Both theoretical (based on works such as Reinganum (1983)) and empirical (based on studies such as Chandy and Tellis (2000)) criticisms can be raised against such a rush to conclusions. Our task in this paper, however, is to examine the theoretical and/or empirical merits of one of his major prescriptions, namely, "Skate to where the money will be" or in other words, his exhortation to managers to learn to better predict technological trajectories (Christensen *et al.*, 2001).

We begin our examination by decomposing the dilemma into two inter-locking parts. The first has to do with the question of how firms compete in the face of technological change (disruptive or otherwise); the other relates to how firms compete in the face of entrepreneurship – i.e. the creation of new markets by upstart entrepreneurs. How upstart firms create new products and services in the absence of current markets for them is a core issue in entrepreneurship research (Venkataraman, 1997). It stands to reason, then, that what we know about how entrepreneurs create new markets should have some implications for how large firms faced with the Innovators' Dilemma can cope with it and overcome it. Results from studies of entrepreneurial expertise suggest two relevant implications:

- (1) the necessity to use a non-predictive effectual logic, as opposed to the current over-emphasis on predictive and causal approaches to strategic action (Wiltbank *et al.*, 2006); and
- (2) a theoretical reformulation of firms as manipulators of mortal markets, rather than as mere long-run survivors within existing markets.

The paper is organized as follows: First, we briefly review the Innovators' dilemma as described by Christensen (2000) and the recent literature pertaining to it. Next, we outline the entrepreneurial micro-foundations of technology commercialization. We will then pause to reflect upon the idea of markets and firms as artifacts, à la Simon's (1988) *Sciences of the Artificial*. Finally, we discuss some possibilities for transferring what we learned from entrepreneurial settings to large corporations facing innovator's dilemmas.

The thrust of this paper is primarily synthetic and prescriptive. While most theoretical papers proceed from existing theories to new theories and propositions for empirical testing in the future, we proceed in the reverse direction – from empirical anomalies demonstrated and well-received in the literature (i.e. the innovator's dilemma) to new theoretical findings (effectuation) that help explain and overcome those anomalies.

1. The innovator's dilemma

The crux of Christensen's (2000) insight is that firms wishing to innovate face an irresolvable dilemma: their existing customers will encourage them to focus resources

on building a better widget, while somewhere else another company is building a gadget, either for new sub-segments of the market, or for an altogether new market. The technological trajectory of the gadget, however, will lead it to eventually usurp the position of widgets in the whole marketplace by destroying the widget market altogether. Therefore, widget companies that listen closely to their existing customers and perfect their technology will one day inevitably face a situation where the market for their technology has been made redundant by the market for the next-best-thing: the gadget. Those feckless existing customers will then defect to gadgets, leaving widget producers high and dry.

The story thus told may be captured in the following relationship and its consequences for firm strategy: The better aligned management incentives are to serving the existing customer base by improving the current technology of the firm, the more likely the incumbent firm is to be blindsided by a market for a fresh new technology created by a challenger entrepreneurial firm. This fresh new technology initially appeals only to customer markets that do not appeal to the firm, but goes on to capture the firm's core customer base over time. Ergo, a well-meaning management team just cannot win by doing the right thing.

Analytically, this dilemma was explained by Christensen as having three key elements:

The first is that there is a strategically important distinction between what I call sustaining technologies and those that are disruptive . . . Second, the pace of technological progress can, and often does, outstrip what markets need. This means that the relevance and competitiveness of different technological approaches can change with respect to different markets over time. And third, customers and financial structures of successful companies color the sorts of investments that appear to be attractive to them, relative to certain types of entering firms (Christensen, 2000, p. xv).

Christensen's framework – while having its share of admirers and detractors – has certainly heightened practitioner awareness of the basic phenomenon of creative destruction described by Schumpeter, i.e. that market churn is a fundamental feature of competition and the evolution of economic systems. The dilemma this situation appears to pose for incumbent firms is also a “perennial” issue in research on the economics of innovation, technology evolution, firm strategy, marketing and entrepreneurship. This means that potentially relevant literature is enormous. So in our review of the literature below, we restrict ourselves to summarizing three central issues that are historical staples in the literature, plus an overview of current conversation. The latter is based on 145 peer-reviewed articles that specifically refer to “Christensen”, “the innovator's dilemma”, or both[1].

First, the economic incentives for incumbent firms to engage in uncertain innovative activities have been examined in detail in the literature on the economics of technological innovation and firm strategy (Reinganum, 1983). The central proposition of this research is that incumbent firms will experience disincentives to create new technologies that disrupt existing technologies because the new technology cannibalizes the rent stream from the old. Non-incumbent challengers do not face this disincentive. So they rationally invest more and as a result will contribute a disproportionately large share of major innovations (Reinganum, 1983, p. 741). Thus, incumbents face the unsavory prospect of having to decide when to start cannibalizing themselves in the full knowledge that much uncertainty pervades this choice. If they

listen to their existing customers too much and stay with them too long they face being disrupted by an entrepreneurial attacker; if they listen inadequately to their existing customers and migrate to a new technology too early then they lose the rent stream from the old product. The uncertainty surrounding this choice is indeed deep, as Rosenberg (1996) has cautioned:

The simultaneous advance in new technology, along with the substantial upgrading of old technology, underlines the pervasive uncertainty confronting industrial decision makers in a world of rapid technological change (Rosenberg, 1996, p. 107).

Therefore, predicting technology trajectories (where the puck will be) *ex ante* in fact is awfully tricky because of uncertainty about how much the old technology will fight back.

Second, the marketing literature has focused on a central and unsettling suggestion made by Christensen and Bower (1996), that the innovator's dilemma consists in the fact that by doing the right thing (i.e. listening to current customers) leading firms often end up losing their markets to upstart newcomers. This is unsettling because compelling evidence exists in the marketing literature that market orientation leads to positive business performance (Matsuno *et al.*, 2002). The essence of this debate suggests a trade-off between two fundamental functions of good management: the creation of satisfied customers and the creation of innovations. The trade-off is echoed in Im and Workman (2004), who recently concluded in line with Christensen and Bower (1996) that:

A notable finding is the negative impact of customer orientation on NP (new product) novelty. It appears that enhancing customer orientation is less likely to help a firm create novel products, because current customers may not approve novel product ideas because of their inertia toward existing products in the market (Im and Workman, 2004, p. 126).

Third, organizational researchers have been concerned with the questions that the innovator's dilemma poses for organizational change, in particular the problem that disruptive technologies pose for organizational capabilities (Henderson, 1993). The essence of this problem is very well understood in the literature on organizational learning: it is an example of organizations having to cope with the difficulties inherent in trading-off the exploitation of existing technologies, capabilities and markets with the exploration for new technologies, capabilities and markets. March captured this trade-off as the relationship between exploration of new possibilities and exploitation of old certainties (March, 1991). Firms balance exploration with exploitation by trading-off the costs of exploration (investments in survival) with the benefits of exploitation (maximizing returns to investors). Organizations sit atop the horns of a dilemma between investing in tomorrow's capabilities that support long-run sustainability (but which capabilities?) and harvesting short-run benefits from today's capabilities.

In line with these perspectives, Christensen and Bower (1996) excavated a process model for resource allocation within established firms faced with disruptive change (Christensen and Bower, 1996, pp. 207-211). This process model brought to surface the fact that many of the new and disruptive technologies were either developed within established firms or were easily accessible to them, but were not pursued due to estimates of high market risk and/or low revenue and profit projections. While individuals within the established firms saw great potential in the new technologies,

the firm's processes were set up to allocate resources based on "rational" assessments of data about returns and risks:

Projects targeted at the known needs of big customers in established markets consistently won the rational debates over resource allocation. Sophisticated systems for planning and compensation ensured that this would be the case. The contrast between the innovative behavior of some individuals in the firm, vs. the manner in which the firm's processes allocated resources across competing projects, is an important feature of this model (Christensen and Bower, 1996, p. 211).

It is precisely here that we begin to look for faulty fundamentals in current theories (Markides, 2006; Tellis, 2006).

(Mis)diagnosing the problem

It is the basic contention of this paper that the innovator's dilemma is not the story it is usually portrayed as: it is not a story about managing the trade-offs inherent in technology transitions, whether they are organizational exploration-exploitation processes, innovation incentives and revenue cannibalization, or listening to existing customers versus ignoring them. Instead, the innovator's dilemma is a story about technology commercialization – i.e. about investing in and building new markets. It is an example of firms floundering on the creation of new markets that end up destroying existing markets, not the story of better predicting technological trajectories with a view to substituting one technology for another in existing markets, and the trade-offs inherent in that situation for incumbent firms.

In fact, Christensen and Bower's empirical evidence showed the commercialization issue very clearly: many of the new (*ex post* disruptive) technologies that eventually took away the firm's customer base were actually invented by the firm itself and rejected for possible commercialization due to lack of interest from key customers. Existing firms did indeed do their due diligence – they explored the potential for the new technology with their existing customer base, and found it wanting. Instead, the authors found that:

New companies, usually including members of the frustrated engineering teams from established firms, were formed to exploit the disruptive product architecture (Christensen and Bower, 1996, p. 209).

In contrasting the decisions made by these innovating individuals with the decisions made by the firms' processes of resource allocation, Christensen and Bower (1996, p. 211) state:

Information provided by innovating engineers was at best hypothetical: without existing customers, they could only guess at the size of the market, the profitability of products, and required product performance. In contrast, current customers could articulate features, performance, and quantities they would purchase with *much* less ambiguity.

Unambiguously, the existing market rejected the technology exploration efforts of existing firms.

In most examples of leading firms snagged on the horns of the innovator's dilemma, it was entrepreneurial startups that commercialized the disruptive technologies that ended up eroding the incumbent firms' leadership in their own markets. Therefore, the literature on entrepreneurial expertise is one place we can look for developing a new conceptual foundation for overcoming the innovators' dilemma and understanding

how technology commercialization processes work, as opposed to just the development of new technologies. Overcoming the innovators' dilemma entails overcoming the demand side problem (i.e. the creation of new customers) and not merely resting on the assumption that solving the supply side problem (i.e. the creation of new technologies) automatically leads to the creation of new markets for them.

2. An entrepreneurial perspective

One potentially fruitful way of thinking about entrepreneurship is that it is concerned with understanding how, in the absence of markets for future goods and services, these goods and services manage to come into existence (Venkataraman, 1997). Entrepreneurship therefore focuses on how interesting new variations (new products and services, new ways of embodying technologies, new institutions, new customer needs and wants, new production and supply variants, new ways of organizing) are introduced in a market economy (Schumpeter, 1934). To the extent value is embodied in these products, services and other artifacts, entrepreneurship can be viewed as being concerned with how the opportunity to create new "value" in society is initially generated. This inevitably involves some individuals acting in concert with others (which we may loosely describe as their stakeholders) to form new economic entities such as new firms and new markets.

Therefore, a central difference of an entrepreneurial perspective is that the twin institutions that comprise the capitalist market system (firms and markets: Coase (1988)) are not assumed as givens in entrepreneurship. Either the firms are new, or the markets are new, or both. The fact that one or both of the twin institutions of capitalism – market and firm – do not exist in many entrepreneurial situations suggests that an entrepreneurial approach to commercializing new technologies might be significantly different from the exploration-exploitation approach taken by existing firms.

In other words, in asking why there was a divergence between the expectations of those few "pioneering" individuals and those of the later to be disrupted firms, one could argue, as Christensen and Bower do, that somehow while the firm's processes were "rational", the innovative engineers in the firm "intuitively perceived opportunities for a very different disk drive" (Christensen and Bower, 1996, p. 211). Alternatively, one could suggest a theoretically richer explanation than the much-beaten old horse of "intuition". This alternative explanation has to do with pluralizing our notion of "rationality" and is called "effectuation". In the following section, we will provide a brief outline of the logic of effectuation and explain how it suggests ways to reason in the face of non-existent or not-yet-existent markets: precisely the situation faced by the leading firms foundering on the horns of the innovator's dilemma.

The empirical origins of effectuation

A central aspect of The Innovator's Dilemma is the genesis of new economic artifacts: concurrent innovations in products, firms and markets. Any resolution of the dilemma therefore depends upon understanding how these new economic artifacts come to exist, ex nihilo. A large amount of empirical evidence points to the fact that entrepreneurs do create new products, firms and markets all the time, and it is reasonable to conjecture

that some empirical regularities potentially exist in the entrepreneurial process (Pech and Cameron, 2006).

One theory of the entrepreneurial method of creating new economic artifacts is called “effectuation” (Sarasvathy, 2001; Wiltbank *et al.*, 2006). The idea of effectuation was induced from empirical studies of entrepreneurship as a form of expertise in the tradition of Ericsson *et al.* (2006). The key to effectuation lies in our ontological stance toward the future. The simple but familiar device consisting of urns and balls used to describe statistical distributions helps clarify this stance. Knight gave us this example in *Risk, Uncertainty and Profit* (Knight, 1921) where he argued that entrepreneurial profit was entirely due to the existence of “true” uncertainty. Knight divided unknown distributions into the following three types:

- (1) *Risk – known distribution, unknown draw*: The urn contains five red balls and five green balls. The expected value of any draw is perfectly calculable through statistical analysis.
- (2) *Uncertainty – unknown distribution, unknown draw*: We do not know how many balls are in the urn, or what color they are. But based on several draws we can learn the underlying distribution of balls and thereafter calculate the value of any future individual draw.
- (3) *“True” (Knightian) uncertainty – distribution does not exist or is unknowable*. We simply do not know what we’ll get when we make a draw. For our first draw we get a red ball; but our second draw brings forth a golf club. We’re unsure whether there even is an urn, let alone what it might contain. We eventually conclude that the shape and contents of the urn depends on what people make it, and put into it.

Current approaches to decision making are firmly rooted in the efficacy of prediction as a guide to action under situations described adequately by risk and uncertainty. In this view, the future is a continuation of the past, and is, therefore at least in theory, predictable. Unpredictability is usually interpreted either as our inability to predict (due to ignorance, inadequate tools and techniques, etc.) or statistical anomalies (due to exogenous shocks, irrationality of agents, etc.). Normatively speaking, it follows that human action should be focused on avoiding or overcoming these contingencies through better planning.

Effectuation is premised on Knightian uncertainty. It starts with the position that the future is contingent upon actions by willful agents seeking to reshape the world and fabricate new ones. The essential characteristic of the future, in this view, is its unpredictability. Environments can be made stable and predictable for limited periods of time in certain areas. But these periods of stability tend to be “artificial” exceptions designed by human action rather than the “natural” regularity of a causal universe. Normatively speaking, therefore, one can argue that human action should seek both to leverage regularities (through prediction) and to leverage contingencies (through effectuation) to create novelty.

The popular myth is that it takes an entrepreneurial mindset to act in highly uncertain environments. That mindset is typically described as a high tolerance for ambiguity and high risk-taking propensity, such as the one ascribed to the innovating engineers within the established firms that Christensen and Bower studied. However, recent empirical research on differences in risk-taking propensity between

entrepreneurs and managers (Palich and Bagby, 1992) together with research into effectuation paints a rather different picture of entrepreneurs. Instead of ambiguity-loving risk-takers, the entrepreneurial mindset rests on the logic of non-predictive control. Expert entrepreneurs explicitly eschew prediction and choose instead to control and even create the future (to the extent they can), most often through an expanding network of partnerships and the imaginative leveraging of unexpected contingencies into unforeseen opportunities. Explanations about how they manage to create frame-breaking new product markets do not have to rest on the foresight, vision, judgment or intuition. Effectuation seeks to demystify entrepreneurial decision-making by describing how strategies emerge through the use of specific cognitive approaches (emphasizing what can be done instead of what ought to be done, for example), and/or through particular problem-solving techniques. “Effectuating” thus explains novelty creation without resorting to cognitive black boxes.

3. Firms and markets as artifacts

Effectual reasoning provides a plausible alternate explanation as to how and why some innovating engineers within the leading firms in the disk-drive industry could have arrived at decisions very different from those driven by their employing firms’ formal resource allocation processes. Given what we know about these effectual design processes, what can we now say about how entrepreneurs compete, and what can we say about an entrepreneurial perspective on the innovator’s dilemma? What the evidence so far suggests is that entrepreneurs redefine the problem of commercializing technologies from a problem of exploring pre-existing markets to a problem of building new markets. The entrepreneurial method therefore results in a fundamental reversal of conventional market logic. Instead of seeing the role of markets as “markets selecting on firm product offers” the entrepreneur sees the inversion: i.e. the role of firms as “firms building and transforming product markets”. Effectuation suggests that the difference in the entrepreneurial approach to new technologies is captured in this inversion.

It is precisely this difference we emphasized earlier between entrepreneurship and other perspectives: that the two key institutions that comprise the capitalist market system (firms and markets) are not assumed as givens in entrepreneurship. That firms are new creations is an empirical fact. But, as Olson and Kahkonen (2000, p. 1) point out, the assumption that markets have to be conjured up by the nurturing design efforts of the “visible hand” flies in the face of orthodoxy:

The fourth primitive of economic thought – and of most lay thinking on economics – is so elemental and natural that it is usually not even stated explicitly or introduced as an axiom in formal theorizing. It is the half-conscious assumption that markets are natural entities that emerge spontaneously, not artificial contrivances or creatures of governments (Olson and Kahkonen, 2000, p. 1).

We need to give up this assumption of “pre-existent” markets in our economic models. If we do so we will see that entrepreneurship is centrally concerned with how both firms and markets come to be (Casson, 1982; Loasby, 1999; Spulber, 1997). As early as 1939, Schumpeter pointed out that it was not enough for a manufacturer to invent and supply soap: if there was to be a market for soap, the demand for soap also had to be invented, i.e. people had to be educated and induced to wash (Schumpeter, 1939). Such

observations about the origin and evolution of markets suggest interdependences between production and preference formation (Aversi *et al.*, 1999; Carpenter and Nakamoto, 1989; Gualerzi, 1998; Robertson and Yu, 2001). In other words, demand theory must reflect the new opportunities for consumption that are created by new sources of supply (Sandberg and Hansen, 2004). This interaction between endogenously created supply and endogenously created demand is an important issue in our understanding of the role of new markets and, indeed, the nature of competition itself. Edith Penrose (1959) saw the importance of this fact especially clearly, stating that:

[I]f entrepreneurial notions about what consumers ought to like have some influence on what is offered to consumers and therefore on what they do in fact like, or learn to like, a mere inquiry into the “state of demand” will not enable us to understand the productive activity of entrepreneurs and, in particular, their innovative activity (Penrose, 1959, p. 81).

The key idea here is that while individuals have abstract aspirations, there are diverse and plural ways in which these aspirations might be fulfilled (Lancaster, 1971). What makes this even more complex is that these aspirations can themselves change over time as the individual learns and interacts with other individuals. Aspirations do not in themselves entail any single or inevitable set of “demands” in the conventional economic sense. Instead, early in the evolution of markets individuals have only a very rough idea of their consumption goals (what Geroski, 2002, p. 28) has referred to as “inchoate” aspirations). For example, the fact that people experience hunger did not inevitably imply a demand for hamburgers, let alone a “market” for the hamburger supplied by any particular fast food chain or restaurant. The transformation of an abstract aspiration such as hunger into particular market niches for particular foods (what Geroski, 2002, p. 28) calls “articulated” demand) usually involves many contingencies.

In most cases, since markets for food in general are very well understood, the manufacturer can induce people to try new food products through several marketing and promotional techniques including free samples. But even in this relatively mundane industry, new markets also get created through more subtle effectual processes. For example, the founders of Starbucks opened their first shop only as an outlet for selling fresh roasted and ground coffee beans from around the world, mostly since they themselves were coffee aficionados. Only requests from walk-in prospects for trying out the coffee in the shop led them to the idea of a coffee shop such as the modern Starbucks Coffee shops. Even armed with the knowledge about existing markets of coffee drinkers, no one could have predicted *ex-ante* the market for Starbucks. That market had to be created through a transformational process that involved the interaction of tentative sources of supply and demand that over time coagulated into a familiar shape that we all recognize as a “market” for specialty coffees and coffee culture (Vishwanath and Harding, 2000)[2].

To summarize, in an effectual universe, Needs, wants and desires \neq Demand; and, Demand \neq Supply \neq Market. The relationships between supply and demand are circular, interactive, intermediated and contingent rather than linear, unilateral, independent and inevitable (Earl, 1998). Instead of thinking of markets as pre-existent, we are better off thinking of them as temporal and effectual artifacts where concrete products and services intersect with our abstract aspirations as individual human beings and as members of a variety of groups, organizations and societies. Markets are not atemporal and naturally existing manifestations of our needs, wants, and desires

that are “out there” waiting to be “discovered”. In other words, *De Gustibus* is not *non disputandum* – i.e. preferences (and consequently demand) are not exogenous to the economic process (Stigler and Becker, 1977; Carpenter and Nakamoto, 1989).

But if markets do not pre-exist and are endogenous to the fundamental economic processes of supply and demand, then of what use would it be for the leading firms in the disk-drive industry (or any other industry for that matter) to listen to existing customers about the potential of new technologies? In a plural and effectual universe where markets are artificial inventions endogenous to the economic process, it is hardly surprising that clear and convincing feedback from existing customers proved misleading and even harmful as guides to the firms’ decisions with regard to new technological possibilities.

Mortal markets

Endogenous markets are not a new idea. But it is our endeavor here to push the provocative limits of the idea to its logical extreme. Therefore, we seek to argue not only that markets are created artificially (i.e. through human action), but that they are also often destroyed through artificial forces – both intentional and contingent. This notion of the artificial mortality of markets completely eschews the lifecycle model, which tends to induce a notion of “naturalness” and inevitability in the birth and death of products. There has been extensive debate and criticism of concepts of a “natural” or determinate life cycle of a product market, both in the marketing literature (see Dhalla and Yuspeh, 1976; Gardner, 1987) and in the population ecology literature (see Lambkin and Day (1989) for the population ecology view, and Donaldson (1995) for a critique of this approach). Our approach emphasizes the artificial nature of markets in order to make a clear break with biological analogies and their suggestion of natural market lifecycles or natural niche-filling. Take for example, the internet browser company, Lycos, that tended to gobble up every new browser invented in Pittsburgh, by acquiring the nascent firms and then burying their products beyond any customer’s reach.

The notion of mortality presented here is connected with the residuals of effectual action – new markets – that eventually end up competing with and sometimes even destroying old markets. An effectual competitive struggle includes not only the births and deaths of products, firms and markets, but brings suicides, euthanasia and executions as part of the milieu. New competitors may “pull the plug” on an old market. In an effectual universe, markets don’t always die peacefully in their sleep; they may be abruptly terminated. In other words, the “Grim Reaper” cometh and he does not come alone. He comes in the shape of the effectual entrepreneur thronged by a mob of stakeholders who have committed to his morbid enterprise. The effectual horde often enters not by opening the door to the room, but by blowing the room away (Schumpeter, 1934).

With this violent metaphorical image we aim to press home the point that competition occurs not only within markets but between markets. Therefore, not only firms compete, but markets compete, and specifically, they compete across the temporal dimension – i.e. today’s markets compete with markets not yet created. While firms are busy competing for market shares within markets, markets compete for the time, attention, and aspirations of individuals. And as individuals discover new aspirations or new ways to operationalize their abstract aspirations into demand for

specific new products, some existing markets get mutilated, transformed or terminated or destroyed in a variety of ways and other new markets come into existence. Firms that naively assume exogenous markets and blithely continue to struggle within existing markets find themselves blindsided and unwittingly crushed under the weight of the larger struggle that continues between markets across time.

This notion of mortal markets answers an important question Christensen and Bower (1996, p. 199) ask in their study, namely:

Why have incumbent firms generally intensified their commitments to conventional technology, while starving efforts to commercialize new technologies – even while the new technology was gaining ground in the market? (Christensen and Bower, 1996, p. 199).

Our answer to this question is:

Because the incumbent firms were focused on competing “within” their existing market, and blinded to the larger temporal struggle “between” markets fraying the edges of that existing market.

With an unwavering faith in exploration, one will only “see” markets that already exist, not the markets that have yet to come to be. The fact is, no one can actually “see” these non-existent markets. Instead, these are the markets that might possibly be made by transforming bits and pieces of the actual world (Sarasvathy and Dew, 2005).

4. Of immortal firms in mortal markets

Legally, firms are fictitious persons with limited liability and perpetual life. The notion of limited liability shields their founders and managers from crippling downside risk and allows society to benefit from their risk-taking. And the concept of perpetual life allows the organization to function relatively independent of the tenure of its managers, allowing it to make credible commitments to long run strategies. But the limited liability corporation has evolved in ways not dreamed of by its formulators and also has unfortunately come to embody the goal of economic immortality. Because they are immortal in a legal sense we have come to believe that firms have to be immortal in an economic sense also. Hence, the pride and honor showered upon firms such as GE (General Electric) that have lasted almost the entire life of the stock market.

But this type of immortality is illusory – it is akin to the story of George Washington’s axe. The story goes that an old gardener preserved the legendary axe that George Washington used to chop down the cherry tree. The old man would proudly display the axe to all comers explaining, “This is the very axe that young Master George used to cut down the cherry tree.” And when asked how the axe looked all shiny and new, he would explain, “Oh! The handle has only been replaced three times, and the blade about five.” In what sense is that axe the very axe that Washington used? In the same sense, we believe in which GE seems immortal – the GE that Jack Welch retired from hardly bears any resemblance at all to the firm that Thomas Edison effectuated into being at the turn of the century[3]. Yet immortality in its milder incarnation of “sustained competitive advantage” continues to be the holy grail of strategic management and suffuses incentive systems in most large corporations today. Indeed, some scholarship explicitly postulates survival as every firm’s *raison d’être*.

In light of our foregoing exposition of the implications of effectual logic of non-predictive control, and mortal markets for the innovator’s dilemma, the key issue

for our research, pedagogy, and practice now becomes: How does one create immortal firms in mortal markets? The short answer to this question is: you don't; you build markets. To be clear, we do not advocate not competing in existing markets – only that firms need to be concurrently conscious of the artificial mortality of markets in general and the effectual nature of the competitive and cooperative struggle that creates and destroys them. In the following paragraphs we speculate on possible prescriptions for practice and some promising areas for future research.

First, perhaps we need to seriously begin considering a role for firm mortality, i.e. the planned obsolescence of particular firms. While as an empirical fact, entrepreneurs and even top management of larger firms do plan and execute exit strategies that include the sale and/or dissolution of firms, proactive exit is often a neglected area in our scholarly research and pedagogy. Except for practitioner-developed concepts such as the “cash cow” in the BCG model of corporate strategy, most studies and instruction concerning exit strategies assume firms with positive NPV of future cash flows in perpetuity. Christensen (1995) came closest to the idea of planned termination of firms and even then only to consider the termination of business units and not the firm as a whole when he suggested that, “In order that it may live, a corporation must be willing to see business units die” (Christensen, 1995). While we believe his ideas can and should be considered for the firm as a whole under certain circumstances, it is clear that such a radical notion requires far more deliberation and empirical experimentation before it can become a viable and accepted way out of the innovator's dilemma.

Second, there are at least two related categories for future research into the artificial mortality of firms and markets: On the one hand (at the micro-economic level), it has to do with pluralizing formal decision processes and activities within firms in terms of their underlying rationality; and on the other (at the macro-economic level), it has to do with redefining the role of the firm within our larger understanding of the economic process as a whole. To turn this discussion into more specific implications for future research, pedagogy and practice, we will integrate the key arguments made thus far into a view of competition that redefines the role of firms and markets in the economic process.

Pluralizing decision processes within firms based on differing assumptions of rationality

Why do we believe that what we learned studying entrepreneurs should be applicable to large firms? It is true that at the very beginning of the entrepreneurial process, firm and entrepreneur are almost identical and virtually no distinction can be made between the two levels of analysis. But every large firm starts out as an entrepreneurial core that expands into an inter-locked hierarchy of stakeholders that carries the footprints of lessons learned in entrepreneurial settings. In fact, we routinely transfer decision-making across units of analysis (individuals, firms, public organizations and institutions etc). It follows then that if it is possible to study and situate firm “decision” processes on assumptions of predictive rationality, it should also be feasible to construct them on effectual design. In fact, that is the exciting task for scholars and practitioners alike that emerges out of a deeper, more empirically driven understanding of how entrepreneurs create firms and markets. This paper is an initial small step in the direction of demonstrating why effectual processes need to be constructed within organizations, and a preliminary illustration of how they can be so constructed. In this task, we take heart from others who have also shown that what we learn from

individual decision-making, and the assumptions on which they are based (e.g. bounded rationality) have important implications for organizational decision making (Cyert and March, 1963).

Some interesting research questions that come to mind here include:

- RQ1.* What types of incentives (positive and negative) would be necessary to create an effective structure of effectual decision procedures in a large organization?
- RQ2.* What is the role of particular ownership structures (say, large pockets of shares owned by a few stockholders versus a more diverse and widely dispersed shareholder base) for the efficacy of effectual versus predictive decision procedures in a large organization?
- RQ3.* Given a firm has limited resources and usually has several choices for investment, some of which are strategic and others that are effectual, how does it decide which investments to make?
- RQ4.* What is the role of effectual versus causal decision processes in the creation of new technologies as opposed to the creation of new markets?

Even as we investigate the above questions through both experimental and field research, we can develop some prescriptions for practice. For example, we could argue that large firms should put in place effectual decision making teams or effectual “cells” intertwined concurrently with cells of predictive rationality (Assink, 2006; Herrmann *et al.*, 2006; McFadzean *et al.*, 2005). Firms also need people who pay attention to what can be done as well as what ought to be done.

The saga of the innovator’s dilemma shows us that our conventional assumptions of predictive rationality and pre-existent markets are adequate – if at all – only in very small corridors of space and time (Wiltbank *et al.*, 2006). They are definitely inadequate in the long run and over larger contexts because we live in a world where our purposes are not given to us *a priori*, and our markets are endogenous constructions of our economic endeavors. We can use this insight to motivate change of our conceptualization of how technologies, firms and markets get created, interact and get destroyed. This re-conceptualization involves a shift from hunter-gatherer concepts to agricultural concepts. Our dominant economic models are analogous to a world of spatially finite but temporally eternal markets where firms forage and compete fiercely even unto death to capture market share. What we really need in a world of rapid technological change instead, is a view of firms as sowers, nurturers, and ultimately reapers of mortal markets, markets that are artificial, a creation of the actions of the firm, not just a pre-existent reality within which firms strive to survive. In this view, firms not only need to invent better weather balloons, they need to develop devices such as crop rotation and hot houses as well, devices that create as well as adapt to their environment.

Notes

1. For this paper we searched EBSCO Business Resource Premier for all peer-reviewed articles that contained the search terms “Christensen” and/or “innovator’s dilemma”. This resulted in 145 articles. From this sample, we short-listed the most relevant articles reviewed in this paper.

2. We are not suggesting a dependence effect (Galbraith, 1976), only that markets are constructed through interactions between entrepreneurs and buyers. Our position is very much in accord with Hayek's famous critique of Galbraith (Hayek, 1961), but we see the issues of "dependence" as more subtle in new markets than Hayek allows for, as is suggested by Carpenter and Nakamoto's (1989) work.
3. We are not suggesting that GE should have been "killed" or terminated. The point is that GE survived and continues to thrive today by killing parts of itself and growing new parts every once in a while.

References

- Assink, M. (2006), "Inhibitors of disruptive innovation capability: a conceptual model", *European Journal of Innovation Management*, Vol. 9 No. 2, pp. 215-33.
- Aversi, R., Dosi, G., Fagiolo, G., Meacci, M. and Olivetti, C. (1999), "Demand dynamics and socially evolving preferences", *Industrial and Corporate Change*, Vol. 2, pp. 353-408.
- Carpenter, G.S. and Nakamoto, K. (1989), "Consumer preference formation and pioneering advantage", *Journal of Marketing Research*, Vol. 26 No. 3, pp. 285-98.
- Casson, M. (1982), *The Entrepreneur: An Economic Theory*, Routledge, Cheltenham.
- Chandy, R.K. and Tellis, G.J. (2000), "The incumbent's curse? Incumbency, size, and radical product innovation", *Journal of Marketing*, Vol. 64, pp. 1-17.
- Christensen, C.M. (1995), "Disruptive technologies: catching the wave", *Harvard Business Review*, January-February.
- Christensen, C.M. (2000), *The Innovator's Dilemma*, Harvard Business School Press, Boston, MA.
- Christensen, C.M. and Bower, J.L. (1996), "Customer power, strategic investment and the failure of leading firms", *Strategic Management Journal*, Vol. 17, pp. 197-218.
- Christensen, C.M., Raynor, M. and Verlinden, M. (2001), "Skate to where the money will be", *Harvard Business Review*, Vol. 79 No. 10.
- Coase, R.H. (1988), *The Firm, the Market and the Law*, University of Chicago Press, Chicago, IL.
- Cyert, R.M. and March, J.G. (1963), *A Behavioral Theory of the Firm*, Prentice-Hall, Englewood Cliffs, NJ.
- Danneels, E. (2004), "Disruptive technology reconsidered: a critique and research agenda", *Journal of Product Innovation Management*, Vol. 21 No. 4, pp. 246-58.
- Dhalla, N.K. and Yuspeh, S. (1976), "Forget the product life cycle concept", *Harvard Business Review*, Vol. 54, pp. 102-12.
- Donaldson, L. (1995), *American Anti-Management Theories of Organization: A Critique of Paradigm Proliferation*, Cambridge University Press, Cambridge.
- Earl, P. (1998), "Consumer goals as journeys into the unknown", in Bianchi, M. (Ed.), *The Active Consumer*, Routledge, Cheltenham.
- Ericsson, K.A., Charness, N., Feltovich, P.J. and Hoffman, R.R. (2006), *The Cambridge Handbook of Expertise and Expert Performance*, Cambridge University Press, Cambridge.
- Gardner, D.M. (1987), "The product life cycle: a critical look at the literature", in Houston, M. (Ed.), *Review of Marketing*, American Marketing Association, Chicago, IL.
- Geroski, P.A. (2002), *The Evolution of New Markets*, Oxford University Press, Oxford.
- Gualerzi, D. (1998), "The active consumer: novelty and surprise", in Bianchi, M. (Ed.), *Consumer Choice*, Routledge, London.

-
- Henderson, R. (1993), "Underinvestment and incompetence as responses to radical innovation: evidence from the photolithographic alignment equipment industry", *RAND Journal of Economics*, Vol. 24, pp. 248-70.
- Herrmann, A., Tomczak, T. and Befurt, R. (2006), "Determinants of radical product innovations", *European Journal of Innovation Management*, Vol. 9 No. 1, pp. 20-43.
- Im, S. and Workman, J.P. (2004), "Market orientation, creativity and new product performance in high-technology firms", *Journal of Marketing*, Vol. 68, pp. 114-32.
- Lambkin, M. and Day, G.S. (1989), "Evolutionary processes in competitive markets: beyond the product life cycle", *Journal of Marketing*, Vol. 53, pp. 4-20.
- Lancaster, K. (1971), *Consumer Demand: A New Approach*, Columbia University Press, New York, NY.
- Loasby, B.J. (1999), *Knowledge, Institutions and Evolution in Economics*, Routledge, London.
- McFadzean, E., O'Loughlin, A. and Shaw, E. (2005), "Corporate entrepreneurship and innovation, part 1: the missing link", *European Journal of Innovation Management*, Vol. 8 No. 3, pp. 350-72.
- March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Markides, C. (2006), "Disruptive innovation: in need of better theory", *Journal of Product Innovation Management*, Vol. 23 No. 1, pp. 19-25.
- Matsuno, K., Mentzer, J.T. and Ozsomer, A. (2002), "The effects of entrepreneurial proclivity and market orientation on business performance", *Journal of Marketing*, Vol. 66, pp. 18-32.
- Olson, M. and Kahkonen, S. (2000), *A Not-so-dismal Science: A Broader View of Economics and Societies*, Oxford University Press, Oxford.
- Palich, L.E. and Bagby, D.R. (1992), "Cognitive processes: is the entrepreneur different?", *Frontiers of Entrepreneurship Research*, pp. 106-17.
- Pech, R.J. and Cameron, A. (2006), "An entrepreneurial decision process model describing opportunity recognition", *European Journal of Innovation Management*, Vol. 9 No. 1, pp. 61-78.
- Reinganum, J.F. (1983), "Uncertain innovation and the persistence of monopoly", *American Economic Review*, Vol. 73 No. 4, pp. 741-8.
- Robertson, P.L. and Yu, T.F. (2001), "Firm strategy, innovation and consumer demand: a market process perspective", *Managerial and Decision Economics*, Vol. 22, pp. 183-99.
- Rosenberg, N. (1996), "Uncertainty and technological change", in Fuhrer, J.C. and Sneddon Little, J. (Eds), *Technology and Growth: Conference Series No. 40*, Federal Reserve Bank of Boston, Boston, MA.
- Sandberg, B. and Hansen, S.-O. (2004), "Creating an international market for disruptive innovations", *European Journal of Innovation Management*, Vol. 7 No. 1, pp. 23-32.
- Sarasvathy, S.D. (2001), "Causation and effectuation: towards a theoretical shift from economic inevitability to entrepreneurial contingency", *Academy of Management Review*, Vol. 26 No. 2, pp. 243-88.
- Sarasvathy, S.D. and Dew, N. (2005), "New market creation through transformation", *Journal of Evolutionary Economics*, Vol. 15, pp. 533-65.
- Schumpeter, J.A. (1934), *The Theory of Economic Development*, Harvard University Press, Cambridge.
- Schumpeter, J.A. (1939), *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, McGraw Hill, New York, NY.

-
- Simon, H.A. (1988), *The Sciences of the Artificial*, 5th ed., MIT Press, Cambridge, MA.
- Spulber, D.F. (1997), *Market Microstructure: Intermediaries and the Theory of the Firm*, Cambridge University Press, Cambridge, UK.
- Stigler, G.J. and Becker, G.S. (1977), "De Gustibus Non Est Disputandum", *American Economic Review*, Vol. 67 No. 2, pp. 76-90.
- Tellis, G.J. (2006), "Disruptive technology or visionary leadership?", *Journal of Product Innovation Management*, Vol. 23 No. 1, pp. 34-8.
- Venkataraman, S. (1997), "The distinctive domain of entrepreneurship research", *Advances in Entrepreneurship, Firm Emergence and Growth*, Vol. 3, JAI Press, Greenwich, CT, pp. 119-38.
- Vishwanath, V. and Harding, D. (2000), "The Starbucks effect", *Harvard Business Review*, March-April, p. 2000.
- Wiltbank, R., Dew, N., Sarasvathy, S.D. and Read, S. (2006), "What to do next? The case for non-predictive strategies", *Strategic Management Journal*, Vol. 27 No. 10, pp. 981-98.
- Knight, F.H. (1921), *Risk, Uncertainty and Profit*, Schaffner & Marx, Boston, MA.

Further reading

- Business Week* (1999), "Clayton Christensen on 'innovator's dilemmas' and 'innovator's no-brainers'", *Business Week*, March 15, p. 1999.
- Galbraith, J.K. (1976), *The Affluent Society*, Houghton Mifflin, Boston, IL.
- Hayek, F.A. (1961), "The non sequitur of the dependence effect", *Southern Economic Journal*, Vol. 27, pp. 346-8.
- Helfat, C.E. and Lieberman, M.B. (2002), "The birth of capabilities: market entry and the importance of pre-history", *Industrial and Corporate Change*, Vol. 11 No. 4, pp. 725-60.
- Hitt, M.A., Ireland, R.D., Camp, S.M. and Sexton, D.L. (2001), "Guest editor's introduction to the special issue: strategic entrepreneurship: entrepreneurial strategies for wealth creation", *Strategic Management Journal*, Vol. 22 Nos 6-7, pp. 479-92.
- Lewontin, R.C. (1992), *Biology as Ideology: The Doctrine of DNA*, HarperPerennial, New York, NY.
- Lindblom, C.E. (1959), "The science of muddling through", *Public Administration Review*, Vol. 19, pp. 79-88.
- McMillan, J. (2002), *Reinventing the Bazaar: A Natural History of Markets*, Norton, New York, NY.
- March, J.G. (1982), "The technology of foolishness", in March, J.G. and Olsen, J.P. (Eds), *Ambiguity and Choice in Organizations*, Universitetsforlaget, Bergen.
- Menard, C. (1995), "Markets as institutions versus organizations as markets? Disentangling some fundamental concepts", *Journal of Economic Behavioral and Organization*, Vol. 28, pp. 161-82.
- Read, S., Dew, N., Sarasvathy, S.D. and Wiltbank, R. (2005), "Marketing under uncertainty: a knock at the door", working paper.
- Schumpeter, J.A. (1976), *Capitalism, Socialism and Democracy*, Harper & Row, New York, NY.
- Shackle, G.L.S. (1979), *Imagination and the Nature of Choice*, Edinburgh University Press, Edinburgh.

About the authors

Nicholas Dew is an Assistant Professor of Strategic Management at the Naval Postgraduate School, Monterey, CA. His research focuses on entrepreneurial decision making and industry evolution. He has a PhD in management from the University of Virginia, an MBA from the Darden school, and a BA in history from the University of York (UK). His work experience includes eight years working internationally for British Petroleum. He has published in several academic journals, including: *Strategic Management Journal*, the *Journal of Business Venturing*, the *Journal of Business Ethics*, the *Journal of Evolutionary Economics* and *Industrial and Corporate Change*. Nicholas Dew is the corresponding author and can be contacted at: ndew@nps.edu

Saras D. Sarasvathy is an associate professor at the Darden Graduate School of Business Administration. She teaches courses in entrepreneurship and ethics in Darden's MBA and doctoral programs. Her research focuses on the cognitive basis for high-performance entrepreneurship. She has published in various scholarly journals, including the *Academy of Management Review*, *Strategic Management Journal*, the *Journal of Business Venturing* and the *Journal of Evolutionary Economics*. Her first book *Effectuation: Elements of Entrepreneurial Expertise*, was recently published by Edward Elgar.

Stuart Read is a Professor of Marketing at IMD in Lausanne, Switzerland. His academic credentials include a PhD in Marketing from the University of Washington and a Bachelor's Degree in Computer Science from Harvard University. He has nearly 20 years of industry experience, having participated in the creation of six high technology start-up firms. Four of those firms were acquired by industry leaders, including Sun Microsystems and Lotus Development Corporation. Two are publicly traded. Stuart also spent six years with enterprise database software provider, Oracle Corporation. Stuart's research interests revolve around new ventures and innovation, specifically investigating expertise in the entrepreneurial domain, marketing of innovations with network externalities, and non-predictive strategies that enable managers to effectively make decisions in situations of true uncertainty.

Robert Wiltbank is Assistant Professor of Strategy and Entrepreneurship at the Atkinson Graduate School of Management at Willamette University. His research focuses on strategy making under uncertainty, particularly as it relates to venture development. His research on angel investing performance is the first large empirical examination of the outcomes achieved by angel investors in the USA. At Willamette University he teaches courses on new venture creation, strategic management, and industry analysis. He holds a PhD in Strategic Management from the University of Washington, and a degree in Finance and Accounting from Oregon State University.