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Effectuation as Ineffectual? Applying the 3E Theory-Assessment Framework to a Proposed New Theory of Entrepreneurship

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Abstract

Effectuation is a proposed new theory of entrepreneurship, with insufficient empirical testing and critical analysis. Drawing on a new, comprehensive set of theory-building criteria—sourced from and complementing those of Robert Dubin and others—we provide the first formal assessment of effectuation as a theory. We highlight its strengths and weaknesses, leveraging the former to address the latter in five different directions that would build on the existing work to improve this theory. The assessment exercise also displays the value of our assessment framework in guiding the evaluation and development of other existing and future theories in entrepreneurship and management.

Effectuation, as a new proposed theory of entrepreneurship (Sarasvathy, 2001), appears to be at a crossroads: many scholars consider it a viable theory while many do not. Supporters include Fisher (2012), who believes effectuation is one of the few viable alternative theoretical perspectives describing entrepreneurial action, and Coviello and Joseph (2012), who find value in effectuation as an explanation of success in new product development. Detractors include Chiles, Bluedorn, and Gupta (2007), who find effectuation under-defined and unoriginal; Baron (2009), who argues that the focal agents described in it cannot actually exist; and Perry, Chandler, and Markova (2012), who conclude that effectuation has yet to be properly tested. We believe that any proposed theory of entrepreneurship is worthy of detailed assessment, especially one that has survived over a dozen years and continues to divide its audience. Given that “an awareness of the actions and behaviors of entrepreneurs is critical to understanding an entrepreneurial economy” (Chandler, DeTienne, McKelvie, & Mumford, 2011: 375), then studies of such actions are important, and if such studies are important, then the critical analysis of any new conceptualizations of such actions—like effectuation—is also important. We conduct that critical analysis based on a new, comprehensive set of theory-assessment criteria organized in an intuitive framework.

We contribute to the entrepreneurship literature in two ways: (1) by providing critical analysis of effectuation as a theory and (2) by suggesting alternatives and directions for improving on and extending the effectual approach, based on our assessment as well as on recent developments in related entrepreneurship research. To that end, in this article we address the question of whether effectuation is good social science theory and, specifically, whether it is good entrepreneurship

theory. By providing a formal assessment of this proposed entrepreneurship theory, we define a clear standard for other proposed theories, of the present and future, in our field and others.

Thus, a related contribution is the introduction of a new, comprehensive theory-assessment framework that is fair, objective, and applicable to any general business theory because it effectively summarizes the main criteria grounded in general normative and pragmatic concerns suggested by superlative works of the past (e.g., Bacharach, 1989; Boxenbaum & Rouleau, 2011; Dubin, 1969; Eisenhardt, 1989; Gioia & Pitre, 1990; McKelvey, 1997; Mohr, 1982; Priem & Butler, 2001; Suddaby, 2010; Sutton & Staw, 1995; Thomas & Tymon, 1982; Whetten, 1989), it does so in one efficient and up-to-date table, and it frames the criteria along the usual theory-building process, with several often-implicit criteria exposed. The application of our framework to evaluate effectuation and guide possible future development reveals the value of this type of framework for informing theory building.

What we find through the assessment is that effectuation meets several basic criteria for theory building, but far from all; more worrying, some of the criteria that are not met are specific to theorizing about entrepreneurship. Recognizing the substantial literature and citations related to effectuation research, we appreciate the continued conviction that there is value in the logic of effectuation to potentially illuminate new insights into entrepreneurship. In that vein, we provide several specific and reinforcing directions for improving and elaborating on the models within the effectuation stream.

The remainder of the article is organized to explain our evaluation of effectuation within our theory-assessment framework. We first describe, in detail, what effectuation is, from the phenomenon it targets to its full model to its predictions. We then outline and justify our integrated framework of theory-assessment criteria. We assess effectuation based on that framework. We finish by drawing on these assessments to construct useful directions for future work in effectuation, both to improve that proposed theory and, more generally, to improve the theory building relevant to any management-related phenomena.

Effectuation as Proposed Entrepreneurship Theory

Effectuation, as a proposed theory, describes *a process of entrepreneurial action* based on the interpretation and extrapolation of a think-aloud lab protocol involving twenty-seven expert U.S.-based entrepreneurs in the late 1990s (Sarasvathy, 2008). It follows an approach that Suddaby, Hardy, and Huy (2011) call “problematization”—where an existing theory (in this case the neoclassical, microeconomic “causal” theory of business processes) fails to adequately explain observed patterns of behavior (in this case the start-up behaviors of expert entrepreneurs). Effectuation is offered as an improvement in depicting a specific phenomenon—that is, where a resource-poor entrepreneur acts to create a new market artifact (e.g., a new and successful firm) in an environment characterized by uncertainty (Sarasvathy, 2001).

Figure 1 depicts this process. The process begins when an entrepreneur confronts the uncertain and resource-restricted context and decides whether to engage in the effectual process; if the entrepreneur engages, the process ends when a new market artifact—for example, a successful business—is created. The core process (depicted in the right square) starts when a threshold is met where the entrepreneur’s available means are expected to produce effects that are aligned with initial aspirations, with the additional caveat that the potential loss of invested means is tolerable. The entrepreneur makes decisions about specific actions based on what effects are possible given the available means, taking into account recent contingencies and co-creator involvement, and drawing on imagination and any changes in aspirations. The entrepreneur takes actions to produce realized effects and then evaluates these effects to determine whether an acceptable artifact has been produced that meets his or her aspirations; if so, the process ends. The core process also produces feedback (in a secondary, updating subprocess) to alter available means, co-creator involvement, aspirations, and inputs to the entrepreneur’s imagination and flexibility; these altered factors then influence the next round of the core process.

The effectuation literature describes a set of units depicted in the figure.¹ We focus on units to describe the theory since these are the most basic parts of theory building (Dubin, 1969). We organize these units of effectuation theory into three types: (1) those in the core process, (2) those affecting that process, and (3) those in the secondary process.

Units of Effectuation Theory: The Core Process (Main Box in Figure 1)

Outcomes: Artifacts and effects.

Artifacts include the firms, markets, and economies that originate from entrepreneurs’ decision processes as they create and grow firms in the real world (Sarasvathy, 2001). Effects are the operationalizations of abstract human aspirations (Sarasvathy, 2001: 245). For example, an effect is a successful business. “The process of effectuation allows the entrepreneur to create one or more several possible effects irrespective of the generalized end goal with which she started” (Sarasvathy, 2001: 247).

Actions.

Actions are the use of available means and the use of other inputs (e.g., resources originating from co-creators and contingencies), by the entrepreneur, toward the intended effect. Actions emerge from means and imagination when entrepreneurs select intended effects based on those means (Read & Sarasvathy, 2005).

Decision making: The affordable loss/ acceptable risk heuristic, the logic of control, and evaluation.

The entrepreneur makes two types of decisions: (1) those directing actions and (2) those evaluating outcomes to determine when to stop the core process. The first of these, decisions

¹ Note that various depictions of *subsets* of the units have evolved into a relatively stable and less complex figure depicting part of the process (see, for example, Fisher, 2012: 1025, Figure 2). Our full process figure is consistent with Sarasvathy’s own general model (2008: 274, Figure 12.2).

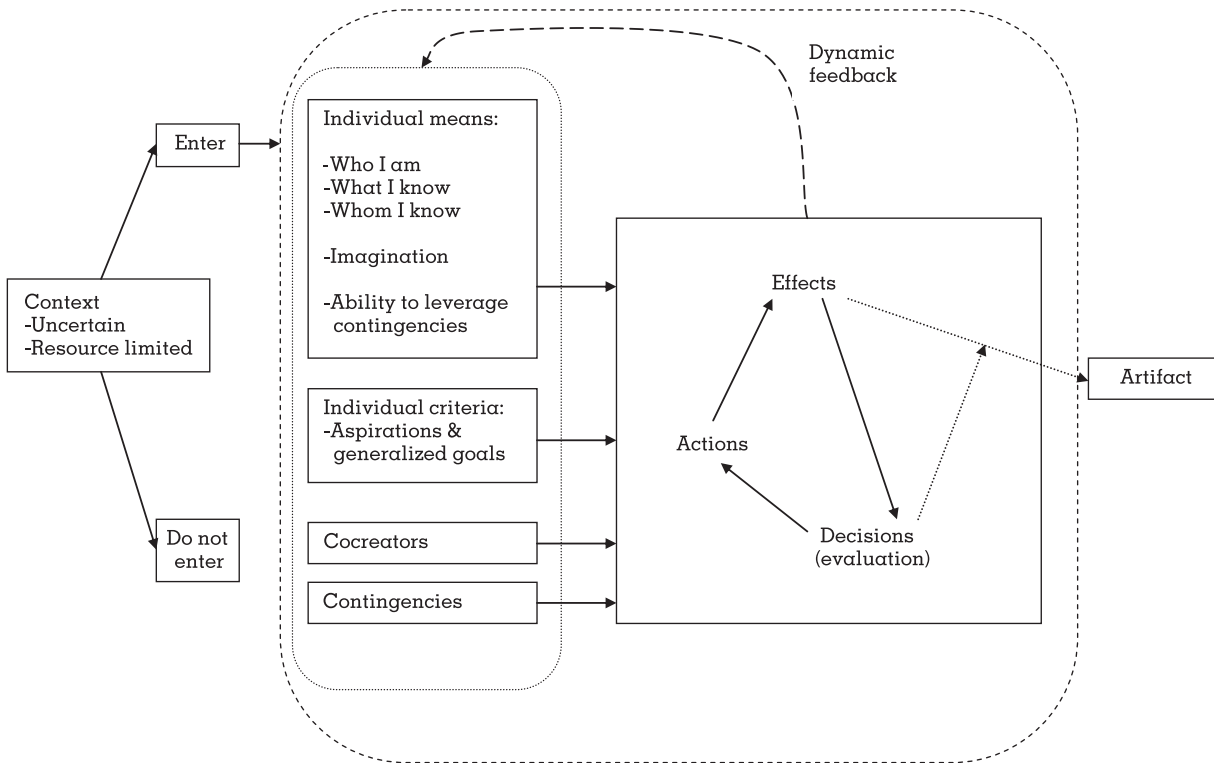


Figure 1. Effectuation as a new proposed model of entrepreneurship.

directing actions, are influenced by how much loss is affordable and by what experiments can be conducted across as many strategies as possible using the given set of means (Sarasvathy, 2001). Affordable loss is also described as acceptable risk, where the focus is on the downside potential of any action (Read & Sarasvathy, 2005). The affordable loss heuristic involves imagining several possible courses of action with unpredictable consequences and evaluating the appropriate action to take in terms of what the entrepreneur is willing to lose (Dew, Read, Sarasvathy, & Wiltbank, 2008). This decision process involves “failure management,” where the effectuator attempts to design intelligent failures that can contribute to learning over time (Sarasvathy, Dew, Read, & Wiltbank, 2008). An investment is so judged based on whether the total failure of its initiative is survivable (Read, Dew, Sarasvathy, Song, & Wiltbank, 2009). The entrepreneur also follows a logic of control, basing decisions on what he or she thinks is in his/her immediate control (e.g., available means), rather than on predictions beyond the short term in an environment defined as unpredictable.

In the other type of decision, the entrepreneur evaluates the action outcomes (i.e., effects and artifacts) against his or her desires (i.e., aspirations and end goals) to determine the sufficiency of the match. When the entrepreneur judges the outcomes to have fulfilled a satisfactory level of the desire, the artifact is set and the process complete.

Units of Effectuation Theory: Factors Affecting the Process (Left and Center Boxes in Figure 1)

The context (preprocess).

Just as bricolage theory begins with a penurious environment (Baker & Nelson, 2005), effectuation begins with a specific context—a domain with two defining characteristics. The first characteristic is that the environment involves a high degree of uncertainty (Perry et al., 2012). It is ambiguous enough that no prediction of the future is possible beyond the short term (i.e., there exist only reasonable expectations of the *immediate* effects of available means, where reasonableness is validated by feedback). Much of the uncertainty arises from the effects of contingencies. The consequences of such uncertainty imply that causal means-ends connections beyond the short term are undefined, demand is uncertain, and optimal choices of the business model, technologies, and resources are *ex ante* unknowable. Extending these consequences, the context suggests that it is irrational to plan and that the identities of many parties in the undefined industry (Perry et al., 2012), including rivals, are *ex ante* unknowable. That said, the implicit assumption is that the context does not remain uncertain over time; an experimental learning process—like effectuation—is expected to reduce ambiguity, over time, through actions taken.

The second defining characteristic is that the resources available to the entrepreneur are significantly restricted. “If she has only the generalized aspiration of building a successful business of her own with relatively limited access to re- sources, she should consider effectuation processes” (Sarasvathy, 2001: 249).

The entrepreneur’s available means: Who the entrepreneur is, what he/she knows, whom he/ she knows, his/her capability to adapt to contingencies, and his/her imagination.

The available set of means in effectuation restricts the possible effects that can be created (Sarasvathy, 2001). This given set of means includes the decision maker’s relatively unalterable individual characteristics of *who he or she is*—for example, his/ her own traits, tastes, abilities, and attributes; *what he or she knows*—for example, his/her own knowledge corridors, education, experience, and expertise; and *whom he or she knows*—for example, his/her social networks (Dew et al., 2008). Effectuators have the ability to leverage contingencies by choosing paths that allow for more possible actions later in the process and for shifting strategy as needed (Read & Sarasvathy, 2005). Because contingencies and surprises can have positive impacts, effectuators are open to them and can leverage them into new opportunities (Dew et al., 2008). Contingencies involve imaginative rethinking of possibilities, continual transformations of target goals, and opportunities for novelty creation (Dew, Read, Sarasvathy, & Wiltbank, 2009). The entrepreneur’s imagination provides the ability to see things not yet existing—things like a possible new product, or the various effects that could be made from a set of available means. Effectual entrepreneurs embrace unexpected events, turn them into profitable opportunities, and thus arrive at unexpected outcomes (Fisher, 2012).

Contingencies.

Contingencies are unexpected influences on the process—unanticipated events that are impossible to plan for (Sarasvathy, 2001: 260). They cancel out the benefits of preexisting

knowledge. An example of a contingency in effectuation is an outcome that could result from the interactions of the entrepreneur with his or her co-creation partners.

Co-creators and pre-commitments.

Co-creators are cooperating partners in the focal entrepreneur's activities (e.g., interested potential customers); they buy into the entrepreneur's idea and help sustain the enterprise (Sarasvathy, 2001: 252). Pre-commitments are provisions of resources and promises (e.g., to buy) made prior to the entrepreneur's offerings being produced. Co-creator alliances and stakeholder pre-commitments reduce uncertainty by providing new information. The particular firm that is eventually created by the effectuator and his or her stakeholders is the residual of the network of partnerships and pre-commitments (Sarasvathy, 2001). The mutual commitments of stakeholders create an initial network that can eventually transform extant reality into a new market (Sarasvathy & Dew, 2005).

Aspirations and goals.

An aspiration is a generalized end goal (Sarasvathy, 2001: 245), such as building a successful business. The notion of aspirations was more heavily emphasized in the early theory development of effectuation. A goal is a desired result, usually accomplished through a process of development.

Units of Effectuation Theory: The Secondary Process (Feedback Loop in Figure 1)

Dynamic feedback from outcomes.

The core process of effectuation produces focal outcomes—effects and artifacts—as well as information. Each feeds back into the main process, as well as into the factors that affect that process. Such feedback changes factor values for the next iteration. For example, aspirations (and goals) are updated in the face of new information about market conditions and rewards; means are updated in the face of recently realized gains, losses, and additions to what is known; and the co-creator network is updated in the face of mutual needs. Such updates influence the next round of the process—for example, the dynamic nature of aspirations allows for the generation of new choice alternatives (Dew et al., 2008).

Summary

The effectuation model—with the units interrelated as in Figure 1—has been proposed as a theory appropriate for entrepreneurs who wish to create the types of products and services that have no established or predefined market (Perry et al., 2012). It is a model that swings the pendulum of focus in entrepreneurship away from business planning and toward enactment. It is amenable to teaching, with its contrasting but intuitive emphasis on personal control of available means, on smart experimentation, on flexibility in the face of contingencies, and on enjoying the journey. It has added to the descriptive knowledge of the process of entrepreneuring—for example, it has “captured the imagination of researchers because it identifies and questions basic assumptions of how individuals think and behave when starting businesses” (Perry et al., 2012:

857). Its propositions have contrasted early-stage venture success rates and characteristics (e.g., in the use of cooperative actions) of effectuators to those of planners, while its conjectures have contrasted actions of effectuators (e.g., the use of test marketing) to those of traditional decision makers, to suggest possible empirical testing. And in follow-on work scholars have drawn on effectuation theory to hypothesize about related creative activity, such as new product development innovation process characteristics (e.g., in the use of mindful trial and error). All in all, it is a proposed theory worth further study and detailed assessment.

Theory Evaluation Criteria: The 3E Framework for Theory Evaluation

We propose a new integration of established and intuitive theory-building elements (augmenting Dubin's 1969 standards) that provides a fair and comprehensive basis for the critique of proposed theory in business, including entrepreneurship, whether inductive or deductive in origin. The three Es represent the natural order of theory building—that is, input, throughput, and output—that we label “experience,” “explain,” and “establish.” Researchers experience the focal phenomenon they wish to theorize about through observation and literature review. They then explain the phenomenon through a model (i.e., defining the units, laws, bounds, and so on) of the causal processes and relationships involved. Finally, they establish the viability and value of the proposed theory through empirical testing, idea diffusion, and practical application. We depict details of this framework in Table 1, and further describe and draw upon them in the remainder of the article.

Theory assessment begins with the capture of the focal phenomenon—its experience from both an academic and a practical lens (Astley & Zammuto, 1992; Boxenbaum & Rouleau, 2011). The “academic” (and more “deductive”) perspective of experiencing the phenomenon is assessed by how well the proposed theory builds on existing literature (e.g., in constructs and models) related to the phenomenon (Bacharach, 1989; Suddaby, 2010). The “practical” (and more “inductive”) perspective of experience is assessed by how well the proposed theory builds on valid observation of the phenomenon. When the phenomenon involves human subjects, there is an expectation of a rational narrative (Pentland, 1999), mitigation of the Heisenberg Uncertainty Principle in social science observation (Van de Ven & Huber, 1990), and other validity issues for qualitative data (e.g., interrater reliability, triangulation, multiple cases, development of a substantial body of observation and interviews, and so on; Locke, 2007; Pentland, 1999).

With the phenomenon described through experience, scholars then build theory to explain its mechanics. Explanation is the heart of theory building (Gioia & Pitre, 1990), because without explanation there is no theory (Sutton & Staw, 1995), so this is the part of the 3E framework where most of the assessment criteria focus. The backbone of this part is based on Dubin's (1969) five-phase assessment criteria (which have been used to critique social science theory, including entrepreneurship theory—for example, “Dubin . . . provides a comprehensive methodology for theory building that is particularly relevant for applied fields such as management” [Ardichvili, Cardozo, & Ray, 2003: 107]). To that backbone we add several additional items suggested by more recent sources to complement those five core criteria.

Table 1. Theory-Building Criteria and Assessment of Effectuation as a New Proposed Theory

Stage	Criteria	Assessment Issues	Recommendation	D#
Experience	Built on existing literature	Some failure: lacks reference to preexisting work on bricolage experimentation, options thinking, and risk management; thus, fails to prove novelty	Build on existing constructs and ideas; compare and contrast with previous work; prove added value with new insights	4 1
	Built on valid observation	Some failure: low N; questionable definition of an “expert”; some lab-based scenarios not aligned with findings; no comparison group in original study	Do more studies of the process in the field; larger N; prove robustness of “expert” definition; use a valid comparison group	4 5
Explain	Units: • Comprehensive • Parsimonious	Some failure: missing many important units — rivals, substitutes, institutional players, and so on	Add missing units to be comprehensive to the focal phenomenon; add to precision of definition of units, especially outputs, like “artifacts”	2 4
	Laws clear (about unit interaction)	Some failure: provision of how units interact, but not why; directionality problematic for several laws (either ambiguous functional relationship or relationship simply assumed without explanation)	Add explicit directionality to laws and explain the relationships; expand on how “minimum” levels of a unit’s characteristics are generated or guaranteed in the process	3 4
	Boundaries specified: precise rules	Some failure: no precise landscape defined (to test alternatives against); no clear performance metric given; aimed at multiple levels of analysis	Specify the competitive landscape with mathematical precision; specify focal dependent variables, sequences, outcomes, and other issues of interest	2 4
	System states exist	Failure: no stable states exist	Specify at least one interim stable state	
	Propositions consistent with model	Some failure: propositions provided are not the three required types; statements of contrast to strawman of causality provided instead	Specify independent or stand-alone propositions (of all three types); highlight unintuitive and counterintuitive propositions	3 2
	Assumptions reasonable	Some failure: flaws with entrepreneur’s abilities, non-predictive control, means-driven action, affordable loss, value creation, and sustainability	Clarify or fix flaws, especially with the span of prediction, liabilities, and bounded rationality of the individuals involved	5 1 2
	Logic: • Causality explicit • No tautologies • Coherent	Some failure: lacking explanation of why laws among units work; syllogism (many laws are true by context); effectuation is not a single construct or process	Explain causality for the main laws; delineate what is not true by context; either find coherence in the concept or split up the process into coherent parts	1

Stage	Criteria	Assessment Issues	Recommendation	D#
Establish	Empirically untestable	Indeterminate: untestable because of a lack of system states and some language, yet has been tested in literature to some degree in contrast-type studies among agents	Propose less “problematic” tests; provide falsifiable predictions (or refrain from referring to this as a “theory”)	1,2 3,4
	Diffused in the literature	Indeterminate: tight group of authors; much of work in non-top-tier outlets; repetitive content; cited in passing	Refrain from repetition and make progress on base; involve others; lower defensiveness in dialogues	3 4
	Practitioner value: • Understandable • Nonobvious • Implementable	Indeterminate: some language not user friendly, some catchy; much of the description is obvious, especially to the experienced; some general prescriptions but also seemingly self-defeating (e.g., to ignore planning, rivals, and partner opportunism)	Rewrite the ideas in a straightforward way; highlight any nonobvious prescriptions and translate to field readiness; explain how real constraints (e.g., requirements for plans) can be absorbed into the process in the process in the field.	1 2 3

The main five phases of Dubin’s methodology describe the focal theory’s structure: (1) the units of the theory, (2) the laws of unit interaction, (3) the boundaries of applicability, (4) the operative system states, and (5) the logically resulting propositions. Dubin (1969) defined units as the things out of which theories are built, where theories emerge when the units are put together into models of the perceived world. Whether the “right” units are included is judged along two criteria: comprehensiveness and parsimony (Whetten, 1989), the former assessing missing critical units and the latter assessing whether any redundant or irrelevant units exist in the model.

Dubin (1969) defined *laws of interaction* as the linkages among units of a model. According to Dubin, “The scientist’s problem of interaction among units is one of accounting for variance [or sequential outcome] in one unit by specifying a systematic linkage of this unit with at least one other” (1969: 90). The specificity of the interactions—for example, in terms of explicit directionality, minimum necessary levels to induce effects, mechanics, and so on—are qualities expected in strong law descriptions.

Dubin (1969) defined a theoretical model as bounded when the limiting values on the units composing the model are known. The *boundaries* help to distinguish the particular domain of interest from aspects of the environment or world that are not addressed by the theory (Ardichvili et al., 2003). The precision of the rules that define the phenomenon as taking place on a (competitive) landscape with specific performance measures is one main way to assess the boundaries of a proposed model, a way that indicates the scope of the model and allows fair judgment of the model relative to alternatives.

Dubin (1969) defined a *system state* as a condition when all of the units have characteristic and determinant values that persist through time. The set of system states provides the finite possible representations of the *collective* units (rather than just the output of any one unit). For example, one system state could be a representation of the system as stable, and another could be a representation of the system as transitory. So in order to identify a particular system state (other than the transitory one), all units take on values that are determinant—measurable and distinctive—for that particular state, for a persistent amount of time (i.e., so those values can be measured for empirical testing or practical application). Collectively, these requirements necessitate that *at least one state be stable*.

Dubin defined a proposition as “a truth statement about a model that is fully specified in its units, laws of interaction, boundary, and system states” (1969: 166). It is a logical consequence that is true by the criteria of the system of logic employed by the theorizer. It is a statement about the model in operation, subject to empirical testing (Eisenhardt, 1989). There are three types of propositions: (1) those made about the value of a specific unit of the model as revealed by the laws of interaction with other units, (2) those made about the continuity of a system state based on the conjoined values of system units, and (3) those made about the transitions of the system from one system state to another (Dubin, 1969: 173).

To Dubin’s five phases we add two further criteria for assessing how well a proposed theory explains a phenomenon: the reasonableness of the model’s assumptions and the soundness of the model’s logic. Assumptions are the “givens”—the self-evident facts of the model—that can be judged on their reasonableness through characteristics like credibility (Whetten, 1989), specificity (Bacharach, 1989), and explicitness (Priem & Butler, 2001). The logic is the glue that binds the assumptions to the drivers of the interactions among the units. The theory’s logic can be assessed by the explicitness of the causal nature of the relationships (i.e., by how well the whys are answered; Whetten, 1989), the lack of tautologies in the model’s depiction (Bacharach, 1989; Priem & Butler, 2001), and the coherence of the total story in explaining the one phenomenon (Suddaby, 2010).

With the phenomenon explained by the proposed model, the underlying theory is then established through academics and practitioners. On the academic side, there is a need to establish the theory both empirically and critically. The theory can be assessed empirically by its testability and falsifiability (Bacharach, 1989; Boxenbaum & Rouleau, 2011; Eisenhardt, 1989; McKelvey, 1997; Suddaby, 2010)—for example, by how easily the units are measured, by how well the bounds can be met, by how translatable the propositions are, and so on. The theory can be assessed critically by judging its diffusion in the related bodies of literature (Eisenhardt, 1989; Priem & Butler, 2001)—for example, by examining why and how often its ideas are cited in the top journals. On the practitioner side, there is a need to establish the theory’s value in the field (Mohr, 1982; Thomas & Tymon, 1982). There are several assessment possibilities: (1) evaluating whether the theory is understandable for practitioners—for example, regarding construct clarity, accuracy, timing, and so on (Bacharach, 1989; Suddaby, 2010; Thomas & Tymon, 1982); (2) evaluating whether the theory is non-obvious to the practitioner in exceeding his or her

commonsense understanding of the phenomenon (Thomas & Tymon, 1982); and (3) evaluating whether the theory is implementable such that meaningful action can be taken by manipulating the causal factors (Thomas & Tymon, 1982).²

Assessment Along Criteria

Building on the Previous Literature

Several peer-reviewed journal articles have raised the issue that there has been insufficient attention to and acknowledgment of related and prior ideas in the effectuation literature (e.g., Chiles, Gupta, & Bluedorn, 2008). Not thoroughly acknowledging previous related work raises the question, “What is truly new in effectuation?” In other words, a stronger case for the specific, differentiated added value of effectuation theory could have been (and may still be) made. Much of what is considered characteristic of effectuation has appeared previously in the entrepreneurship literature but is not cited. Examples include the use of a process-driven approach to understanding entrepreneurial activity (e.g., Aldrich, 2001; Aldrich & Martinez, 2001; Gartner, 1989; Low & MacMillan, 1988; Shaver & Scott, 1991), the contrast with causation (e.g., Polanyi, Arensberg, and Pearson’s [1957] contrast of economic with substantive approaches), the creation of socially constructed artifacts (Aldrich & Fiol, 1994; Smelser & Swedberg, 1994; Steyaert, 1997), the description of the action orientation of entrepreneurs (e.g., Lachmann, 1986; Polanyi, 2001; Shackle, 1955), and the creative behavior of the entrepreneur (e.g., Lachmann, 1986). Precursors to the defining dimensions of effectuation also exist, such as available means as being prior knowledge (e.g., Shane, 2000) and social networks (Uzzi, 1997), the prescription to leverage surprise (e.g., Manis & Meltzer, 1994; Spinosa, Flores, & Dreyfus, 1997) in emergent (Mintzberg, 1978) or non-predictive strategies (Lachmann, 1976), the consideration of affordable loss (e.g., Argote, 1999; Shackle, 1966; Sitkin, 1992), and the prescription to leverage partnerships (e.g., as in structuration [Giddens, 1979, 1982] or exploration [Spinosa, Flores, Dreyfus, Fernando, & Dreyfus, 1999]). And similar descriptions of observed entrepreneurial processes existed prior to effectuation, including bricolage (e.g., Hull, 1991; Lanzara, 1998; Levi-Strauss, 1966), improvisation (e.g., Miner, Bassoff, & Moorman, 2001), and experimentation in the face of a context dominated by random events, aka contingencies (Block & MacMillan, 1985; Woo, Daellenbach, & Nicholls-Nixon, 1994). In that vein, experimentation is described as “groping along” (Dimov, 2010) through low-cost and

² A *novelty* requirement is implied throughout, given newness is necessary to contribute to knowledge. In the experience part of the framework, the phenomenon observed needs to be under-addressed (e.g., newly discovered) or in- correctly addressed; the literature has to have a gap or error related to explaining the phenomenon. In the explanation part of the framework, the model has to have new elements (e.g., new units, laws, states) leading to new outcomes (e.g., propositions). In the establish part of the framework, the prescriptions have to be new to practitioners and recognized as an advance by academics.

contingency-leveraging actions meant to reduce uncertainty (Sull, 2004)—again, consistent with much of what effectuation describes.³

Besides the lack of building on previous work that introduced the main ideas in the proposed theory, there is the lack of acknowledging previous work that disconfirms effectual ideas. For example, there is empirical work showing several *benefits* of a causal-planning approach in new venture creation (Dimov, 2010)—benefits that are intellectual (e.g., providing better choices and preparation for contingencies), volitional (e.g., providing better focus, persistence, and readiness), and also practical (e.g., providing access to funds). Such work also reveals that planning increases the persistence and survival of nascent firms (e.g., Delmar & Shane, 2003). And, in more general applications, work like Campbell's (1988) supports the use of planning in contexts of complexity and uncertainty, which appear to be those that effectuation targets. Additionally, empirical evidence exists that new ventures almost always begin with a goal or vision, implying an initially rational-causal outlook (Baum, Locke, & Kirkpatrick, 1998; Shane & Venkataraman, 2000)—an outlook that seems to contradict what was observed (and then prescribed) in the effectual approach.

Scholars have noted several deficiencies in the inductive research on which effectuation theory is based. Fischer and Reuber (2011: 15) commented that in prior effectuation research scholars have identified only one variable for justifying the use of the effectuation process—expertise—and that the theory is based on only hypothetical start-ups (not actual field work with real ventures). Baron (2009) critiqued the empirical analysis in effectuation (e.g., in Dew et al.'s [2009] study contrasting the use of effectual logic of expert entrepreneurs and novice MBA students), commenting that such studies lack credibility because many real alternative explanations for why expert entrepreneurs think differently (e.g., age, selection, life history, experience, education) are not considered, and because there is a lack of proof that expert entrepreneurs can even exist, given that expertise requires “deliberate practice”—something as yet to be evidenced in the effectuation literature. The lab-based, think-aloud protocol that centered on simulation of a set of decisions facing a hypothetical start-up manager, while useful in generating data, appears to have violated the Heisenberg Uncertainty Principle for observing real processes because it directed them (Van de Ven & Huber, 1990). The choice of the definition for the expert entrepreneur produced a sample that skewed older, more male, and more educated than the usual entrepreneur profile, which may call into question what drove success and whether the theory should have used alternative sampling (Skeat & Perry, 2008), for example, across levels of expertise. The final original sample was twenty-seven valid responses of a ninety-minute simulation experience and a thirty-minute post interview, with triangulation about past

³ Other aspects of effectuation are potentially questionable in their originality. For example, scholars considered the idea of learning through experience, especially from a failure of the firm, before 2001. Learning that takes place within an entrepreneurial context is experiential in nature (e.g., Collins & Moore, 1970; Deakins & Freel, 1998; Reuber & Fischer, 1999; Sullivan, 2000), where failures provide entrepreneurs an opportunity to discover uncertainties that were previously unpredictable (McGrath, 1999; Sitkin, 1992).

real successes and background gathered from public sources. This left fifteen original possible participants unused, which seems to have violated the inductive theory-building suggestion that a *substantial body* of observations should be the basis (Locke, 2007). The description of effectuation as a process emerging from induction appears at odds with what is commonly considered inductive research on processes, since it seems to deny the logic of the human process where participants make sense of the world and proactively plan—contrasted with effectuation’s unpredictable future where planning is not done—and enact narratives that are consistent with expectations and values—contrasted with effectuation’s denial of preexisting goals, aspirations, or values (Pentland, 1999).

On the positive side, the validity of the basis of effectuation is bolstered by Sarasvathy’s use of multiple raters, both quantitative and qualitative data and analyses, and the use of answers to one simulation problem’s questions to generate initial hypotheses tested against another’s.

The Units of Effectuation Theory

Effectuation theory appears to be missing several units—it lacks comprehensiveness. For example, contextual competition and other important industry forces (e.g., substitutes) are absent. Rivalry is underspecified, and this is problematic because venture success depends on the strength of competitive forces. One reason for this underspecification is that in uncertain contexts rivals are, by definition, hard to identify because all of the market factors are ill defined, but that alone is not a sufficient justification for overlooking the negative effects of competition altogether. Even in uncertain contexts, the only reason an entrepreneur can exist is because his or her offerings outshine those of rivals (and substitutes). Failure to include the influence of competitive forces in a theory that claims to explain new market artifacts like successful new firms and successful new products raises doubts about the validity of the model.

On the positive side, in terms of parsimony, the model does not appear to have extra or overly redundant units, which is a positive for teaching and testing it.

The Laws of Effectuation Theory

The effectuation model describes all of the interactions among units in its laws; however, these descriptions are of the *how*, rather than explanations of the *why* of those interactions. Additionally, and somewhat consequentially, there is often a lack of directionality to the laws of interaction given. For example, although one could argue that “greater available means” should increase an entrepreneur’s chances of success, one could also argue the exact opposite—that greater available means reduce any induced creativity and related success. One could even argue a nonlinear effect, where effectuation no longer applies when sufficient means are present. That ambiguity in the relationships of the interactions is problematic (e.g., since it makes testing the

model overly demanding).⁴ When the directionality is clearer, it appears driven by description rather than by explanation (e.g., by identifying an underlying driver). The few directional interactions in effectuation research that exist usually are implicitly assumed in the model. This can be seen in the assumption that iterating the process is likely to produce learning and success. It would be better if the theory simply stated that selection and learning processes underlie that interaction (Pentland, 1999).

The Boundaries of Effectuation Theory

Although the literature provides several boundaries of effectuation—from ambiguity to resource constraints to a mix of Knightian uncertainty with goal ambiguity and isotropy—it appears that the context of effectuation lies between two extreme benchmarks, one being certainty (with full information) and the other being the opposite context of true ambiguity, characterized by the *nonexistence* of predictability, control, and any form of resource superiority. Effectuation's context involves uncertainty, but not true ambiguity or true predictability. Because the theory lacks an exact specification of what that context entails, relevance to the practitioner is severely reduced. And whether the resource restriction is partly a function of the uncertainty in the environment is unclear (as is the reason for why having greater resources would not otherwise be useful under such conditions). The most significant problem with the under-specification of boundary conditions is that there is no precise competitive landscape (complete with dependent variable specification) from which to compare alternative processes to determine which is best under which conditions; without this, there is no reason for a practitioner to use an effectual process rather than a different process.⁵

The System States of Effectuation Theory

Effectuation theory has no stable system states; its process is dynamic and occurs within uncertain and changing conditions. This calls into question the objectivity of any measured unit values, the persistence of any such measures, and the idea that any states could be proven distinct in what appears an ambiguous process. In other words, effectuation theory, as it now stands, does not appear to meet this criterion for theory building.

The Propositions of Effectuation Theory

⁴ Other issues of nonlinearity in the laws include (1) the lack of specification of minimum levels of units for the relationships to occur (e.g., it is likely that there is a need for sufficient structure in order to effectuate or improvise effectively so as to capture opportunities; Davis, Eisenhardt, & Bingham, 2009) and (2) the lack of specification of the moderators that are involved in determining how well the effectual process performs (e.g., as with improvisation being not inherently good or bad but, instead, dependent upon local conditions; Hmieleski & Corbett, 2008).

⁵ One example of the possible landscape boundary conditions that affect the best choice of action is provided in Hmieleski and Corbett's (2006) piece, where boundaries defined by levels of information, resources, time, and experience indicate when to use trial and error versus planning versus heuristics versus improvisation to realize the best effect.

The majority of the propositions in the effectuation literature are not of the required three types; most contrast outcomes expected when applying the effectuation process versus the causal process (e.g., Sarasvathy, 2001), or they contrast how entrepreneurs self-report their decision making relative to manager peers in terms of the units of effectual theory (e.g., Read et al., 2009). Because effectuation theory does not describe any system states, it has been difficult to identify “traditional” propositions (with two types—2 and 3—being automatically ruled out). It is additionally difficult to identify propositions of type 1 given the lack of articulated directionality of the interactions among the units in the effectuation literature to date. The propositions that are possible to state either are implicit yet under-explained in the effectuation literature or are already proven in separate but related theories. For example, in independent work drawing on effectuation theory, a hypothesis, such as one relating the use of trial and error in new product development to success in major innovations (Coviello & Joseph, 2012), seems supportable by the experiential-experimental research that predates effectuation.

The Reasonableness of Assumptions in Effectuation Theory

There are several assumptions in effectuation theory that we believe are questionable. We describe below the issues related to six of these major assumptions of the model:

1. There exists an unjustified optimism assumed in the abilities of the effectual entrepreneur to “build several different types of firms in completely disparate industries” (Sarasvathy, 2001: 247); “change his or her goals and even to shape and construct them over time, making use of contingencies as they arise” (2001: 247); pursue an aspiration and visualize “a set of actions for transforming the original idea into a firm—not into the particular predetermined or optimal firm” (2001: 249); proceed “without any certainties about the existence of a market or a demand curve, let alone a market for his or her product” (2001: 249); be certain of his or her three endowments that he/she can exploit as “who they are, what they know, and whom they know” (2001: 250); and proceed with “only some means or tools” that exist at that point in time (2001: 251). We believe that such abilities directly contradict the *real cognitive limitations* of the focal individuals involved.

First, the mental flexibility of entrepreneurs asserted in effectuation seems to be at odds with the many biases (e.g., over- confidence) and heuristics (e.g., representativeness) attributed to entrepreneurs that instead indicate a certain level of mental stubbornness (Busenitz & Barney, 1997). Second, the implied certainty and accuracy of their assessments of their own personal resources—their traits, knowledge corridors, and social networks (which are resources characterized in the originating piece as having significant plasticity)—seem unjustified. Entrepreneurs are often considered self-delusional (De Meza & Southey, 1996; Hmieleski & Baron, 2009; Simon, Houghton, & Aquino, 2000) in their confidence over the quality of their abilities, the quality of their data, and the quality of their networks (e.g., Busenitz & Barney, 1997). Such delusions often lead to ill-advised entry decisions, underestimation of rival responses, and

underinvestment in venture assets (e.g., Hayward, Shepherd, & Griffin, 2006; Lowe & Ziedonis, 2006; Moore, Oesch, & Zietsma, 2007), the last being evidence that, even with limited means, entrepreneurs often do not acknowledge how limited their means truly are. So the idea that entrepreneurs choose the optimal effects based on their means is unlikely to be true (given optimality would require accurate knowledge of means, losses, and so on), and, if false, then the logic of the system breaks down. Third, it seems doubtful whether entrepreneurs can calculate what is questionably expected to be calculable in an effectual process, such as in the experimentation approach based on a predetermined level of affordable loss or acceptable *risk* (Sarasvathy, 2001: 250), which would be difficult in a context of an unpredictable future, since one cannot calculate risk in an essentially ambiguous context (i.e., because states of the future world would be unknown). For example, while one could limit the size of an initial investment, one would not be able to control downside liability in an ambiguous future (e.g., like the size of the downside in a product liability lawsuit or negligence lawsuit involving punitive rewards). So, again, if the decision rules cannot necessarily be followed as stated, either the system breaks down or alternative rules need to be considered.

2. One defining characteristic of effectuation is that non-predictive control is not only possible but advantageous. However, the assumption that the effectual context entails control without prediction (Sarasvathy, 2001: 251) appears tenuous. Having control necessarily implies being able to predict the outcomes of the initiated actions that are under control (e.g., one would not say a driver has control over a car if that driver is not constantly and accurately predicting where it is going). Essentially, in the real world, control requires prediction; to control an outcome requires the knowledge of how an input affects an output, where that knowledge is predictive.⁶ If effectuation instead is trying to describe “local” predictability, where the locality is defined by the immediate outcomes from the use of available means, then that is what should have been stated in the theory.
3. Another defining assumption of effectuation is means-driven action; however, it appears needlessly restrictive, if not inaccurate. It restricts the entrepreneur’s options for paths forward to those based on *only* immediately available resources. There is no reason for not attempting to gain access to greater means *prior* to committing to action per se. Besides the unjustified restriction issue, there is a question of whether human decisions can ever be made without some influence of goals. Even in the original study that spawned effectuation (described in Sarasvathy, 2008: 321), the first line quoted from the example protocol is both predictive and goal oriented regarding the expected success of the hypothetical firm. It is improbable that pure means-driven decisions exist; there is no proof provided in the effectuation literature (or related studies) that entrepreneurs are not actually influenced, subconsciously or otherwise, by goals.

⁶ We question the logic of non-predictive control. The origin of this logic appears to come from the observation that the expert entrepreneurs refused to trust predictions and instead planned to confirm through direct experience certain market conditions (e.g., demand) by devising hypotheses and then testing them through action (Sarasvathy, 2008: 92). Such thoughts aloud, however, do not themselves reject all prediction because, for example, experiments are *tests of prediction*.

4. Yet another defining assumption of effectuation is the use of the affordable loss heuristic where the expert entrepreneur chooses actions that entail minimizing possible losses to him/herself based on a psychological estimate of the commitment of means in terms of the worst-case scenario of a total loss (Sarasvathy, 2008: 81). Mitigating downsides in volatile environments is *not* a new approach; it is the logic of options, and one reason for the staging of investments by venture capitalists. That said, options leverage the upside volatility; effectuation does not consider this upside explicitly in the decision-making calculus. In fact, effectuation does not seem to consider other possible aspects of options thinking (e.g., timing, exercise pricing, nesting, and so on) that could be quite a valuable and possibly a more realistic description of the way expert entrepreneurs would think. As such, it appears that the current modeling of this decision making in effectuation is needlessly oversimplified.
5. Effectuation lacks a core part of what entrepreneuring traditionally has been defined by—the creation of new value (e.g., as often stated in terms of what constitutes an *opportunity* in the entrepreneurship literature [see, for example, Shane & Venkataraman, 2000]). There is no explicit explanation for why new value is created in the effectuation literature; it is simply assumed. Traditionally, value creation arises from innovation, from arbitrage, from responding first to new market needs, from addressing unmet gaps within existing markets, and from improved offerings made to underserved segments (Barringer & Ireland, 2009). However, explorations of such avenues of value creation are missing from effectuation theory; instead, there appears to be an implicit assumption that any offering arising from the imagination of the entrepreneur in an uncertain environment will produce consumer value in excess of production costs. Assuming this rather than explaining this is inadequate for a new proposed theory of entrepreneurship.
6. Artifact “success”—assumed as an outcome of effectuation—requires an explanation of the implied *sustainability*. The only way that entrepreneurial activity can sustain is if it produces an offering with some defensible advantage over existing offerings, which means an activity that entails a differentiated product or a cost advantage, or both (Porter, 1980). The analysis of even short-term barriers to imitation (and barriers to opportunism by partners) is currently missing from effectuation theory. The model’s validity is put into question when it fails to consider real-world threats posed by the hazards in fragile unbalanced alliances and the reactions of other industry forces when a new market is created (Porter, 1980).

The Logic in Effectuation Theory

The first assessment of a proposed theory’s logic is whether it is able to explain causal relationships. The causality in effectuation theory is not explicit. The identification of underlying drivers is lacking. This appears to put effectuation into the category of a purely instrumentalist theory where connections among units are described but not explained, which makes it not a theory (Lawrence, 1997).

The second assessment of theoretical logic is whether any tautologies exist. A significant tautology appears at the core of the effectuation process. It is a tautology by *sylogism*: the specific context of effectuation implies particular rational responses that are embodied in specific units of effectuation theory; thus, the context implies the depicted behavior, giving no possibility of falsification. The context of effectuation is an uncertain environment. The only rational approaches to dealing with ambiguities involve gathering new information (e.g., through experimentation and networking) and being flexible in responding to new information. This is codified within effectuation in the logic of control, the focus on cooperation, and the capability for leveraging contingencies. The context of effectuation also involves resource scarcity. The only rational approaches to dealing with resource scarcity are the preservation and extension of existing means and the gathering of new means. This is codified in affordable loss-based decisions, imagination, and pre-commitments.

The third assessment of a theory's logic is whether it presents a *coherent* model. Effectuation is described as an internally consistent set of ideas that forms a clear basis for action (Sarasvathy, 2008: 17). In the original article Sarasvathy (2001) considers effectuation *a single construct* made up of several processes.⁷ However, the construct appears to be an amalgam instead—a composite of several different cognitive processes and behaviors (e.g., Perry et al., 2012). Instead of simply focusing on a specific approach—like experimentation—the theory also includes personal resources (e.g., available means), personal capabilities (e.g., imagination), strategic focus (i.e., on cooperation over competition), decision-making heuristics (e.g., affordable loss), and even a certain level of (personal) aspirational flexibility as part of its proposed *single* construct.

The Empirical Testability of Effectuation Theory

Effectuation theory is difficult to test as a stand-alone conceptualization. It is expectedly problematic to test the “effectuation construct” through the usual method for gathering a large sample: a survey (Chandler et al., 2011). Respondents are unlikely to comprehend the subtleties involved (e.g., regarding the differences between an uncertain and an unpredictable future). Few respondents will have been involved in the creation of new markets to make a definitional dimension like “creating new markets through alliances” applicable. While it may be relatively simple to test whether experienced entrepreneurs differ from managers in their self-reported decision-making techniques, some of which may be affiliated with effectuation, this is not evidence of the testability of effectuation itself.

⁷ Sarasvathy (2001: 251) applied the single construct label to her Table 1, and researchers such as Chandler et al. (2011) tested effectuation as a single construct. Effectuation is illustrated as one overall construct in the stories provided (e.g., U-Haul) and is used as a single umbrella term—even as a verb and a person type—in propositions in Sarasvathy's original article. In testing, there is no support for the unitary construct assumption; for example, Chandler et al. (2011) found that, using five characteristic constructs (covering multiple items each), the *best* fit models entailed at least two factors. This is not a surprising result in light of related constructs like improvisation, where three dimensions are involved (Hmieleski & Corbett, 2006).

What makes a more specific testing of effectuation difficult is controlling for the unique environments (e.g., regarding uncertainty, goal ambiguity, and environmental isotropy; Sarasvathy, 2008) while also describing the most meaningful dependent variable, because the literature remains unclear on what type of ex post success can be attributed to effectual logic (e.g., artifact creation? minimized costs of failure? personal entrepreneurial success?). Difficulty also arises in testing the theory through multiple cases where patterns could be “matched” with those proposed because of the need to ex ante identify the expert entrepreneurs to whom the proposed processes are supposed to apply.

Diffusion in the Literature of Effectuation Theory

There have been many papers written on, and hundreds of citations referring to, effectuation. However, diffusion appears to be limited in the sense that many of these papers are cowritten by a small common set of authors, and there is substantial repetition of the theoretical content across those papers.⁸

Another way of assessing diffusion of the proposed theory is to measure its impact in terms of how it has been published in the top general business journals. We drew upon the University of Texas at Dallas (UTD) list of such journals and considered how effectuation is cited and used in independently authored articles.⁹ There are nine articles that cut across five journals and the years 2003 to 2012. With one exception—Coviello and Joseph’s 2012 *Journal of Marketing* piece—the authors of these articles only used the effectuation idea (and its main sources) as convenient cites for the general ideas of opportunity and market creation, the think-aloud protocol, alternative decision-making approaches under uncertainty, and as a contrast to causation. There is no substantive use (e.g., testing or development) of effectual logic in eight of the nine pieces. In the Coviello and Joseph (2012) article, there is an extension of the ideas to new product development; however, this is for firms that were not new ventures, with a focus on managers rather than entrepreneurs, and involved determining what type of capabilities correlated with marketing innovation success (where one type was considered effectual). In sum, we do not find strong evidence of a meaningful impact of effectuation on the thinking of the wider field in terms of its diffusion to top business journals.

The Practitioner Value of Effectuation Theory

⁸ A table of *Financial Times* forty-five listed journal articles is available from the authors on request that provides citation information and summarizes Sarasvathy’s (2001) article’s contribution to the effectuation literature from 2001 to 2012. Over half of the papers involve repeat authors, and almost all of the papers apply the ideas of the original version of the theory rather than suggesting changes to that version.

⁹ We restricted ourselves to the UTD list and the electronic database search on keywords in the text (e.g., of “effectu*” or “Sarasvathy”). We eliminated all papers with Sarasvathy as a coauthor, all dialogues and responses, all book reviews, and all notes. This left nine papers (a summary table is available from the authors on request that provides the quotations from each paper where effectuation is cited); the median number of times effectuation is cited in these papers is once, and these cites refer to related ideas and not effectuation as a theory. We understand that alternative lists and criteria are also viable in such analysis; however, we do not see any change to our conclusions.

As alluded to above regarding the survey-based testing of effectuation, the jargon of the theory does not always transfer well to practical understanding—for example, in the language of an isotropic environment, non-predictive control, and so on. Practitioner value can also be assessed by the non-obviousness of the theory’s prescriptions. If this theory truly captures the pattern of behaviors of more expert entrepreneurs, then, by definition, it is obvious to at least those entrepreneurs. If the context, by syllogism, implies certain known responses (some of which are summarized in the effectual units)—as we suggested above—then, again, major portions of the theory *are* obvious. That said, the prescription to “not plan,” to consider “means over goals” when making decisions, and to “ignore competition” are all counterintuitive. However, some of these prescriptions are dangerous to most entrepreneurs (e.g., to those who do not face ambiguous contexts); for example, common sources of resource support (e.g., financing) will not be available without some form of written plan from the entrepreneur.

Implementability is another means to assess practitioner value—for example, can practitioners use the theory by manipulating the independent variables to achieve desired outcomes? The answer to this question is also predicated on several conditions. If the directionality of the interactions is underspecified, as we have described above, then such manipulations are difficult, if not impossible, to do.

Discussion: Overall Assessment and Resulting Directions

There are several assessment criteria that are met, at least partially, in the evaluation framework, and there are several criteria that are not. So there exists the possibility that effectuation can become a solid theory, but there is substantial work to be done. As it stands, we believe that effectuation is underdeveloped as a new theory of entrepreneurship and so should be used with a modicum of restraint (e.g., in following its prescriptions). Effectuation is currently quite limited in its scope—in describing only part of the story of entrepreneurial activity (n.b. this is partially a function of the fact that the under-defined area of entrepreneurship remains too broad, spanning multiple disciplines and scales and levels of analysis). That said, because of the uncertain context in which effectuation applies, the specific type of artifact creation at the core of effectuation is *interesting*—since artifacts emerging from such contexts are more likely to be novel, surprising, and potentially influential on the economy. But even here, if effectuation is to focus on such *business* artifacts, then there are existing theories and constructs to draw from, like blue ocean strategies (Kim & Mauborgne, 1997, 1999, 2004) and disruptive innovation (Bower & Christensen, 1995). To provide value as a proposed *new* theory, there needs to be a better recognition of what exists in that problem space so that any differentiation can be highlighted and argued as significant.

We now shift our focus from the middle column in Table 1 to the two rightmost columns in order to highlight several directions to take to improve effectuation theory and contribute to theory building in entrepreneurship. We outline five different directions that effectuation research should take based on the assessment; the first four are in order of priority (drawing directly from

the table, where the “D#” column indicates in bold the primary focus of the numbered direction below, and in italic the secondary coverage) while the fifth represents a collective “jumping off point” that recommends a more fundamental shift in approach.

Direction #1: Address the “Why”

Without an explanation of causation of the focal outcomes, there is no theory. Effectuation adopts a narrative perspective (DiMaggio, 1995), describing a process and initial flow of events; however, it fails to address the causes, necessary timing, probabilities, and effects underlying the process. A main challenge is to move from a basis of this description of *what* expert entrepreneurs do and how they act under conditions of uncertainty to explaining the decisions and actions are effective, efficient, and better than alternatives (and possibly also why the decisions are made behaviorally).

Identifying which behavioral fundamentals drive the observed patterns, especially in light of existing behavior-based theories and concepts related to entrepreneurs (e.g., in overconfidence, representativeness, and so on; Busenitz & Barney, 1997), would help justify why the actions described are specific to more expert entrepreneurs.¹⁰ Identifying which behavioral fundamentals drive the observed patterns would also help address the syllogism concern (i.e., where it appears the “what”s and “how”s derive directly from the context). There is a need to move from an arguably tautological connection between conditions and behaviors to a decoupled system. Identifying the underlying causes of the proposed relationships among units would also help to define the boundaries and to construct testable hypotheses (involving variable relationships or process patterns). Extending effectuation in this manner may lead to answers to further research questions involving action-oriented approaches in general, in terms of their benefits, costs, and risks, and involving what coevolution is possible among co-creators in emerging industries.

Direction #2: Specify the Landscape

A good business theory is one that leads to a performance improvement (e.g., by identifying optimal theoretical solutions, if not superior practical approaches). A necessary condition for this is specifying the competitive landscape; here an explicit, clear, precise statement of assumptions of the problem space (e.g., of the rules of the game and the means available to the participant), and of the performance measures, must be provided so that a sharp basis for comparison among possible alternative solutions is established. (If no rational alternatives exist, then a tautology has been identified.) If the context is underspecified, then the optimality of the logic in the theory is not proven. At present in the effectuation literature, the exact characteristics of the uncertainties faced by the entrepreneur, the embodiments of the resources, the nature of the contingencies, and the reaction functions of the identifiable parties involved all remain underspecified.

¹⁰ Explaining the why may also unlock the answer as to how the value is created by an entrepreneur in this process, which may then lead to understanding why such value is defensible. Likely, path dependencies, tacit experience-based knowledge, and luck will all be involved in this recommended line of future research in effectuation.

If this theory is supposed to model the internal processes of the entrepreneur and also is supposed to extend beyond what the entrepreneur does with what is exogenously given to him/ her, then it needs to provide more than a one-dimensional presence of external parties that affect outcomes; it needs to delve more deeply into the roles of parties such as co-creators, rivals, institutions, and other whom-the-entrepreneur-knows participants. We recommend that effectuation either explicitly model these influences on performance or redefine its boundaries to avoid their effects. Relatedly, we recommend that effectuation focus on providing an explicit explanation for *value creation*—how the artifacts that effectuators produce are better performance-to-price offerings than substitutes for their customers and how those artifacts are produced at costs sufficiently below prices—which is an explanation that could possibly build on the insightful uncertainty-resolution activities described in the model.¹¹

It may also be useful for effectuation to include goals explicitly in decision making, specifying their role—no matter how minimal—in the theoretical model, and, if these goals are evolving, then to model that process of goal evolution as well so that the mechanics of the endogeneity can be better understood and applied.

Even if events in the landscape are unpredictable, effectuation can progress by analyzing the unpredictable ex post, for example, by specifying the general types of shocks that do occur (e.g., typing along the differences of their effects; Woo et al., 1994) and how the effectual approach does and does not work with such shocks. Effectuation scholars are also challenged to specify the temporal dimension in their landscape, which seems to be similar to that in improvisation—that is, being urgent and of the immediate present (Smets, Morris, & Greenwood, 2012). When effectuation theory provides a clearer delineation of the resources, information, time, novelty, and other items that entrepreneurs face in their modeled phenomena, then there will exist a fairer way for the field to prescribe best practices (Hmieleski & Corbett, 2006). Pursuing this direction may help to address research questions involving how to build managerial “tools” drawing on effectuation and how to recognize when to use them *and* when not to use them.

Direction #3: Express Interesting Propositions and Prescriptions

Establishing effectuation theory entails predictions—in the form of testable propositions and non-obvious prescriptions—that are attractive to academic and practitioner audiences. For example, testable propositions should identify possible restrictions and modifications when using the effectual approach near its boundaries and how those affect its applicability. Additionally, clearly delineating possible rational alternatives will make tests of optimality meaningful (rather than continuing the interesting but inappropriate testing against causation).

¹¹ One possible source of value creation and potential competitive advantage is alluded to by Gemmill, Boland, and Kolb (2012): experiments in which effectuators do provide tacit knowledge, path dependence, and synergies with cocreator partners, where those partners not only validate an effectuator’s ideas but also provide social capital (e.g., for resources, recruiting, and more).

In order to have practitioners reap greater value from effectuation prescriptions, we recommend further work that improves the precision in defining which problems effectuation addresses, where it outperforms alternative approaches, and what its costs, benefits, and risks are under specific conditions. In order to have practitioners use effectuation, we recommend a simplification of the main insights. Where industrial organization has the five forces, and the resource-based view has VRIO, to be powerful in a practical manner, effectuation theory needs to have a simpler, cleaner, and more understandable and coherent set of main factors than it now has. It then needs to explain how potential benefits from adopting this simpler effectual approach outweigh potential costs.

The challenge to effectuation scholars is to move the theory away from tautology by context, because we already know that it is natural to improvise (e.g., effectuate) in unpredictable environments (Mirvis, 1998). In pursuing this direction, scholars should consider interesting research questions about where such instinctual approaches can and do go wrong, as well as questions about where such instincts emerge, which could be a fruitful nature (genetic) versus nurture (experience, heuristics, imitation) debate to document.

Direction #4: Build on Previous Work (and Obtain More Data)

The proper way to experience the phenomenon that a theory is supposed to explain is to build on what exists, in the literature and in the field. Given we (and others) have noted some issues with a lack of reference to related, often preexisting concepts that also seek to explain entrepreneurial activity, we recommend more work there. Effectuation scholars are challenged to explain the differentiation of effectuation as a proposed theory of entrepreneurship from previous ideas and from current, alternative proposed theories of entrepreneurial activity (e.g., like bricolage and opportunity creation). This direction not only would move effectuation from a comparison-based logic (i.e., mostly described in contrast to causation) to a stand-alone model but also would clearly highlight its different assumptions, heuristics, mechanics, trade-offs, and outcomes. We recommend more comparison pieces (to complement Fisher's 2012 paper, for example) so that any potential downsides of effectuation can be better understood (e.g., that it is likely a time-consuming and mistake-prone process like improvisation [Hatch, 1998; Weick, 1998] and that it is likely to lead to learning traps when effectuators get caught in the short-term positive feedback with their exploitative tactics [Hughes, Hughes, & Morgan, 2007]).

We also recommend more data collection by independent scholars (to complement the hard work done by the past set of scholars), especially focused on field-based observation of the phenomenon, employing standard inductive approaches to process models (e.g., Langley, 1999). A richer understanding of process steps, necessary sequences, and decision-making rationales may help generate a more comprehensive set of units and identify system states (which are currently lacking). With a better appreciation of previous ideas and a wider set of observations, effectuation scholars should be better able to differentiate their proposed theory by removing overlaps and empirical contradictions. This exercise may lead to new research questions

regarding how best to pursue inductive theory building and why overlaps occur in newer fields like entrepreneurship.

Direction #5: Consider a Radical Refocusing of the Approach

We close with a more radical recommendation for directing future work in effectuation in order to help contribute to theory building in the field. We target an implicit assumption in effectuation theory that we consider possibly the most problematic, as a means to open up a further set of research questions—questions we feel have the potential for gains of substantial insight in the study of entrepreneurial activity. This assumption is that *all* entrepreneurs can be effectuators (i.e., that anyone can follow the effectual process to success). The premise is that all entrepreneurs “can” but few “do” what effectuation prescribes, with a subsequent loss of artifact creation in the economy. We challenge this. We believe that the correct premise is, in fact, that few entrepreneurs “can” (where most “cannot”), so there is an economic inefficiency actually produced by effectuation where those who cannot try and do when they should not. We see great potential for theory that helps entrepreneurs self-identify when they can and when they cannot, and how to move them from cannot to can. In effectuation, it appears that entrepreneurs who can are those who have the right means, imagination, abilities, aspirations, and co-creator network and have found a sufficiently uncertain and dynamic context to enter. Those who cannot, which we believe are the majority of entrepreneurs in an economy, are the ones who rightly do not follow the effectual process (e.g., Case, 1989; Cooper, 1985); they are the franchisees, the “compete-preneurs” (Arend, 2001), the lifestyle business owners, the local imitators, the local efficiency improvers, and the local professionals.

We believe effectuation is a set of interesting ideas that can be applied “differently,” by pivoting to address the question of how and when to go from cannot to can, and then focusing on the process of moving from can to do that it currently attempts to model through an experiential-based process. Effectuation research must stop sampling on the dependent variable, as it does with its focus on “expert” (i.e., outlier-successful and experienced) entrepreneurs. Instead, it needs to focus on how and when and by what process these experts did and did not use effectual decision making and when it did and did not work. This may help to better identify not only the boundary conditions for effectuation but also how one enters (and exits) those boundaries (e.g., entering by building up the “whom I know” through different approaches to networking). Identifying how to enter may draw upon learning, absorptive capacity, path dependence, passion, and so on. Identifying the sufficiency of being able to do may draw upon concepts of trust, differentiation, risk and ambiguity tolerance, opportunity cost, and so on. There exist challenges for effectuation re- searchers in terms of fleshing out who the potential effectuator is and how he or she got there.

While it is useful to list the necessary, sufficient, or beneficial abilities that entrepreneurs should have when confronting an effectual con- text, it is much more useful to explain how entrepreneurs can gain such abilities and build them up to levels above those of others. And while it is interesting to depict these abilities as given parts of a larger process, if it is, in fact,

these under-defined capabilities that *are* the necessary drivers of success in that bigger process, then perhaps these should be the focus of the future work on effectuation. There is an urgent need to explain the assumed abilities of “those who do.” For example, the effectuation literature does not provide any description of any separate process to become better at exploiting contingencies than other actors in that context. Similarly, there is no explicit procedure (or explanation) for the superior cooperative strategy abilities of the effectuator, which is unfortunate given the challenges that alliance management entails (e.g., given the hazards, selection, spillover, synergies, and so forth that such partnerships and networks would present to any focal entrepreneur and his/her limited attention).

Effectuation scholars are advised to take a page out of the book of structuration scholars and exploit the “middle” ground between the subjective and objective perspectives in entrepreneurial opportunity generation, between the contexts of predictability and ambiguity, and between the local and nonlocal scales. Effectuation can have a greater impact by researching how to recognize and exploit when and where radical artifact creation is possible, rather than assuming it is always possible. This could lead to great insight on how entrepreneurs could use any market power they may temporarily have in developing industries, and how they could effectively manage complex environments that mix decisions in which they are market takers with the few but critical times in which they are the market makers (e.g., through business model innovation).

Improvisation has been considered an elemental component of entrepreneuring (Hmieleski & Corbett, 2008)—an approach akin to effectuation, but one that more explicitly blends planned and emergent behavior. We know that one “can’t make something out of nothing,” so the challenge for effectuation scholars is to show how to build the repertoire where entrepreneurs can effectuate (Mirvis, 1998). This may mean that effectuation theory has to acknowledge a role for planning and preparation to get to that “can”-level set of means. For example, if creativity is a four-step process that begins with preparation, effectuation scholars will be called on to model the pre-effectuation process (Gemmell et al., 2012). In related concepts, real firm managers have shown that there are ways to “plan to improvise”—so that the venture can better straddle novelty and deliberate action in less predictable contexts (Miner et al., 2001). Such preplanning and calculation have been shown to be necessary to allow performers (effectuators) to loosen up and better improvise when needed (Mirvis, 1998). By pursuing this direction, effectuation can contribute to the debate on how best to combine exploration and exploitation (at the new venture stage here) for the firm to respond to conflicting needs for diversity and reliability in processes and to break the paradoxes involved (Lanzara, 1998). Such case-based research may offer explanations and prescriptions for how disruption-like results can and do occur (e.g., in wind-turbine technology where bricolage-like, low-tech initial designs are ramped up over time to triumph over planned design approaches; Garud & Karnøe, 2003).

In the bigger picture, modern economies need experimentation in order to flourish; there is efficiency gained through seeming inefficiency because memetic diversity is required in a turbulent—changing and complex—environment to test alternative approaches competitively so any emergent best practice can be identified and imitated (Huang & Murray, 2010). Ecosystems

without such diversity do not do well in changing environments where progress and growth occur. Thus, we need the kind of passion, optimism, and confidence in the experimental, contingency-based cases that effectuators have described in their success stories, but more than that we need that differentiation from the pack, even when it leads to failure, to retain the necessary diversity in the economy that entrepreneurial activity alone provides. Thus, we look forward to further theorizing that explains entrepreneurial activity—in effectuation and other streams—promoting such diversity.

We also look forward to improving such proposed theories in management-related fields by applying the 3E framework criteria throughout the theory development and refinement processes (Devers, Misangyi, & Gamache, 2014). Consider three research areas where such theoretical assessments can be extended—one involving new value potential, one involving value capture in a competitive context, and one involving value capture in a noncompetitive context—to display that insights from the framework span many major challenges in the modern management literature. The research area involving “opportunity existence” appears to be “stuck” in debating the scientific philosophy over whether potential new value, as captured in the term *opportunity*, is discovered or created, or both. This area has normally been associated with entrepreneurship, comprising one of the two parts that is in the field’s core individual-opportunity nexus (Shane & Venkataraman, 2000), where the first part—the individual—has its own strong theoretical literature (in psychology). Applying our framework may help this research area in several ways, including weighing the option of developing a separable theory of opportunities (to extend out of entrepreneurship) by considering how many of the criteria have already been met with current work in entrepreneurship and innovation and moving the area toward resolution of the stalled philosophical debate (e.g., by focusing efforts on new types of testing to get around the ex post conundrum where every opportunity can be explained as both created and discovered or by focusing on new explanations that are based on the fact that every opportunity entails drawing on given, existing factors to combine or reassemble in new ways).

The research areas involving value capture include more established literature (i.e., the dynamic capabilities view) and more embryonic literature (i.e., prosocial venturing studies), where the former appears relatively flush in explanation-related items and the latter relatively deprived. Applying our framework may help the former area in several ways, including providing a retrospective perspective in an area that saw an initial hyper growth of interest (but has been criticized in failing to build on existing concepts and has suffered from weak empirical support and unclear practical implications; Arend & Bromiley, 2009) and can now use some guidance in shoring up its foundations and filling its gaps. Applying our framework may help the latter area of interest as well in several ways, including helping determine whether these are “wicked” problems that are unsolvable and inhospitable to theory building (through an analysis of the area along the framework’s experience-related criteria) and helping to direct explanatory work in an efficient manner (e.g., starting with common units and measures as some are attempting to do [Kroeger & Weber, 2014] or writing nontautological definitions as others are attempting to do [Santos, 2012]) to fulfill the necessary criteria to build solid models. Besides its use in helping develop and redevelop managerial theories, we also hope that such a framework can spur

discussions over theorizing itself, such as how to weigh (or more specifically sequence) the proposed assessment criteria, in order to provide even more value to the field and its progress.

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