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FROM GOLDILOCKS TO GUMP: ENTREPRENEURIAL MECHANISMS FOR EVERYDAY ENTREPRENEURS

Saras Sarasvathy[1]
William Forster[2]
Anusha Ramesh[3]

ABSTRACT

In this essay we argue that the exclusive focus on research aimed at isolating the characteristics of entrepreneurs as opposed to others, while intellectually exciting and even practically valuable, may have blinded us to another wholly new and exciting possibility – namely, the design of mechanisms that allow all kinds of individuals to start new ventures and provide useful and valuable tools to enable them and their stakeholders to build enduring organizations. The research stream on effectuation has identified a few of these mechanisms. By showing where effectuation may be located within the history of behavioral and experimental economics, we were led to the outline of at least three more mechanisms that could open the door to an entirely new research agenda on entrepreneurial mechanisms design that parallels the effort in experimental economics on economic systems design.

Keywords: Characteristics of entrepreneurs; Effectuation; History of Behavioral; Experimental Economics.

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[1]University of Virginia, Darden School of Business, (United States). E-mail:sarasvathys@darden.virginia.edu
[2]University of Virginia, Darden School of Business, (United States). E-mail: wforster@willamette.edu **Orcid id: https://orcid.org/0000-0001-5237-4408**
[3]University of Virginia, Darden School of Business, (United States). E-mail: aramesh@willamette.edu **Orcid id: https://orcid.org/0000-0001-8706-0521**

1 INTRODUCTION

While Goldilocks searches for just the right kind of soup, chair and bed, Forrest Gump traipses along accepting his mother's dictum that life is like a box of chocolates and that you never know what you're gonna get. For over four decades of empirical investigations into entrepreneurial decision making, we have tried to model Goldilocks, while our subjects have happily muddled their way through the entrepreneurial process in a Gump-like fashion. Or so it appears from the data we have accumulated.

Whether it is personality traits, opportunity recognition processes, heuristics and biases or strategies for success, differential findings from carefully imagined, rigorously executed studies in entrepreneurial decision making lead to conflicting results that make cumulation and convergence frustratingly difficult. Risk taking is good; too much risk taking is bad (Miner & Raju, 2004; Stewart & Roth, 2001). Resources matter; resources do not matter (Amit, MacCrimmon, Zietsma, & Oesch, 2001; Holtz-Eakin, Joulfaian, & Rosen, 1994; Mamadou, 1990). Confidence is necessary; overconfidence kills you (Camerer & Lovallo, 1999; Chen, Greene, & Crick, 1998). Trust is crucial; overtrust is debilitating (Davies, Lassar, Manolis, Prince, & Winsor, 2011; Goel & Karri, 2006; Nguyen & Rose, 2009). Persistence is essential; not exiting at the right time is fatal (Cardon, Wincent, Singh, & Drnovsek, 2009; Gatewood, Shaver, & Gartner, 1995; Jensen, 1993). Listening to customers is key; listening too closely can blind you to new trajectories (Christensen & Bower, 1996; De Clercq & Rangarajan, 2008). Learning is great; but learning too quickly leads to myopia (Cassar, 2010; Cope, 2011; Denrell & Fang, 2010; Yang, 2011).

So what are we to do? We can either keep searching for the perfect Goldilocks solution for each of these or we can work on specifying contingencies under which different quantities are optimal. Some studies are beginning to do the latter and are to be applauded (Admati & Pfleiderer, 1994; Carrasco & De Mello, 2010; Chi-Nien, 2006; Endres & Woods, 2010; Gruber, 2007; Honig, 2004; Koe Hwee Nga & Shamuganathan, 2010). Rauch and Frese (2007) find in their meta

analysis of personality traits that traits matched to specific tasks involved in starting and running ventures produced higher effect sizes than more general traits, and also that heterogeneity was larger than expected and needed to be taken more explicitly into account in future studies. As a third alternative, we can simply turn from specifying the ideal characteristics of the decision maker to identifying, inventing and testing specific mechanisms that any old Gump can use to build useful, valuable and enduring ventures. This third way has the added advantage of making entrepreneurship an experimental and actionable discipline, and not only a phenomenological setting to test theories from more "scientific" disciplines.

In this essay, we seek to outline a research agenda for fleshing out this third way. We begin with a brief history of behavioral and experimental economics within which we are able to locate the growing stream of research into entrepreneurial expertise. The review also leads us to the rising subfield of economic systems design in experimental economics. For over four decades now, experimental economists have "designed" institutions in laboratory settings, tested and modified them through iterative experiments and empirical observations that show how useful and efficient market structures could emerge. We see a similar promise in the realm of entrepreneurship. We outline how it may be possible to design and test mechanisms that allow all kinds of entrepreneurs, Goldilocks and Gump and everyone else in between, to build ventures that make sense for them and make a difference for their stakeholders.

2 A BRIEF REVIEW OF BEHAVIORAL AND EXPERIMENTAL ECONOMICS

Decision making under uncertainty has a long history dating back to Pascal in 1654 (Todhunter, 1865). It was imported into economics when prominent economists such as Knight and Hayek began highlighting the role of uncertainty and partial knowledge as fundamental challenges to the decision making frameworks in vogue at the time (Hayek, 1984; Knight, 1921). Knight in particular put uncertainty at the very core of entrepreneurial decision making. Although both Knight and Hayek have been revered as great economists, their works did not directly impact entrepreneurial decision making until recently. In the meanwhile, Austrian

economists kept some of these works alive even as they argued for a more central role for entrepreneurship in mainstream economics (Boudreaux & Holcombe, 1989; Kirzner, 1979, 1997). Almost all of these developments, however, were predominately theoretical rather than empirical, at least partially because of the growing success of the neoclassical revolution in economics through the first half of the twentieth century.

At the heart of the neoclassical model of economics is *Homo Economicus.* Homo Economicus is rational. His preferences are clear and well-ordered; he knows what he wants; he is capable of carrying out formal calculations based on perfect or near-perfect information; and he has the ability to learn almost instantaneously and accurately. Moreover, the model postulates a homogenous population of decision makers each of whom can be adequately represented as Homo Economicus. At least one important argument for replacing actual human behavior with the set of simple and formalizable assumptions that is Homo Economicus came from the philosophical notion of Occam's razor. Occam's razor proffers parsimony as the touchstone for modeling. As a principle it states that simpler explanations, hypotheses and assumptions are, other things being equal, generally better than more complex ones. Philosophers and scientists through the ages have found value in the razor as a useful maxim in research and model design. But as Herbert Simon pointed out with characteristic insight, Occam's razor may have a double edge (1979: 495). Accepting overly simple and unrealistic assumptions may lead to complex, ugly theories that do not predict well and explain little. On the other hand, using more realistic even if ugly and complex assumptions could lead to simple, elegant and generalizable theories that work well.

This insight combined with Simon's work on human problem solving and a resurgence in empirical work at the intersection of psychology, economics and computer science led to the behavioral and experimental revolution in economics in the second half of the twentieth century. As Camerer & Loewenstein (2003: 3) explain, "At the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve

economics on its own terms -- generating theoretical insights, making better predictions of field phenomena, and suggesting better policy."

Starting with experiments in the laboratory, behavioral economists painstakingly began testing existing assumptions, gathering counterexamples and contradictory results, ruling out alternative explanations and finally modifying the original models and/or developing new models based on the tested, more realistic assumptions. As a result of this continuing endeavor, Homo Economicus is beginning to resemble Homo Sapiens in cognition and emotion, and even beginning to acquire a body and brain through recent developments in neuroeconomics (Camerer, Loewenstein, & Prelec, 2005). As the collection of articles in Camerer and LoewenStein (2003) lays out in some detail, advances in behavioral economics include the development of Prospect Theory, models of mental accounting (Grinblatt & Han, 2005) and intertemporal choice (Thaler, 1980), behavioral game theory (Camerer, 1997) and behavioral finance (Thaler, 2005) as well as a role for fairness and social preferences even in the calculation of individual utilities (Loewenstein, Thompson, & Bazerman, 1989).

The overall patterns in empirical studies over the last four to five decades point to a healthy trend in the spirit of Richard Thaler's (2000) predictions of the move *From Homo Economicus to Homo Sapiens.* Starting with standard economic models of rationality (Baum & Walkup, 1951), both economists and entrepreneurship scholars have moved toward behavioral models based on bounded rationality (Smith, Gannon, Grimm, & Mitchell, 1988), incorporating heuristics and biases (Busenitz & Barney, 1997) and expert cognition (Mitchell, 1994; Sarasvathy, Simon, & Lave, 1998; Sarasvathy, 1998). More recently, the field has begun to grapple with emotion (Cardon, Wincent, Singh, & Drnovsek, 2009; Chen, Yao, & Kotha, 2009; Shepherd, 2003), intuition (Blume & Covin, 2011), metacognition (Haynie, Shepherd, Mosakowski, & Earley, 2010) and even biology (White, Thornhill, & Hampson, 2006). Although these latter are mostly studied as antecedents to decision making rather than constituting the content and process of decision making, the literature as a whole is beginning to put flesh on the bare bones of our understanding of entrepreneurial decision making.

Yet the literature also points to conflicting, even paradoxical, findings such as the ones listed at the beginning of this essay. The growing literature on overconfidence (also comparative optimism) is a case in point. On the one hand, studies show that being too confident can negatively affect decision making in new firms (Hayward, Shepherd, & Griffin, 2006) and can lead to taking on excessive risk (Li & Tang, 2010). On the other hand, Busenitz and Barney (1997) indicated that being overconfident could help entrepreneurs more readily establish new ventures, and Dimov (2010) found empirical evidence that confidence was associated with new venture emergence. Hayward et al (2010) also postulated that hubris could be positively related to repeat venturing, and is likely to have other positive performance effects.

It could be that these conflicting findings are pointing to difficulties or errors in measurement. After all, entrepreneurship is indeed a complex phenomenon that occurs in settings of multiple types of uncertainties. It could also be that the uncertainties are so large and complex and intractable that the only strategy is one of randomness, that is, individual decision makers do nothing more than inject random variation into the model. This implies that the entire field of research on entrepreneurial decision making is chasing what the philosopher Quine termed a *falsidical paradox* – namely an absurdity masquerading as logically coherent reality (1976). Or it could be that we are dealing with the other kind of paradox he specified, a *veridical* one, where a seeming absurdity is actually real and logically coherent (Quine, 2011). We suspect it is the latter in the case of entrepreneurial decision making.

Simply stated, both risk averse and risk loving individuals can become successful entrepreneurs; pursuit of resources currently outside one's control (Stevenson & Jarillo, 1990) may be as viable a strategy as leveraging only what you already have control over (Sarasvathy, 2008); both confidence and overconfidence can feed effective action; and both due diligence and overtrust may provide useful criteria for putting together and growing a network of valuable stakeholders (Sarasvathy & Dew, 2008). In other words, in adopting a Goldilocks approach to

entrepreneurial decision making, we may be over-specifying the decision maker in our models.

Philosophically speaking, the Goldilocks Principle states that something must fall within certain margins, as opposed to reaching extremes. It is used, for example, in the Rare Earth hypothesis which states that a planet must neither be too far away from, nor too close to the sun to support life (Ward & Brownlee, 2003). Either extreme would result in a planet incapable of supporting life. The opposite may be true in the case of entrepreneurship. Maybe the task is not to stay away from extremes or even to specify the ideal decision maker, but to develop a variety of specific mechanisms that all kinds of decision makers can use in different ways in different situations. We will specify this idea in some detail in the next section and provide arguments from two separate sets of studies – one involving decision making at the level of individual entrepreneurs and their early stakeholders, and the other dealing with the behavior of markets given differential assumptions about individual human behavior. For the former, we draw on the growing literature on effectuation (Sarasvathy, 2001, 2008) and for the latter, we draw on behavioral and experimental economics (Smith, 2003). But we begin with behavioral and experimental economics first and then move to effectual entrepreneurship as a subset of scholarship located within behavioral and experimental economics.

From Goldilocks to Gump: Evidence from Behavioral Economics

In order to develop an alternate set of behavioral assumptions about the entrepreneurial decision maker and to push toward a new research agenda to spell out mechanisms that can result in enduring organizations, we will use the plunge decision as an illustrative example. The plunge decision is a commonly used term in practice for the decision to become an entrepreneur (Dew, Sarasathy, Read, & Wiltbank, 2009b). In the canonical case in economics, the plunge decision is examined through the occupational choice problem. Let us begin with that to illustrate the differences between a Goldilocks versus Gump specification of the decision maker.

The occupational choice problem is usually modeled as a choice between

staying in a wage job versus starting one's own venture. In 1978, the Nobel prize winning economist Robert Lucas used this model as a basis for theorizing about the size distribution of firms in an economy (Lucas, 1978). Since then a number of articles have been published using the model to specify key decision parameters and their fit with market structure and other relevant variables that impact this particular decision problem in entrepreneurship. Kihlstrom and Laffont (1979) added in the role of risk aversion into the model. Evans and Leighton (1989) analyzed both entry into and exit out of self-employment. More recently, Levesque et al (2002) provided a dynamic utility maximizing extension to the model. And Parker and van Praag (2012) extended it to study whether entry into entrepreneurship happens through takeover of an existing business or through a de novo venture start.

Another recent study using panel data from the National Science Foundation's Scientist and Engineers Statistical Data System found that individuals choosing to become entrepreneurs were more likely to come from both tails of the earnings and ability distribution (Elfenbein, Hamilton, & Zenger, 2010). Astebro and Thompson (2011) explained this finding in terms of mismatches between firms and workers as well as between workers and tasks arising out of frictions in the labor market. In terms of Quine's paradoxes that we alluded to earlier, if we cast the problem as one of Goldilocks choosing between wage work and entrepreneurship set within a frictionless market, the Elfenbien findings would seem to be pointing to a falsidical paradox. The decision maker is irrational or something is wrong with the data or there is a market failure of some sort. But when we consider a market structure with its own kinks and a heterogenous population of decision makers with bounded cognition and varying motivations and preferences, we begin to see the paradox as veridical. The overall picture becomes logically consistent even when different parts of the picture do not necessarily make sense or look pretty. And most importantly, we do not need to assume Goldilocks at the crux of the choice. Any old Gump will do.

Gigerenzer and his collaborators took a similar explanatory stance toward biases such as base rate fallacy identified in the behavioral economics literature

(Gigerenzer, Hertwig, Hoffrage, & Sedlmeier, 2008). The notion of a bias implies the existence of an ideal rational model that the decision maker either deviates from. Even when decision makers are modeled not as perfectly, but only "boundedly" rational, the literature on biases assumes a normative ideal that they ought to aim for. Gigerenzer et al challenged that by simply showing that (a) so-called biases disappear when context is explicitly brought back into the modeling and (b) simple heuristics are actually smart when they match up with the environments they were actually evolved to fit. This argument from "ecological" rationality echoes March's (1996) seminal arguments about the "logic of appropriateness" and fits with a looser set of assumptions about human behavior that can more easily take into account the heterogeneity and even idiosyncrasy that we observe in actual human beings (March & Olsen, 2005).

Cumulative evidence from the vast and growing body of research in behavioral economics leads to the conclusion that maybe we should dumb down our assumptions about what it takes to be a good decision maker in entrepreneurship. We have paraphrased this conclusion into the phrase "from Goldilocks to Gump." In the next two sections we will show how moving from Goldilocks to Gump is beginning to find support from two other relevant and rising tides of studies – one from experimental economics and the other from entrepreneurship.

3 From Goldilocks to Gump: Evidence from Experimental Economics

In his Nobel lecture, economist Vernon Smith (2003) provided a stylized review and summary of decades of research in economic psychology, behavioral economics and experimental economics to examine which assumptions about human behavior are relevant for the understanding of how and why markets work. He began with the Scottish philosophers Mandeville and Adam Smith whose arguments have been concurrently sanctified and vilified as rational man, or *Homo Economicus* or what Vernon Smith refers to as the standard socioeconomic science model of rationality (SSSM). He then linked SSSM to "constructivist rationality" and contrasted it with "ecological rationality" and emphasized that "both are essential to

understanding and unifying a large body of experience from socioeconomic life and the experimental laboratory, and in charting relevant new directions for economic theory as well as experimental-empirical programs.“ (Smith 2003: 466).

A constructivist rational order emphasizes “conscious deductive processes of human reason,” and “… uses reason to deliberately create rules of action, and create human socioeconomic institutions that yield outcomes deemed preferable, given particular circumstances, to those produced by alternative arrangements.” (p 468) An ecological rational order is conceptualized “as an undesigned ecological system that emerges out of cultural and biological evolutionary processes; homegrown principles of action, norms, traditions, and "morality”. Furthermore, “Ecological rationality uses reason-rational reconstruction-to examine the behavior of individuals based on their experience and folk knowledge, who are "naive" in their ability to apply constructivist tools to the decisions they make; to understand the emergent order in human cultures; to discover the possible intelligence embodied in the rules, norms, and institutions of our cultural and biological heritage that are created from human interactions but not by deliberate human design.” (p 469-470).

Smith and his colleagues have been working in an area that has come to be called “economic systems design” which seeks to go beyond examining the intelligence (economic rationality) inherent in emergent social orders. It does so by investigating counterfactual social orders – i.e., norms, institutions and cultures that did not actually emerge, but could have, given relevant historical constraints. As Smith explains:

> To understand what is -- the tip of the knowledge iceberg -- requires understanding of a great deal that is not. In the laboratory we can not only rationally reconstruct counterfactuals, as in economic history, but also use experiments to test and examine their properties. (2003: 472)

In economic systems design, the experimental method is used to design alternate institutions, test them in the laboratory, refining and modifying particular features in an iterative fashion based on test results. In this way, even when initial

institutional designs are “constructivist” in their rationality, iterations that modify, test, redesign and retest implement an “ecological” approach. When some of these designs are realized in practice outside the laboratory, actual evolution of the institutions is also observed. Additionally, these experiments, in the lab, in the field and those that arise naturally in the world, all bring into relief the microstructures necessary to make markets work – i.e. for the emergence of markets capable of competitive equilibrium in the Cournot-Nash sense.

Smith (2003) summarized hundreds of experiments over four decades of research in this area to conclude that individual human beings need not have complete information or sophisticated calculating abilities for working (i.e., ecologically rational and even competitively efficient) markets and institutions to emerge. Nor do decision makers need to be self-interested per se – heterogeneity on this issue works just as well. In other words, “markets economize on information, understanding, the number of agents, and individual rationality.” (2003: 477) Furthermore, “Without knowledge or understanding of the whole, and without design or intention, the participants use the rules at their disposal to achieve three properties observed by the experimenter: (1) high efficiency, (2) maximum individual profit given the behavior of all other agents, and (3) protection from manipulation by their protagonist.” (2003: 479).”

In sum, experimental work investigating the microstructures of efficient institutions evolved in the lab, in the field and through history all point to the conclusion that we may be over-specifying the rationality requirements of individual decision makers and underestimating the role of heterogeneity in human behavior. Recent evidence from studies of entrepreneurial expertise argues for the same within the specific realm of entrepreneurship. Yet it also shows that all kinds of individual decision makers in concert with small groups of self-selected stakeholders can help shape markets that work well. In other words, the mechanisms that decision makers use and the processes through which they use them may be more important than specific characteristics of the decision makers themselves.

4 From Goldilocks to Gump: Evidence from Effectual Entrepreneurship

The set of heuristics that have come to be clubbed together into the rubric of "effectuation" was discovered through an in-depth protocol analysis study of expert entrepreneurs. Since the findings from the original study were published in Sarasvathy (2001), a variety of other articles – empirical, theoretical and polemical – ensued. In the next paragraph, we provide a brief summary of the findings from this stream of research.

4.1 Extensive, independently validated, and rigorous basis. The non-predictive logic of effectuation was rigorously extracted from the real world experience of expert entrepreneurs who built companies in a wide variety of industries. The original study of expert entrepreneurs has since been replicated with novices and expert corporate managers, attesting to the specific elements that make the logic unique to entrepreneurial expertise (Read, Dew, Sarasvathy, Song, & Wiltbank, 2009). In a concerted ongoing effort, each detailed element of the logic is since being worked out in considerable theoretical detail (Dew, 2009; Dew, Read, Sarasvathy, & Wiltbank, 2008; Dew, Read, Sarasvathy, & Wiltbank, 2009a; Sarasvathy & Dew, 2005) and encapsulated into pedagogical materials drawn from the case histories of hundreds of actual ventures (Read, Sarasvathy, Dew, Wiltbank, & Ohlsson, 2011). Several elements have also been spelled out for empirical investigations using a variety of methods and different groups of subjects. Methods used thus far include protocol analysis, qualitative case studies and interviews, mathematical and computer simulations, surveys, conjoint experiments, meta-analysis, and innovative analyses of social media data. Besides expert entrepreneurs, expert corporate managers, and novices, groups of subjects studied include technology ventures in multiple countries, R&D managers, angel investors, venture capitalists, family and small business owners, and international and social ventures (Brettel, Mauer, Engelen, & Küpper, 2012; Chandler, DeTienne, McKelvie, & Mumford, 2011; Fischer & Reuber, 2011; Read, Song, & Smit, 2009; Schweizer, Vahlne, & Johanson, 2010; Wiltbank, Read, Dew, & Sarasvathy, 2009).

4.2 Empirical, pedagogical, and practical links to entrepreneurial experience.

Empirically speaking, the logic holds up in at least three ways. First, it has been shown to be *acquired* through entrepreneurial experience. Even if there may be a traits aspect to it, namely that some people are more prone to use it even as novices, the relationship between entrepreneurial experience and the increased use of effectual logic is strong and significant. Second, effectual logic coheres well with other heuristics induced from both rigorous empirical studies of entrepreneurs as well as more anecdotal wisdom culled from practice. For example, the bird-in-hand principle in effectuation partially overlaps with studies of bricolage and improvisation (Baker, 2007; Baker, Miner, & Eesley, 2003). And the affordable loss principle works well with specific practitioner methodologies such as Lean Startups and IDEO's Deep Dive as well as more generally with techniques of bootstrapping and rapid prototyping (Dew et al., 2009b). Finally, as is attested from the efforts of hundreds of educators around the world, effectual logic appears to be both teachable and learnable (see www.effectuation.org for recent developments). Moreover, it seems to be teachable more widely than in the MBA classroom (Blekman, 2011; Faschingbauer, 2010).

4.3 Parsimonious in assumptions yet specific and detailed in content. One of the unique features of effectual logic is that it does not make any assumptions about precedents either at the micro or macro levels. The model does not require standard assumptions of *Homo Economicus* such as rationality, utility maximization, or ordered preferences (Thaler, 2000), nor does it require the preexistence of particular psychological traits or institutional frameworks, nor even the prior existence of opportunities, particular regulatory or technological regimes, or socio-economic conditions such as specific types of human and social capital. The logic, therefore, is generally applicable to *Homo Sapiens* as is and is both descriptive and prescriptive under a wide variety of institutional and historical environments. Furthermore, in de-emphasizing the specific characteristics of individual decision makers and focusing on mechanisms and processes, effectuation works well with sociological approaches that seek to provide behavioral microfoundations for institutional logics (Thornton, Ocasio, & Lounsbury, forthcoming).

In sum, the model of the decision maker at the heart of effectuation coheres

well with the findings from behavioral and experimental economics research reviewed in the previous section. But whereas the work of Smith and his colleagues is focused on alternate institutional arrangements that evolve over time toward efficient markets, effectuation is focused on the process through which individual entrepreneurs interact with small groups of self-selected stakeholders to build enduring organizations.

The effectual decision maker is not postulated to be a special type of human being – Goldilocks and Gump are equally plausible candidates. The decision maker at the heart of the process may be smart or dumb, rational or irrational, risk averse or risk loving, self-interested or altruistic, or more realistically, a bit of all of the above at different times over different domains of action. The only requirement on the decision maker is that he or she is willing to work with others. The effectuator does not act alone and the effectual process is interactive. And it is interactive in at least three different ways – over time, across actors and with its environment however defined. Effectual interactions at times leverage, strengthen, modify or destroy existing institutions, in part or as a whole. This may happen intentionally or as unanticipated consequence of the effectual process.

More generally, these interactions often result in marginal transformations of all elements involved including decision makers' own preferences and intentions. These transformations are embodied in specific mechanisms that we believe are both observable in the field and manipulable in laboratories. Put differently, research into effectual entrepreneurship has the potential to do for organizations what Smith's oevre has accomplished for markets. Whereas the latter focuses on institutions that allow markets to function well, the former has the potential to develop intersubjective mechanisms that allow enduring organizations to emerge (Venkataraman, Sarasvathy, Dew, & Forster, 2012).

Ergo, a research agenda that seeks to investigate entrepreneurial decisions based on a more realistic model of human behavior would move us away from trying to specify special characteristics of entrepreneurs or structural elements for success and toward spelling out mechanisms and processes through which entrepreneurs

and their stakeholders transform current realities into new opportunities. In the following sections we outline a few initial steps in that move.

5 A RESEARCH AGENDA FOR ENTREPRENEURIAL MECHANISMS DESIGN

In this section we outline several ongoing research streams that can feed into a research agenda that does not require onerous assumptions about the characteristics or circumstances of the decision maker. Instead these newer contributions help deepen our understanding of particular mechanisms in entrepreneurial decisions, actions and interactions. The literature on effectuation has spelled out a series of such mechanisms. Here we list a few more possibilities that cohere with effectuation but derive from other research streams.

5.1 Hybrid entrepreneurship – Take the fork

Earlier we used the research into the occupational choice problem to contrast the Goldilocks versus Gump specifications of the decision maker in entrepreneurship. Recent research has shown how the occupational choice problem itself may be irrelevant for a substantial part of the entrepreneurial population that starts new ventures while continuing to work in a wage job, whether full time or part time (Folta, Delmar, & Wennberg, 2010). This new research on "hybrid" entrepreneurship offers an important mechanism for decision making when faced with tradeoffs. It implements Yogi Berra's famous prescription, "When you come to a fork in the road, take it."

In addition to the plunge decision, it is easy to visualize experimental as well as empirical studies to flesh out our understanding of this and other hybrid mechanisms in a variety of other entrepreneurial decisions. Funding decisions are a case in point. Entrepreneurs and their early stakeholders in new ventures are often faced with funding decisions involving debt versus equity. Family firms, for example, have been shown to exhibit a preference for debt while technology-based ventures tend to use equity (Carpenter & Petersen, 2002; Hogan & Hutson, 2005). But almost no studies in entrepreneurship in the new venture setting have looked at the role of the hybrid funding instrument – convertible debt. A notable exception is Cornelli and Yosha (2003) who showed how convertible debt may prevent short

termism in entrepreneurial decision making in venture-capital backed firms. The only other study we found consists in an unpublished working paper that examines conversion features and covenants in 50 venture capital convertible preferred private placements (Gompers, 1995). Both these studies focus on venture-capital backed ventures. But there is ample anecdotal evidence for the use of convertible debt in early stage ventures in angel investing and even in funding from family and friends (Wiltbank, 2005).

Hybrid mechanisms not only overcome the necessity for making tradeoffs in the entrepreneurial setting, they also help transform mixed gambles into pure gambles. In mixed gambles, both upside and downside possibilities exist as in the case of the classis occupational choice model where starting a venture may either result in profit (equal to or more than wage income) or loss (in addition to loss of wage income). In hybrid entrepreneurship, since the decision maker does not forgo wage income, yet has the option to earn profit through the new venture, only upside possibilities are salient to the decision, turning it into a pure gamble. This is even more true if the decision to become a hybrid entrepreneur is made using the affordable loss principle in effectuation.

6 PROSPECT THEORY: LOSS FRAMING

The notion of pure and mixed gambles comes from the literature on Prospect Theory (PT). In a recent comprehensive review of management studies based on Prospect Theory, Holmes et al (2011) carefully unpacked the theory into its constituent parts, explained each part in detail and showed their use (or lack thereof) in management journals. They also provided essential guidelines for improving our use of the theory in future research. In our outline below of the possible uses of Prospect Theory in building entrepreneurial mechanisms, we urge scholars to peruse the excellent review by Holmes et al before getting started on their projects.

According to Holmes et al, there are two important parts to PT: the value function and the probabilities weighting function. PT builds on experiments that show that in dealing with risky or uncertain situations, decision makers value gains and losses with respect to a reference point. Moreover they value equivalent

amounts of losses and gains as non-equivalent. Specifically, their value functions tend to be steeper below the reference point (i.e. it is concave in the possible loss domain) than above (i.e. it is convex in the domain of possible gains). Another way to understand this is to say that people are loss averse, that is, decision makers derive more displeasure from a loss than the pleasure they gain from an equivalent gain. Besides this skew in the value function, PT also shows that people underweight most probabilities (especially large probabilities such as the chance of finding a job in case their venture fails) but overweight probabilities near 0 (such as the much-touted less-than-one-in-ten success rate for new ventures).

The affordable loss principle is closely related to the findings from PT. Reconsider the plunge decision in terms of affordable loss versus expected return. According to PT, a gain-frame of the plunge decision occurs when the decision maker uses his or her current salary as the reference point and seeks to find an entrepreneurial opportunity that can do better than that. Affordable loss offers a loss-frame of the same problem. Here the reference point is the opportunity to become an entrepreneur and the problem becomes one of whether to walk away from that opportunity, especially if the initial investment is “affordable” however subjectively defined. Studies in PT show that decision makers tend be risk seeking in a loss frame and risk averse in a gain-frame. The prediction from effectuation that people using an affordable loss framing of the plunge decision are more likely to take the plunge is thus independently justified through PT.

It is easy to see why and how loss versus gain framing from PT may be of import in modeling other entrepreneurial decisions as well. We see several promising possibilities including how effectual entrepreneurs are able to bring early stakeholders on board even without predictions of higher returns on investment. Here a PT-based negotiation study involving uncertain payoffs offers an important clue. Bottom (1998) required subjects to negotiate for the chance to win a prize rather than for the prize itself, i.e., uncertainty was inserted into the outcome of the negotiation. Surprisingly, the study reversed standard predictions from PT. Here negotiators in a loss-frame were more likely to cooperate and reach a deal than negotiators in a gain frame. Could loss framing be an actionable mechanism in

entrepreneurial interactions more generally? It would be really interesting to construct experiments that manipulate relevant aspects of PT and affordable loss in the context of stakeholder interactions in new ventures.

The issue of when and how stakeholders choose to make commitments and negotiate emotional and/or economic ownership in an early stage new venture is closely related to how they view uncertainty, and what exactly they see as possible positive and negative contingencies down the road. We turn next to another useful mechanism that helps frame contingencies in entrepreneurial decision making.

7 COUNTERFACTUAL AND SEMIFACTUAL THINKING: EVEN-IF

The unexpected is an intrinsic part of entrepreneurship. Ever since Knight's (1921) definition of entrepreneurial judgment as the ability to make decisions in the face of the utterly unexpected, contingency has been considered an essential aspect of entrepreneurship. For example, Honig (2004) argued for a contingency-based approach to business planning. And Dew (2009) examined the role of serendipity in entrepreneurship. More recently Harmeling and Sarasvathy (2011) used counterfactual analysis to show how effectual entrepreneurs use contingency as a resource, rather than seeing it as something to be planned for and avoided, or adapted to or overcome.

Responses to contingency are interesting precisely because contingencies challenge the deterministic flow from cause to effect. For every course of events actually realized in history there are several (if not an infinite number of) alternate courses that could have happened but did not. Counterfactual thinking, therefore is a part of the human penchant for sensemaking and re-imagining the past. But counterfactual thinking has been shown to increase regret in the face of failure and other negative events (Roese & Olson, 1995; Zeelenberg et al., 1998) . Therefore, scholars have hypothesized that entrepreneurs are less likely than others to engage in counterfactual thinking. Baron (2000) compared entrepreneurs with potential entrepreneurs and non-entrepreneurs to find empirical support for that hypothesis. Interestingly, in line with our earlier observations about research that seeks to delineate characteristics of entrepreneurs usually leading to mixed findings,

Markman, Balkin, & Baron (2003) found equivalent levels of regretful thinking in both entrepreneurs and non-entrepreneurs except each group was regretful about different things.

In any case, there are very few studies of counterfactual thinking in entrepreneurship and literally none on semifactual thinking, probably because the latter is new even in psychology. We saw earlier that counterfactual thinking consists in wondering about what might have been different in consequence if antecedent conditions or choices had been different. In contrast, semifactual thinking consists in reflecting on consequences that would not have been different even if antecedent conditions or choices had been different. Whereas counterfactual thinking involves statements starting with "if only" semifactual statements begin with "even if."

In an experimental study comparing counterfactual "if only" thinking with semifactual "even-if" thinking, McCloy and Byrne (2002) showed that counterfactual "if only" thoughts about an antecedent event lead people to judge the event to be more causally related to the outcome, whereas semifactual "even if" thoughts lead people to judge the antecedent event to be less causally related to the outcome. In addition, the experiment showed that generating counterfactual "if only" thoughts increases emotional reactions such as regret, whereas generating semifactual "even if" thoughts decreases such reactions.

Note that when people consider events less causally related and hence more susceptible to intervention, they are more likely to take action to shape the course of events – i.e., they are more likely to be effectual. That is why semifactual thinking could be an important mechanism in entrepreneurial decision-making and not merely a way of characterizing the entrepreneur as different from others. Sarasvathy (2008) explained the role of "even-if" in effectual reasoning and showed that expert entrepreneurs used this as a mechanism in decision making under Knightian uncertainty. To illustrate the use of semifactuals in entrepreneurial decision making, let us once again consider the plunge decision of the entrepreneur who is leaving a well-paying job to start her own company. She could hypothesize to herself, "If I

start my own venture, I will be a successful entrepreneur-- something I have always wanted." But if we take a "positive" approach to the hypothesis, the data will almost always be against her taking the plunge because she will be pitting a near-certainty (income from current job) against an uncertain gamble (earning from venturing). And as scientists studying the subject, we will have to conclude that she will take the plunge only if she suffers from overconfidence bias.

But entrepreneurs routinely make the decision on the basis of the negative formulation of the hypothesis: "If I take the plunge, I may or may not become a successful entrepreneur; but if I do *not* take the plunge, I will *not* become a successful entrepreneur." So the problem becomes one of trying to find antecedent conditions that would make the plunge sufficiently feasible. This is a move away from the counterfactual mindset of "if only I had enough money, I would become an entrepreneur" or "if only I were not so risk averse…" or "if only I could be surer of success…" to that of "even if I were to fail…" In other words, so long as becoming an entrepreneur has a positive value to the entrepreneur, "even-if" is a mechanism that allows her to figure out how to take the plunge rather than why she should or should not. The mechanism focuses on enabling conditions such as:

- Even if I fail, I can find another job
- Even if I don't succeed, I would have the satisfaction of having been an entrepreneur because that is important to me
- Even if I don't succeed, it will be alright because I am within my affordable loss levels
- Even if I fail, I will be well-positioned to start another venture or to find a better job because of the people who are willing to come on board to try and make this happen with me.
-

In their series of experiments cited earlier, McCloy and Byrne (2002) also found that "when people complete "if only" and "even if" sentence stems, they focus on different alternative antecedents to the outcome: "if only" thoughts focus on

alternatives that would undo the outcome whereas “even if” thoughts focus on alternatives that would not undo it, from among a set of available alternative antecedents in which either all, some, or none would undo the outcome.” Given the fascinating possibilities that counterfactual and semifactual thinking offer both with regard to sensemaking about the past and helping shape the future, we hope we have nudged open an important door for the research agenda on entrepreneurial mechanisms design.

8 CONCLUSION

What we have provided above is but a starter set of possible mechanisms worth studying and constructing in the lab and elsewhere. The mechanisms used in our examples have only spanned the plunge decision, some aspects of early stage financing and the acquisition of stakeholders in new ventures. We are convinced similar mechanisms exist in hiring and firing decisions, marketing and sales decisions and even in accounting and legal decisions. Some of these might be observable through qualitative and quantitative empirical studies and others might have to be designed and examined in the laboratory and later brought to practice and tested in the field. Here the fruitful tradition of research into economic systems design has already shown the way and may be used as an initial blueprint on how to proceed.

We began this essay with the argument that the exclusive focus on research aimed at isolating the characteristics of entrepreneurs as opposed to others, while intellectually exciting and even practically valuable, may have blinded us to another wholly new and exciting possibility – namely, the design of mechanisms that allow all kinds of individuals to start new ventures and provide useful and valuable tools to enable them and their stakeholders to build enduring organizations. The research stream on effectuation has identified a few of these mechanisms. By showing where effectuation may be located within the history of behavioral and experimental economics, we were led to the outline of at least three more mechanisms that could open the door to an entirely new research agenda on entrepreneurial mechanisms design that parallels the effort that Smith (2003) referred to as economic systems

design at the institutional level. Smith summarized the effort as follows:

> Out of this interaction between minds through the intermediary of rules the process aggregates the dispersed asymmetric information, converging more-or-less rapidly to competitive equilibria if they exist. Each experimental market carries its own unique mark with a different dynamic path. (2003: 500)

A Gump-based research agenda in entrepreneurship would show how interactions between minds through the intermediary of effectual principles and other mechanisms yet to be discovered/constructed aggregates dispersed asymmetric information and heterogeneous preferences, tastes and talents into enduring organizations when possible. And in the case of effectual mechanisms, even if such organizations do not emerge, each entrepreneur and stakeholder investing in them will lose no more than they can afford to.

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