Competitive Research Article

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Extending Constructivist Perspectives on Opportunity Production Through An Incorporation of Effectual Logics

Abstract: Current constructivist theorizing relies heavily on causal logics and, therefore, posits that entrepreneurs either pursue or abandon perceived opportunities shortly after their inception. However, findings from effectuation research illuminate less-direct processes involved in the establishment of entrepreneurial ventures. We describe how effectual and causal logics might be integrated by proposing a supplemented model of entrepreneurial opportunity production that features an alternative effectual pathway. In describing this model, we develop six propositions to explain the unique pattern of cognitions and behaviors found among entrepreneurs employing effectual logics. Our propositions suggest that these entrepreneurs are unlikely to rely on peer feedback to determine the viability of early stage opportunities. Instead, they delay the objectification and evaluation of opportunities because they recognize that predictions made in uncertain environments are unlikely to be correct. The employment of these alternate logics results in different pathways to commercialization and different consequences associated with failures.

Keywords: opportunity production, cognitive style, causation, effectuation, constructivism

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Introduction

“Do entrepreneurial opportunities exist, independent of the perceptions of entrepreneurs, just waiting to be discovered? Or, are these opportunities created

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by the actions of entrepreneurs?” (Alvarez and Barney 2007, 11). Because the discovery, evaluation, and exploitation of opportunities constitute the “heart” of entrepreneurship research (Shane and Venkataraman 2000), epistemological and ontological debates concerning these questions remain central themes in entrepreneurship research (Busenitz et al. 2003; Venkataraman et al. 2012). The present research contributes to this debate by proposing an alternative theoretical pathway to existing constructivist models through which experienced entrepreneurs create opportunities by employing effectual logics in environments suffuse with uncertainty.

Constructivist research represents a significant departure from foundational works in entrepreneurship that describe opportunities as objective phenomena that exist independent of entrepreneurs awaiting *discovery* (e.g., Schumpeter 1934; Hayek 1948; Kirzner 1979). Instead, constructivist theory emphasizes the ways in which entrepreneurs’ perceptions, interpretations, and understandings of environmental forces influence the *construction* of opportunities. A recent proliferation of constructivist research is indicative of a broader shift among entrepreneurship scholars toward recognizing the influences of cognitions, intuitions, emotions and other phenomena on the entrepreneurial process that are difficult to quantify and, therefore, have traditionally been excluded from scholarly inquiry (Venkataraman et al. 2012). Despite these advances, current constructivist theorizing heavily relies upon causal logics that are unable to adequately explain the creation of many types of entrepreneurial opportunities. We address this theoretical gap by drawing upon insights from effectuation research to offer an augmented model of opportunity production that clearly demonstrates how certain effectual logics influence the production of entrepreneurial opportunities. By integrating these logics into a cohesive conceptual model, we adhere to recent recommendations encouraging entrepreneurial scholars to explore similarities and differences among the definitions, and assumptions of different theoretical perspectives of opportunity production (Korsgaard 2013).

Wood and McKinley’s (2010) conceptual model that summarizes extant (causal) constructivist theorizing concerning processes of entrepreneurial opportunity production serves as a foundation from which we highlight the similarities and differences between causal and effectual logics. From this foundation, we describe an alternative theoretical pathway to opportunity production that extends a core tenant of effectuation – that successful entrepreneurs demonstrate “continued goal striving” in spite of adversity and ambiguity (Van Gelderen 2012, 630). The inclusion of this pathway provides unique insights into the ways opportunities are enacted or abandoned when entrepreneurs employ effectual logics and to the outcomes associated with these decisions.

In the following sections, we first review the recent introduction of constructivist theorizing to the entrepreneurial literature. We then review effectuation theory and highlight how effectual logics fit within the broader constructivist paradigm. Using Wood and McKinley's (2010) causal constructivist model, we develop empirically testable propositions that differentiate causal and effectual pathways to the potential creation of entrepreneurial opportunities. We conclude by discussing methods by which future research might evaluate our propositions and the theoretical implications of our model for understanding unexplained entrepreneurial phenomena.

Effectuation theory and opportunity creation

Constructivist theorizing on the production of entrepreneurial opportunities represents a broad paradigmatic shift away from opportunity discovery models that previously served as the primary explanation for entrepreneurial processes (Morris, Kuratko, and Covin 2008). Constructivism research draws its inspiration from earlier works in organizational theory that challenged the ontological assertion of neo-classical economists. Rather than accept the existence of objective realities, the constructivist perspective posits that individuals rely upon experiential knowledge to sense, categorize, and formulate responses to environmental phenomena (Weick 1979, 1995). Constructivism therefore represents a substantive epistemological departure that fundamentally changes the questions asked by organizational and entrepreneurial scholars (Kwan and Tsang 2001; Mir and Watson 2001).

Accepting that individuals are involved in the creation of their realities shifts scholars' conceptualizations of entrepreneurs from passive recipients and/or discoverers of information to creators of possible outcomes, realities, and opportunities. Adopting this perspective breaks from a theoretical tendency to view entrepreneurs' decisions as objective and motivated by bounded rationality and instead accepts that entrepreneurs act based upon their unique worldview incorporating knowledge gained from peer groups (e.g., Dubini and Aldrich 1991; Weick 1995), past experiences (Shane 2000) and other subjective sources (Sarasvathy 2001).

Despite these changes, constructivist theorizing relies heavily on causal logics. Causal logics are those that "take a particular effect as a given and focus on selecting between means to create that effect (Sarasvathy 2001, 245)." Using causal logics, entrepreneurs envision the end state of their endeavors and direct their activities toward gathering the resources (means) necessary to realize

their predictions. These logics are particularly useful in stable environments in which information can be gathered to make meaningful predictions. However, these logics do not adequately explain how opportunities are created in environments suffused with uncertainty (Sarasvathy 2008). In these environments, entrepreneurs lack the predictive information needed to effectively and accurately employ causal logics in processes of opportunity production.

Effectuation theory explains the logics that entrepreneurs use to navigate “non-existent or not-as-yet existent markets” where even subjective information may be of little help (Sarasvathy 2008, 12). Early empirical research found differences in how bankers and expert entrepreneurs approached problem solving and risk mitigation when tasked with scenarios designed to simulate events commonly faced in the entrepreneurial process (Sarasvathy, Simon, and Lave 1998). Bankers represented a population with little-to-no entrepreneurial exposure. Compared to expert entrepreneurs, bankers were more likely to focus on outcomes and attempted to either control risk or avoid situations with a higher level of risk. Later studies (Read et al. 2009a; Dew et al. 2009; Sarasvathy and Dew 2005) provide additional evidence that expert entrepreneurs employed different logics when engaging in entrepreneurial processes. These individuals disregarded causal logics and, in doing so, were more likely than non-entrepreneurs to (1) accept risk as a given (rather than attempting to control risk), (2) deemphasize predictions concerning the future success of perceived opportunities, (3) be influenced by perceptions of acceptable losses (rather than potential gains), and (4) focus on establishing initial partnerships around the perceived opportunity in the process of creating a market, firm, or product.

Sarasvathy et al. (2003, 92) used the earlier findings to position their emerging effectuation research firmly in line with constructivist theories:

Starting without any given goals, effectuation investigates the key principles and logic of predictive rationality to carve out an alternative paradigm to rational choice. In this view opportunities do not pre-exist – either to be recognized or discovered. Instead they get created as the residual of a process that involves intense dynamic interaction and negotiation between stakeholders seeking to operationalize their (often vague and unformed) aspirations and values into concrete products, services, and institutions that constitute the economy.

The authors explain that effectuation research integrates insights from extant theories that demonstrate that innovation need not be a linear process (e.g., Von Hippel 1994, 1976) *and* that it provides an alternative (but equally rational) explanation of a logic used by entrepreneurs in conditions of high uncertainty (Dew and Sarasvathy 2002). Effectuation is, therefore, a form of constructivism that is employed in situations of high uncertainty and involves patterns of

cognitions and behaviors shared by expert entrepreneurs that create opportunities by first considering available means and then directing these toward imagined and manageable effects.

We conceptualize situations of high uncertainty as those in which the environment provides entrepreneurs no reliable means for accurately predicting the risks and rewards associated with their nascent endeavors (Knight 1921). These need not be limited to new industries, as (Read et al. 2009b) note, high uncertainty may also exist as entrepreneurs attempt to develop new opportunities in extant industries experiencing competitive, customer and/or other types of change. Consistent with effectuation scholars use of the term, we view expert entrepreneurs as individuals that consistently achieve high levels of performance in a particular domain as a result of their experiences (Foley and Hart 1992) and deliberate practice (Ericsson, Krampe, and Tesch-Römer 1993, Dew et al. 2009). When employing effectual logics, these expert entrepreneurs do not follow causal approaches to opportunity production (i.e., predicting and working to achieve a predetermined opportunity). Instead, these individuals' attempts at value creation are unfettered by inability to predict the plethora of value-adding opportunities that may arise from their efforts. Holt (2009, 233) deftly describes the journey of expert entrepreneurs employing effectual logics:

Rather than painting a known and knowable landscape, the entrepreneur is understood as walking through one, discovering the means making themselves available as she is underway. There is still a goal, but the goal is under constant negotiation as she works at creating a business.... There is no overview and no sense of well-defined omission, only a sense of immediate features and a vague but persisting sense of lack calling her on.

Before developing our conceptual model, we first must address several common misunderstandings concerning effectuation as described by Wiltbank and Sarasvathy (2010). First, effectuation is not a replacement for predictive rationality. In constructing our model, we acknowledge that many entrepreneurs successfully create new opportunities through causal processes. We therefore develop our model to position effectual and causal logics as phenomena that coexist and explain why different entrepreneurs might employ one or another during commercialization attempts. Figure 1 summarizes the relationship between the overarching constructivism perspective and the causal and effectual logics that underlie attempts at opportunity production.

Second, effectual decision making should not be understood as irrational or rational. Instead, it should be viewed as an extension of rationality. When future markets are uncertain and/or entrepreneurs have reasons to doubt the predictive validity of available information, it would be irrational for entrepreneurs to employ decision-making processes that rely on accurate forecasting. Instead,

Constructivism: An ontological approach to entrepreneurship research that investigates how entrepreneurs participate in the creation of opportunities through their actions and beliefs.

Causal Logic: A commonly-employed approach to entrepreneurship that involves first envisioning a possible opportunity and then engaging in activities designed to acquire and direct means (resources) toward achieving that early-stage conceptualization.

Effectual Logic: A commonly-employed approach to entrepreneurship that involves first assessing possible means (resources) and then engaging in processes designed to create opportunities through their acquisition and recombination.

Figure 1: A summary of different perspectives on, and approaches to, the creation of entrepreneurial opportunities.

entrepreneurs operating in uncertain contexts behave rationally by basing their decisions upon factors that they believe are knowable and controllable.

A third common misunderstanding is the belief that effectuation approaches to opportunity production rely on chance and contingency. Although, we argue that entrepreneurs employing effectual logics defer the objectification of opportunities during early stages, they do not passively wait for market or predictive information to serendipitously materialize. Instead, these entrepreneurs interact with their immediate environments in consistent ways designed to influence the formation of new markets that oftentimes clarify the end states of their ideas. Lastly, effectuation is often mischaracterized as a perspective in which “anything goes” rather than an attempt to explain constrained creativity. Entrepreneurs employing effectual logics demonstrate repeatable processes of leveraging “who they are; what they know; and who they know” in the initial stages of opportunity production in attempts to minimize their losses while innovating (Sarasvathy 2008). Our model incorporates these repeatable processes to explain instances of opportunity enactment or abandonment that are not explainable using only causal theorizing.

To summarize, effectuation is a decision-making logic that extends but does not replace the causal explanations that underpin many constructivist approaches to understanding opportunity production. Effectual logics are rational in environments suffuse with uncertainty and/or devoid of predictive information and they explain how a large contingent of entrepreneurs think and behave differently from non-entrepreneurs. Thus, when properly understood and positioned within the broader constructivism literature, effectual logics offer a complimentary and commonly traveled pathway to explain opportunity production. In the sections that follow, we describe how our alternative pathway

can be integrated into existing, casual constructivist theorizing to form a more holistic model of opportunity production.

Extending constructivist theorizing

Wood and McKinley (2010) incorporate extant constructivist theorizing into a general model of entrepreneurial opportunity production that serves as the foundation for our present extension. Their model makes a contribution by describing how entrepreneurial opportunities may be socially constructed by entrepreneurs' peers who influence the objectification of perceived opportunities. In addition, Wood and McKinley (2010) describe how entrepreneurs' social ties and reputations influence their pursuit or abandonment of objectified opportunities and how these abandoned opportunities influence subsequent attempts by entrepreneurs to pursue additional opportunities.

Their propositions suggest that (1) the creation of entrepreneurial opportunities result from an interplay between entrepreneurs' social environments, their perceptions of an opportunity, and their confidence in their ability to exploit a new venture. Entrepreneurs use peer approval (2) or disapproval (3) to help decide if they should pursue or abandon an idea. Further, the enactment of an opportunity relies upon an entrepreneur's ability to generate the commitment of a group of stakeholders around a commonly-held and objectified vision of the potential opportunity (4). It is an entrepreneur's access to, and ability to motivate, a pre-existing social network that influences the likelihood of enactment (5) or abandonment (6) and it is an entrepreneur's reputation for past successes which influences their ability to mobilize stakeholders around an opportunity (7 and 8). Finally, opportunity abandonment causes entrepreneurs to reframe former belief in an opportunity as illusory (9). This post hoc modification of beliefs allows entrepreneurs to undertake new ventures despite past failures (10).

Our point of extension occurs between Wood and McKinley's (2010) first and second propositions. Although we acknowledge that entrepreneurs' peer groups can influence their objectification and pursuit of opportunities, we draw from effectuation research to explain instances when entrepreneurs defer objectification and continue to pursue opportunities in the presence of ambiguous or negative peer feedback (Dew et al. 2009). Once entrepreneurs adopt an effectual logic their willingness to risk damage to their available means (e.g., finances, reputation among various stakeholders, etc.) becomes the primary driver for later thoughts and behaviors directed at commercialization (Sarasvathy et al. 2008). This different approach significantly alters both actualized opportunities and the psychological,

financial and social costs associated with failed ventures. We, therefore, offer our first proposition as a point of departure that highlights the potential for past entrepreneurial experience to supersede negative peer feedback with the goal of our model being the elucidation of influences on, and outcomes of, an effectual pathway to opportunity abandonment or enactment (see Figure 2).¹

Figure 2: An effectual pathway to entrepreneurial enactment or abandonment.

In developing this model, we offer additional propositions to explain the constraints and resources that influence entrepreneurs’ decisions to either enact or abandon opportunities in environments that require the use of effectual logics.

Opportunity deferment

Wood and McKinley (2010) incorporate work by Shepherd, McMullen, and Jennings (2007) to posit that entrepreneurs use feedback from their peers (e.g., friends, family members, trusted acquaintances, etc.) to evaluate if their ideas

¹ White boxes represent unique propositions from this paper, grey boxes represent Wood and McKinley’s (2010) conceptual model of entrepreneurial opportunity production.

truly represent a commercializable opportunity. Their research suggests that peer evaluations precede the objectification of opportunities (Berger and Luckmann 1967) and trigger cognitive shifts that cause entrepreneurs to either abandon or pursue opportunities. In this way, entrepreneurs' causal approaches to opportunities resemble stage-gate models of innovation (Cooper 2008). Opportunities are evaluated at each of a series of sequential steps and abandoned if the assessment is negative. We acknowledge that peer groups may influence entrepreneurs' decisions to pursue or abandon opportunities. To the extent that peers are willing to commit to an entrepreneurial venture, they may represent valuable means toward developing an opportunity. However, effectuation research suggests that individuals' past entrepreneurial experiences and perceptions of environmental uncertainty also influence these decisions and may supersede any disconfirming or negative feedback from peer groups.

One of the key findings from effectuation research is that expert entrepreneurs repeatedly place significantly less emphasis on predictive information than novice entrepreneurs and organizational managers (Dew et al. 2009). This insight suggests that with increased experience navigating entrepreneurial processes, individuals become more likely to employ effectual logics and, therefore, bypass speculative feedback from peers when they believe that future opportunities are unknowable. Instead, expert entrepreneurs employing effectual logics display bounded rationality in uncertain environments by demonstrating behaviors consistent with beliefs that neither future consumer preferences, nor outcomes for the entrepreneur, are knowable (March 1978).

Research on entrepreneurial learning explains this relationship, suggesting that entrepreneurs learn by reflecting on significant positive and negative events that occur prior to, and during, their exposure to entrepreneurial processes (Minniti and Bygrave 2001; Reuber and Fischer 1999). These experiences lead entrepreneurs to take fundamentally different approaches to subsequent entrepreneurial endeavors. Instead of simply trying to improve the efficacy of their past actions, expert entrepreneurs revise subsequent approaches to entrepreneurial endeavors based upon past successes and failures that differed substantially from their initial predictions (Cope 2005). Because of this "double-loop" learning (i.e., learning about learning; Argyris and Schön 1978) expert entrepreneurs attribute little predictive validity to peer feedback because they believe that the outcomes of nascent entrepreneurial conceptualizations are largely unknowable. These insights lead to our first proposition:

Proposition 1: Entrepreneurs that have attained a greater level of expertise with creating new opportunities are less likely to rely on peer feedback when pursuing subsequent opportunities.

In addition to entrepreneurial expertise, the environment surrounding the perceived opportunity may also determine if entrepreneurs apply effectual or more causal logics. In environments with greater uncertainty, predictive information becomes less valuable because it is less likely to be correct. Effectuation research suggests that entrepreneurs will increasingly choose to defer the objectification of an opportunity in the face of high levels of perceived environmental uncertainty. We define opportunity deferment as a purposeful postponement or reluctance toward forming a concrete assessment of any specific entrepreneurial opportunity. Van Gelderen (2012, 642) posits that in situations of high uncertainty an entrepreneur's ability to plan and execute becomes less important to the success of their venture than their ability to adapt, accommodate and persevere despite a dearth of reliable predictive information.

Given a high level of uncertainty that accompanies the birth of many new industries (e.g., Aldrich and Fiol 1994; Navis and Glynn 2010; Santos and Eisenhardt 2009), we expect entrepreneurs will increasingly devalue and/or disregard peer feedback in these contexts. Additionally, newness is but one of many characteristics that can increase industry-wide uncertainty. Market structures, competitive concentrations and the extent of governing entities (e.g., regulators, professional organizations, etc.) are a few of the economic, social and political factors that contribute to perceptions of uncertainty within industries (Hrebiniak and Snow 1980). Empirical research further supports a correlation between entrepreneurs' perceptions of environmental uncertainty and their increased reliance on effectual logics (Chandler et al. 2011). These findings lead to our second proposition:

Proposition 2: Entrepreneurs who perceive greater amounts of environmental uncertainty are less likely to rely on peer feedback when pursuing an opportunity.

Effectual pathway to potential enactment

Effectuation does more than simply address the individual and environmental antecedents to entrepreneurs' evaluations of peer feedback. It also provides unique insights into subsequent behaviors that entrepreneurs employing effectual logics demonstrate when attempting to commercialize new products and services. As individuals attain expertise with entrepreneurial processes or perceive greater uncertainties with their respective ventures, they increasingly recognize the futility of early attempts to predict realistic end-states. Effectuation suggests that these entrepreneurs defer the enactment of many traditional entrepreneurial behaviors such as securing financing, conducting

market research and establishing distribution agreements (Shackle 1979; Wood and McKinley 2010). Instead, entrepreneurs employing effectual logics turn their efforts inward and rely upon their available means to chart pathways through commercialization processes.

To do so, these entrepreneurs ask themselves: who they are (i.e., what type of business/industry do I want to operate in?), what they know (i.e., what do my past experiences contribute to this endeavor?) and whom they know (i.e., who can be strategically partnered with?; Sarasvathy et al. 2008). By answering these questions and taking stock of their available means entrepreneurs employing effectual logics are able to conceive of a variety of potential end states that take the form of vaguely objectified products or services. This loose conceptualization of the ends an entrepreneur might achieve with a set of means is specific to predetermined levels of affordable loss. In contrast, entrepreneurs employing causal logics apply a reverse process, first objectifying the ends they wish to achieve, then collecting the means necessary to achieve those ends.

Sarasvathy, Simon, and Lave (1998) illustrated this process with an experiment that asked expert entrepreneurs to decide how to pursue fictitious entrepreneurial opportunities. The authors found that 85 percent of these experts repeatedly emphasized the importance of minimizing costs when formulating a pathway to the commercialization of their products. Extraordinarily, the remaining 15 percent of experts went even further, insisting that no money be spent on activities that assumed a knowable end state for their products (e.g., market research, financial analyses, etc.). A later study, employing a similar methodology, bolstered these findings by demonstrating that fewer than 50 percent of expert entrepreneurs assigned value to market research or other activities that direct resources toward activities that attempt to define end states for early-stage ventures (Read et al. 2009a). In contrast, when these same scenarios were presented to MBA students with little entrepreneurial experience, over 91 percent recommended funding market research and other activities designed to establish ends-driven commercialization pathways for early-stage ventures.

Dew and colleagues (2009) draw upon findings from behavioral economics to illustrate how entrepreneurs employing effectual logics use perceptions of affordable loss throughout the opportunity production process. In situations devoid of reliable information needed to successfully perform risk-return calculations and/or real options analyses (i.e. valuing the future flexibility of an investment), entrepreneurs using effectual logics consider the means that they have available and pre-commit those resources they are willing to lose. In making their plunge decision – their decision to abandon or continue toward an enactment of the opportunity – entrepreneurs using effectual logics place more value on information that pertains to potential losses rather than potential

gains. These entrepreneurs believe that data about losses represent endogenous, knowable and controllable factors (e.g., the entrepreneur's current financial situation and relationships). In contrast, factors that determine the potential gains surrounding an opportunity (e.g., consumer preferences, competitor activities, etc.) are largely exogenous, difficult to predict and outside the control of the entrepreneur. These findings support our third proposition:

Proposition 3: Entrepreneurs employing effectual logics are more likely to rely upon pre-determined levels of affordable losses rather than activities that attempt to objectify an end state when pursuing an opportunity.

Wood and McKinley's (2010) model identifies entrepreneurs' social ties and reputations as the two most influential antecedents to the objectification and commercialization of new ventures. The authors posit that entrepreneurs who are more socially embedded in networks (Granovetter 1985) are better able to attract founding partners (Ruef, Aldrich, and Carter 2003; Greve and Salaff 2003), have greater access to physical and cultural resources necessary for new business success (Vissa and Chacar 2009; Greve and Salaff 2003) and can best communicate their envisioned value propositions to consumers and other crucial stakeholders (Dimov 2010). Further, these entrepreneurs employ causal logics by leveraging their past accomplishments to mitigate potential stakeholders doubts about their ability to predict and enact opportunities and, in doing so, mobilize coalitions of proponents behind their new business venture (Eisenhardt and Schoonhoven 1996).

In the presence of effectual logics, however, social ties and reputations have a decidedly different influence on the possible enactment and commercialization of ideas. Entrepreneurs that adopt an effectual approach to producing new opportunities do not risk damaging their longstanding reputations or severing their social ties by claiming to know the outcome of their initial ideas, because they believe the end state of early-stage opportunities to be unknowable (Sarasvathy 2001). Instead of objectifying perceived products or services and then acquiring stakeholders to actualize these imagined opportunities, entrepreneurs employing an effectual logic seek to minimize losses by establishing a network of initial commitments from stakeholders that have an immediate need for their nascent ideas and/or technologies (Sarasvathy and Dew 2005). These stakeholders may contain individuals from an entrepreneur's pre-established social networks as well as individuals encountered during the exploration of possible outcomes for the entrepreneur's new venture.

For example, customers might make limited commitments to purchase small quantities of prototype products or services. Alternatively, upstream supply chain

partners might make limited investments in equipment needed to make specialized parts for entrepreneurs if they perceive it to be in their, or their organization's best interest. It is important to note from these examples that because entrepreneurs employing effectual logics do not purport to understand the long-term ramifications of their ventures, these relationships form, and are sustained, because stakeholders perceive short-term gains. As entrepreneurs initiate these commitments they acquire new means that begin to shape an "end-state" for a product or service (e.g., recurring revenue steams from early consumers and production competencies of suppliers). Even stakeholders that cease their involvement in the early stages of a new venture may impart long-lasting influences on the means available to entrepreneurs and the eventual "end-state" products or services. Eventually, webs of stakeholders materialize and create situations where "new [stakeholders] have to take [the product or service] as they find it, or forgo membership in the network" (Sarasvathy 2008, 107).

As a result of these disparate processes, entrepreneurs employing effectual logics rely heavily on "network bricolage" (i.e., using personal and professional networks as means to formulate and achieve possible effects) when determining whether to enact or abandon opportunities (Baker, Miner, and Eesley 2003). These networks are not a means-to-an-end. That is, entrepreneurs do not leverage these social ties and their reputation in order to actualize their early-stage conceptualizations of an opportunity. Instead, these networks are ends-in-themselves that influence value propositions and determine the decision to pursue or abandon a perceived opportunity. These findings influence our fourth proposition:

Proposition 4: When employing effectual logics, entrepreneurs' ability to bricolage commitments by addressing stakeholders' immediate needs will have a greater impact on their decision to enact or abandon opportunities than social ties and/or reputation.

In addition to initial stakeholders' commitments, exogenous shocks in the form of significant and unpredictable socio-cultural (Drucker 1985), technological (Klevorick et al. 1995) and/or regulatory changes (Winston 1998) constitute a persistent influence on effectual attempts at opportunity enactment in ways that are not commonly considered in causal attempts. In any attempt at entrepreneurship, exogenous shocks can alter collectively held beliefs about the economic sensibilities of pursuing or abandoning certain technologies. However, McMullen and Shepherd (2006) note the disparate affects of these shocks on entrepreneurs employing causal vs effectual logics. In situations where entrepreneurs employ causal logics, entrepreneurs primarily leverage exogenous

shocks to identify and communicate problems that they then attempt to solve by leveraging domain-specific knowledge.

In contrast, entrepreneurs employing effectual logics search for, and leverage, exogenous shocks throughout their attempts to commercialize new products or services because these shocks may add or remove potential means (Sarasvathy 2001). Rather than trying to control these exogenous shocks at the beginning of an entrepreneurial process, they are instead sought as potential solutions to emergent problems encountered throughout the entrepreneurial process. McMullen and Shepherd (2006) present the example of an entrepreneur working in the athletic shoe industry. In a causal approach to developing a new product, this entrepreneur would focus on one (or a few) exogenous shock(s) (technological in their example but regulatory or socio-cultural changes can be used as well) to frame their attempt at commercialization. Subsequent efforts would be anchored to the opportunities and/or problems that were thought to result from this shock. Alternatively, an entrepreneur employing an effectual logic becomes aware of shortcomings of the current products because of personal experience (e.g., lack of ventilation), engages in deliberate search for solutions throughout the process (instead of just at the beginning) and, in doing so recognizes and incorporates multiple technological changes that offer solutions to their problems (e.g., “bel-lows, fans, suction devices”; 140). This search for discontinuities is a constant and repeatable part of an effectual pathway to entrepreneurship and something that entrepreneurs and their stakeholders actively engage in throughout the process. These observations suggest our fifth proposition:

Proposition 5: When employing effectual logics, exogenous shocks will have a more pervasive and greater impact on an entrepreneur’s decision to enact or abandon opportunities than social ties or reputation.

Abandonment alternatives

The above propositions illuminate a pathway for entrepreneurs to enact opportunities without first objectifying them in the early stages of a new venture. In short, entrepreneurs’ past experiences and/or perceptions of environmental uncertainty cause them to discount predictions concerning the end states of nascent opportunities and proceed despite negative or ambiguous peer feedback. Rather than attempting to predict potential end states of their ventures (and potential future financial gains) entrepreneurs employing effectual logics focus on assembling initial commitments from stakeholders in efforts to minimize potential losses. Ultimately, the enactment or abandonment of technologies developed in this

fashion depend on the immediate value that initial stakeholders see in an entrepreneur's offerings and contingencies created by exogenous shocks. In addition to providing an alternative pathway to enactment from that offered by Wood and McKinley (2010), our model also differs in the theorized pathway to, and the outcomes of, opportunity abandonment.

In their theoretical model, Wood and McKinley (2010) highlight literature that addresses the emotional states of entrepreneurs in the aftermath of unsuccessful ventures. Drawing on cognitive dissonance theory (Festinger 1957), the authors suggest that entrepreneurs modify their behaviors and/or beliefs to lessen the psychological discomfort that follows unsuccessful attempts to enact opportunities. Because entrepreneurs' actions are often irreversible after committing to the abandonment of a venture, they are prone to revising past perceptions as illusory or poorly conceived. Wood and McKinley (2010) posit that this re-envisioning gives entrepreneurs the ability to break from past failures and rekindles their confidence in the production and pursuance of future opportunities.

However, because entrepreneurs employing effectual logics do not commit to knowing the outcomes of their entrepreneurial ventures, we propose that abandoned opportunities may be less likely to produce the same cognitive dissonance or require the reconstructive processes outlined above. Instead, according to Sarasvathy (2008, 144), "when entrepreneurs employing effectual logics state, 'failure is not an option', they literally mean that success does not entail not-failing and that failing does not imply success." We suggest, therefore, that entrepreneurs employing effectual logics are more likely to see abandoned opportunities as just another part of entrepreneurship processes rather than catalysts to cognitive revisions of beliefs and efforts associated with failed ventures. Politis and Gabrielsson's (2009) empirical findings support our theorizing by demonstrating that repeat exposures to successful and unsuccessful startups lessen the psychological blow that entrepreneurs report feeling when abandoning future opportunities. These findings are inline with others that suggest that, despite their often significant financial, social and physiological costs, the experience of failure/abandonment can result in "powerful learning outcomes [that] are future-oriented [and] increase the entrepreneur's level of entrepreneurial preparedness for future enterprising activities" (Cope 2011, 604). This attitude toward abandonment, combined with a tendency of effectual entrepreneurs to structure initial commitments in ways that minimize financial and/or reputation loss to the entrepreneur (or to their partners) in the event of abandonment (Sarasvathy 2001; Wiltbank et al. 2009) suggests our sixth and final proposition:

Proposition 6: Entrepreneurs employing effectual logics will view the abandonment of opportunities as a part of the entrepreneurial process and are therefore less

likely to dramatically change their approach to the production of subsequent opportunities.

The model and propositions outlined above make several important contributions. By integrating these two logics, we illustrate an alternative pathway to the enactment of opportunities. This alternative pathway incorporates an effectual logic, which entrepreneurs rely upon as they gain experience or encounter environments suffuse with high levels of uncertainty. Second, we developed six propositions that explicate differences in the behaviors and cognitions exhibited by entrepreneurs relying on effectual logics compared to those who apply more causal logics to the objectification and/or enactment of opportunities. Many entrepreneurs ultimately decide to abandon or pursue opportunities in a non-linear fashion that departs markedly from early objectifications of opportunities. Finally, we propose that entrepreneurs employing effectual logics are unlikely to change their behaviors and beliefs when they abandon opportunities. It is important to note that through repeated experiences with entrepreneurial processes, individuals who once habitually employed the causal processes described by Wood and McKinley (2010) can, and likely will, adopt more effectual processes in their subsequent ventures (Dew et al. 2009; Read et al. 2009a; Sarasvathy and Dew 2005).

Discussion

We began with Alvarez and Barney's (2007) question: "Do entrepreneurial opportunities exist, independent of the perceptions of entrepreneurs, just waiting to be discovered? Or are these opportunities created by the actions of entrepreneurs?" Our theoretical extension suggests that constructivist scholars should answer "yes" to both questions. Effectuation research suggests that opportunities can be both discovered and created throughout the entirety entrepreneurial processes. However, a more important point to recognize is that the aforementioned questions present perceptions of opportunities, and the actions taken to create them, as mutually exclusive alternatives. Instead, an effectual pathway to opportunity enactment or abandonment views the perceptions of opportunities and actions taken to create opportunities by entrepreneurs as complimentary processes that enable entrepreneurs to navigate uncertain environments. Consequently, opportunities exist as a result of co-evolutionary processes where the opportunities that entrepreneurs perceive, change in response to their actions. These actions, in turn, change the opportunities that are perceived.

Exploring the relationship between causal and effectual logics enables constructivist scholars to consider that in some circumstances (e.g., stable environments and/or inexperienced entrepreneurs) perceptions and actions exist as a dichotomy that can be disentangled and examined as separate processes in empirical study. However, in other contexts, where environments present few opportunities for accurate forecasting and/or when entrepreneurs shy away from practices of prognostication because of past experiences, organizational scholars may face difficulties in executing research that conceptualizes perceptions and actions as independent phenomena. As such, we highlight several implications of the current research for future theoretical and empirical efforts concerning the production of entrepreneurial opportunities.

Revisiting the introduction, our goal in developing this integrated conceptual model was to supplement current constructivist theorizing on the origination of entrepreneurial opportunities. In doing so, our aim was to develop a richer understanding of the pathways that entrepreneurs travel as they breathe life into new ventures. We contend that there are instances in which entrepreneurs likely discover opportunities that require few alterations prior to commercialization. There are also instances in which entrepreneurs approach new ventures with a predefined conceptualization of opportunities and leverage resources to construct opportunities with causal processes that result in opportunities similar to their initial objectifications. Lastly, there are instances where entrepreneurs adopt a “wait and see” approach and apply effectual logics. In these instances, entrepreneurs allow stakeholders and market demand to test and define the viability of their vaguely defined ideas. Entrepreneurs that travel this effectual pathway still construct opportunities, but delay attempts at objectification and base their actions instead upon perceptions of their available means. Our belief that discovery, causal, and effectual pathways to opportunity creation represent disparate, albeit equally important, entrepreneurial phenomena is consistent with a plethora of recent calls for a synthesis of theoretical frameworks that collectively advance our understanding of the entrepreneurial process (Korsgaard 2013; Sarason, Dean, and Dillard 2006; Chiasson and Saunders 2005).

In developing these different pathways to opportunity production, we open new possibilities for empirical inquiry and the discovery of important insights into processes that underpin the commercialization of new ventures. Specifically, we believe that our propositions would not emerge when applying either a discovery or a causal lens to instances of opportunity production. In one perspective, entrepreneurs are passive recipients of external phenomena who, undertake actions to create and derive value around an idea. In the other, entrepreneurs conceptualize and enact an opportunity if they can persuade

their peers, access necessary social capital, and leverage their reputation for past successes. There is, however, a middle ground that our empirical propositions elucidate and that could not be envisioned without the incorporation of effectuation. Our propositions suggest that entrepreneurs do act to create future opportunities but, given past experiences and perceptions of uncertainty, may place less emphasis on targeting objectified goals and may instead be more flexible, allowing the market and other stakeholders to determine in what form the opportunity is ultimately enacted. Importantly, when entrepreneurs employ effectual logics and experience failure they are unlikely to reframe their prior beliefs but instead embrace failure as part of the entrepreneurial process.

Opportunities exist for entrepreneurial cognition scholars to examine the disparate effects that entrepreneurial logics might have on cognitive mechanisms and, therefore, entrepreneurial successes and failures. For instance, scholars could revisit studies establishing overconfidence biases among entrepreneurs (Busenitz and Barney 1997), which can impair performance (Hmieleski and Baron 2009). Specifically, future research might disentangle the effects of entrepreneurial confidence at predicting a future outcome by those employing causal logics (Simon and Shrader 2012) relative to entrepreneurial confidence in one's ability to not incur irreparable financial, social and physiological losses by those employing effectual logics (Griffin and Varey 1996). Entrepreneurs employing causal logics may demonstrate unwarranted optimism in their predictions, whereas more experienced entrepreneurs employing effectual logics may demonstrate both greater confidence *and* greater success in their ability to navigate uncertainty. Hmieleski and Baron's (2009) finding that past experiences strengthen the negative relationship between optimism at predicting product success and venture performance support this line of inquiry.

Future research could evaluate the current set of propositions through data collected at both an individual and industry level. First, existing experiments provide a guide for comparing the decision making strategies of expert entrepreneurs relative to executives and MBA students with less entrepreneurial experience at an individual level (Read et al. 2009a). Participants in these studies were asked to respond to a hypothetical situation commonly faced in entrepreneurial attempts. Responses were then coded to evaluate differences among the groups' responses. Future research can adopt similar experimental approach to test our propositions. We expect differences in entrepreneurial experience (P1) and perceptions of environmental uncertainty (P2) to influence how opportunities are conceptualized and approached (P3). This experiment would likely involve several iterations with changes to the scenarios and measurement tools to also examine the influence that perceptions regarding stakeholder commitments (P4), exogenous shocks (P5) and abandonment decisions

(P6) have on entrepreneurs' current and future attempts at establishing entrepreneurial endeavors.

Lastly, despite focusing on individual-level processes, our conceptual model invites future examinations of phenomena that might influence the prevalence of different logics among various groupings. We suspect that future research may uncover mechanisms that explain entrepreneurs' selective employment of these disparate logics in different cultures, industries and various other settings. In addition, we believe that this line of inquiry can inform "perpetually nascent industries" that continue to attract entrepreneurs despite extended periods of uncertainty that limit the efficacy of causal logics. A variety of industries (e.g., solar technologies, biotechnologies, electric vehicles) demonstrate this phenomenon, with entrepreneurs continually pursuing vaguely defined opportunities despite a dearth of reliable predictive data that causal theorizing would suggest are necessary to explain these behaviors. Such contexts may provide opportunities for evaluating our propositions through historical industry analyses.

Solar energy technologies, for example, have been the target of entrepreneurial efforts since at least the 1860s with countless waves of entrepreneurs working for over 150 years to create the right mix of market opportunity, technology, and price point. Exploring the influence of disparate logics on the production of industry-specific opportunities may explain these instances of perpetual nascency. Specifically, our model suggests that these contexts may attract and retain an abundance of entrepreneurs who minimize their potential losses (P3) and who embrace, and learn from, their past mistakes (P6).

Conclusion

In this research, we attempted to illustrate an alternative pathway to causal explanations for the production of entrepreneurial opportunities. According to causal theorizing an entrepreneur often "swings for the fences" and attempts to predict an end-state for their initial ideas through early interactions with peers and other social relations. However, given the high levels of uncertainty that define many entrepreneurial endeavors, it is unlikely that objectified ideas will survive evaluations by the entrepreneurs' peers or even less emotionally invested stakeholders when there are few valid predictors of future success. Incorporating insights from effectuation research, we offer an alternative pathway that is more likely to explain processes of opportunity production in uncertain industries or among expert entrepreneurs.

In this pathway entrepreneurs' past failures, and the failures of their peers, are not seen as obstacles to overcome but as lessons to incorporate into future

commercialization attempts. Driven by an effectual logic, these entrepreneurs attempt to minimize losses through initial partnerships that ultimately enhance their available means and often result in the enactment of a very different opportunity than could have been predicted at the onset of the process. The effectual research that informed this research suggests that relatively few entrepreneurs will attempt to employ a more causal logic in industries that sustain high levels of uncertainty. As entrepreneurs learn from both their own, and other's experiences, only those who prepare for acceptable losses and embrace failures will likely remain.

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