Commitment in the Entrepreneurial Process: A reconceptualization

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ABSTRACT

Researchers disagree on the role that entrepreneurial commitment plays in nascent markets. One view is that uncertainty requires a flexible approach, which precludes commitments. Another view is that flexibility and commitment can be simultaneous and that successful entrepreneurs balance the two.

This article reconciles the two views by differentiating the forms of flexibility on the basis of commitment. It proposes a framework that formulates entrepreneurial action in terms of each form’s context of relevance, and discusses the implications for the entrepreneurial process.

INTRODUCTION

How entrepreneurs deal with nascent markets has long been the subject of scholarly inquiry (Santos & Eisenhardt, 2009; Sarasvathy, 2001). In a new firm, an entrepreneurial insight is typically developed into a concrete definition of an organizational domain: a specific good or service and a target market or market segment (Miles, Snow, A. D. Meyer, & Coleman, 1978). According to Shane and Venkataraman’s model of entrepreneurial process (Shane & Venkataraman, 2000), this development takes place when start-up intentions lead to the creation of a plan against which the entrepreneurs attempt to execute (Baker, Miner, & Eesley, 2003). The plan is the expression of a focused commitment (Wernerfelt & Karnani, 1987) by the entrepreneurs to a specific organizational domain.

Compaq, a computer manufacturer, is a good example of a focused commitment approach for a new venture. Created in 1982 to commercialize a portable PC for business users, Compaq successfully released the product a few months later and immediately started growing, generating more than 100 million dollars in sales for its first full fiscal year (Bhidé, 2000).

The personal computer market traces its origins back to the 1970s and was already well established at the time of Compaq’s inception some ten years later. Portable computers for business users had already been successfully introduced by several vendors prior to Compaq’s founding, so the market was well established at the time. Nascent markets are different. As business environments in an early stage of formation (Santos & Eisenhardt, 2009), their creation is fraught with incomplete information (Sarasvathy). As a result of this incomplete information, it is difficult for entrepreneurs to define a successful organizational domain at the
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outset of the venture, i.e. what product will be offered, at what price, to whom, when and where (Lynn, Morone, & Paulson, 1996) in the future. The organizational domain must instead emerge later in the process, making the focused commitment approach irrelevant (Van de Ven & Polley, 1992). Understanding how this domain emerges through the actions of entrepreneurs is the purpose of this paper.

Three alternative approaches are identified in the literature in this regard. The first approach is adaptation, i.e. the ability to “fit the firm more particularly for existence under the conditions of its changing environment” (Chakravarthy, 1982: 35). Underpinning interest in the concept of adaptation is the assumption of temporal truncation (McGrath, 1997) – whereby the passage of time alone brings uncertainty to an end. New information will become available over time, and the venture can wait and act only after the uncertainty is removed (Wernerfelt & Karnani, 1987). By acting later rather than now, entrepreneurs delay their commitment to a specific organizational domain and organize in such a way as to allow a “fluid” readjustment of the venture to unanticipated situations (Eisenhardt, Furr, & Bingham, 2010).

Rather than wait and being purely reactive, however, entrepreneurs tend to actively seek information (M. Simon & Houghton, 2002). In doing so, they commonly go through a process of successive iterations (Loch, Solt, & Bailey, 2008) which enable them to progressively redefine their organizational domain as new information becomes available. This iterative process is commonly referred to in the literature as ‘trial and error’ (Van de Ven & Polley, 1992). Trial and error provides entrepreneurs with an opportunity to evaluate outcomes associated with a course of action before deciding upon a future course of action (Garud & Van de Ven, 1992). Hence the commitment to a course of action is conditional on successful trials.

Sarasvthy (2001) also observes that successful entrepreneurs dealing with nascent markets do not define their organizational domain at the outset of the venture, but progressively, over time. However, she finds that these entrepreneurs do not delay commitments but pursue them actively. Unlike with the focused commitment approach, however, such commitments are not made in relation to an organizational domain, but to stakeholders interested in the venture. For Sarasvthy (2001), the entrepreneurial process consists in securing reciprocal commitments with a growing network of stakeholders.

Hence, whether in established or nascent markets, the concept of commitment is central to the entrepreneurial process, but scholars take contradictory views on its role and nature. This contradiction has important implications for research on the entrepreneurial process. On the theoretical side, it leaves the phenomenon inadequately described and can lead to conflicting or contradictory findings. On the practical side, it leaves entrepreneurs without guidance on how to manage uncertainty.

This paper proposes that the difficulty occurs because of a failure to differentiate between the various approaches and to understand the nature and the role of commitment in each form.

The paper is organized as follows. First, we review the concept of commitment in the literature. We differentiate its different approaches and reconceptualize them on the basis of commitment. Second, based on this reconceptualization, we propose a framework associating each approach to a particular context of relevance. Finally, we examine the implications of the framework with regards to the entrepreneurial process.
Commitment is an important and complex construct that has long been studied in various fields of research. In organization studies, commitment is mostly studied as the relation between individuals and organizations they belong to (e.g. Klein, T. E. Becker, & J. P. Meyer, 2009). In this field, scholars try to understand why individuals develop a particular bind to an organization, such as their employer, their community, or their church. In psychology, commitment often refers to the strength of a person’s determination to pursue a goal (Nesse, 2001a). Commitment is also defined as becoming bound or obligated to some course of action or inaction (Schelling, 2001). Being bound to a course of action often means that other courses of action are deliberately abandoned. Somewhat counter-intuitively, Elster (2000) observed that the ability to restrict one’s own freedom by pre-committing to one option at the expense of others can be valuable in certain circumstances. Elster (2000) emphasizes that rationality often requires taking steps to make pre-commitments in anticipation of temptations that would yield a short-term gain but a long-term cost. For instance, smokers might leave their cigarette pack in their car so as not to have them available when the desire for smoking manifests itself. Similar examples in history and literature abound, the most well-known being that of Ulysses and the Sirens. Ulysses famously asked his crew to bind him to the ship’s mast in advance so as not to be seduced by the sirens. The objective of the commitment was for him to remove in advance the option of ceding to the sirens when he would encounter them.

When a commitment to a goal involves an intent to persist despite difficulty or to resist the temptation of a short term gain at the expense of a long term cost, its influence is on the self (Klinger, 1975). Commitment, however, can also be used to influence someone else’s choices. Commitment does so by affecting that other person’s expectation of one’s behavior (Schelling, 2001). The military strategy literature contains numerous examples of the value of restricting one’s freedom to influence others. For instance, the Spanish conquistador Cortes allegedly burned his vessels so as to remove the possibility for his soldiers to retreat from the enemy, leaving them with only two extremes options: victory or death.

The value of commitment has also been stressed in the strategy literature (e.g. Ghemawat, 1991) both as an influence on the self and on others. As Ghemawat remarks, commitment is the tendency of strategies to persist over time. “A strategy embodies commitment to the extent that, if adopted, it is likely to persist.” (1991: 15) Commitment in this sense involves selecting an organizational domain based on the prediction of an expected future (Wernerfelt & Karnani, 1987) at the expense of several possible ones. The argument in this stream of research is that making early commitments (such as adding manufacturing capacity) may secure future market space and discourage rivals from investing (Pacheco de Almeida, Henderson, & Cool, 2008), accelerate learning and enable economies of scale (Wernerfelt & Karnani, 1987), and provide with a first mover advantage through technological leadership, preemption of scarce assets, and switching costs (Lieberman & Montgomery, 1988).

Entrepreneurial commitment

In the entrepreneurship literature, it is observed that a focused commitment to an organizational domain defined at the outset of the venture to which entrepreneurs are bound during the execution phase also allows the development of routinized behavior (Nelson &
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Winter, 1982), which enables the venture to effectively handle liabilities of newness (Stinchcombe, 1965).

Entrepreneurial commitment is also defined as the commitment of the entrepreneurs to their project itself (Fayolle, Basso, & Tornikoski, 2011), i.e. it corresponds to entrepreneurs’ persistence in their efforts despite experiencing negative outcomes (Garud & Van de Ven, 1992) or underperformance (DeTienne, Shepherd, & Castro, 2008). To the extreme, it can lead to the well described syndrome of escalation of commitment (Staw, 1981). However, this persistence might be explained by ambiguity (Garud & Van de Ven, 1992), i.e. the uncertainty of nascent markets where determining precisely when a goal is unreachable is hard (Nesse, 2001b). There might be value in persisting, and persistence may eventually lead to success.

Entrepreneurial commitment, to the organizational domain or to the project, has other benefits: it helps convince investors (Garud & Van de Ven, 1992) and other stakeholders such as employees, the support of whom is necessary for the venture to acquire resources. This is because a stakeholder invests in the relation with the entrepreneur, and like any relation, the investment does not make sense unless both parties expect the relationship to continue for an extended period (Frank, 2001). For instance, entrepreneurial commitment to the project in turn leads to employee commitment to the venture, a crucial but challenging task (Breugst, Domurath, Patzelt, & Klaukien, 2012).

In sum, commitment has been mainly studied as the ability of entrepreneurs to persist despite the initial difficulties, or as the abandonment of all possible options but one (Focused commitment) regarding the organizational domain in order to increase the chance of success and to obtain the support of stakeholders to acquire needed resources. However, in both cases, commitment is studied regardless of the nature of the environment as far as availability of information is concerned. In short, entrepreneurial commitment has essentially been studied as a focused commitment to an organizational domain and a course of action, and its relation to the resolution of uncertainty that characterizes nascent markets has largely been ignored.

Uncertainty and the entrepreneurial process

A number of scholars have observed that the impossibility to predict future states of an environment, as is the case of nascent markets, does not permit the definition of the organizational domain at the outset of the venture and therefore limits the relevance of a focused commitment (Van de Ven & Polley, 1992), hence calling for a different approach instead (Eisenhardt & Tabrizi, 1995; Loch et al., 2008).

They observe that in such context, the founding process rarely begins with a plan that is expected to guide future action (Shah & Tripsas, 2007). On the contrary, as new ventures receive feedback from the nascent market, entrepreneurs reassess decisions made in a prior stage (Eckhardt & Shane, 2003) and continuously morph and adapt products, organizational structure, and sources of competitive advantage (Shah & Tripsas, 2007). Hence unlike for established markets, the entrepreneurial process in nascent markets tends to be characterized by the progressive determination of the organizational domain and other elements of the new venture’s strategy and organizational form through ‘continuous morphing’ (Rindova & Kotha, 2001).

Three approaches to this determination have been identified in the literature.
Adaptation

The first approach is adaptation, i.e. the ability to revert prior decisions at little or no cost (Chakravarthy, 1982). Adaptation has been studied from a number of management perspectives and units of analysis. At the product level, for instance, new product development scholars observe that adaptation is made possible by organizing the development process so as to delay design decisions subject to uncertainty as far as possible (Bhattacharya, Krishnan, & Mahajan, 1998; Iansiti, 1995).

Underpinning interest in the concept of adaptation is the assumption of temporal truncation (McGrath, 1997) – by which the passage of time alone brings uncertainty to an end. New information will become available over time, and the firm can wait and act only after the uncertainty is removed (Wernerfelt & Karnani, 1987). By acting later rather than now, the firm delays its commitment to a specific organizational domain and organize in such a way as to allow a “fluid” readjustment of the venture to unanticipated situations (Eisenhardt et al., 2010).

The capacity to respond effectively to changes in the environment can be improved by the creation of assets that are not specific either to the firm or to the market, which facilitates asset reconfiguration when needed (Ghemawat & Del Sol, 1998), and by investing in so-called ‘real options’ (McGrath, 1997). Real options earn the right to fully commit to a specific course of action only when information becomes sufficient. In such approach, the unit of analysis shifts from the organization to the project. In what Pich et al. (2002) call ‘Selectionism’, the firm can actually develop several trials independently and choose the best performing ex-post. For instance, in the early 1990s, several operating systems competed on the nascent Personal Digital Assistant market and it was difficult to anticipate which one would end up winning. Rather than waiting, Sharp Corporation introduced several models on each of the different systems, and quickly dropped those that didn’t sell (Loch, Arnoud De Meyer, & Pich, 2006).

The adaptive approach can therefore be characterized as follows: (1) The definition of the venture’s organizational domain is progressive; (2) The progression is continuous; (3) Adaptation consists in preparing effective and timely action, which is taken only when information becomes available. Key to success is the ability to delay the commitment to an organizational domain long enough for information to become available.

Trial and error

Rather than wait and adapt when information becomes available, however, entrepreneurs tend to actively seek information (M. Simon & Houghton, 2002). Scholars have proposed that this can be achieved through an iterative process called trial and error. Trial and error provides an opportunity to evaluate outcomes associated with a course of action before deciding upon a future course of action (Garud & Van de Ven, 1992). Scholars have also used the terms ‘experimentation’ (Thomke, 1998), ‘muddling through’ (Lindblom, 1959) and ‘probe and learn’ (Brown & Eisenhardt, 1997; Lynn et al., 1996) to describe this approach. Though there are differences between these notions (e.g. Miner, Bassof, & Moorman, 2001), they are not relevant for our purpose. Accordingly, we equate the terms trial and experiment, on the one hand, and ‘trial and’ error, ‘experimentation’, and ‘probe and learn’, on the other hand.

According to Lee, Edmondson, Thomke, and Worline (2004), learning from experimentation is fundamental to solving problems for which outcomes are uncertain and where critical sources of information are nonexistent or unavailable. According to the Merriam Webster dictionary, experimentation is the fact of conducting an experiment, i.e. “a procedure carried
out under controlled conditions in order to discover an unknown effect or law, to test or establish a hypothesis, or to illustrate a known law.” An experimentation is conducted using a prototype (Thomke, 1998), which is defined as the first example of an industrial product, from which all later forms are developed. Information learned in an experimentation can be used to modify subsequent experimental designs, conditions, or even the nature of the desired solution (Thomke, Von-Hippel, & Franke, 1998). Experimentation is a low cost action: it is used to learn about the product’s fitness and its market acceptance before committing substantial funds to it (Moore, 1982). Through the succession of experimentations, the trial and error process is directed by insight as to the direction in which a solution might lie. If an experiment is successful, the trial and error process stops (Thomke, 1998) and the firm can commit to an organizational domain and roll out its product (Lee et al., 2004).

Hence the trial and error approach is Bayesian (Greene, 2008) in the sense that it is based on conditional, not just delayed, commitments: commitment to action B is made only 1) when the result of action A is known, and 2) if that result is ‘successful’. Therefore, and unlike adaptation, trial and error is based on conditional, not just delayed, commitment.

In addition, trial and error is non committal in the sense that being a trial, action may increase the stock of knowledge but it leaves the organizational domain unchanged - it is “off-line” (Miner et al., 2001), and it gives the firm the opportunity to backtrack if the trial is unsuccessful. It is also non social in the sense that a trial does not require a commitment with stakeholders, even though it can involve stakeholders.

Trial and error can therefore be characterized as follows: (1) The definition of the venture’s organizational domain is progressive; (2) The progression is iterative; (3) Each iteration is made with a relatively low-cost action (“affordable loss”); (4) The purpose of this action is to acquire the information that is missing to define the organizational domain; and (5) Action consists in a trial that by itself leaves the organizational domain unchanged - and entails no commitment either to a stakeholder or to a course of action. Key to success is the ability to create and run the trials as quickly and efficiently as possible.

Social commitments

Sarasvathy (2001) also observes that successful entrepreneurs in nascent markets do not commit to a successful organizational domain at the outset of the venture, but define it progressively over time. However, she finds that a progressive definition does mean a lack of commitment. On the contrary, it rests on a series of commitments with stakeholders. She shows that entrepreneurs use a comprehensive logic that she calls “Effectuation”. Effectuation is a sequence of non-predictive strategies in dynamic problem solving that is primarily means-driven, where goals emerge as a consequence of stakeholder commitments rather than vice versa (Sarasvathy, 2001).

The importance of stakeholders, defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984: 46), has long been highlighted in strategy and in entrepreneurship. Singh et al. (1986), for instance, propose that stable links with key stakeholders are important for a firm survival.

Sarasvathy (2001) suggests however that stakeholders play a more fundamental role than helping a new firm survive. To her, the commitment to the venture of a growing network of stakeholders is the core mechanism of the development of its organizational domain. For instance, the founders of U-Haul obtained the commitment from early customers to refer new customers and obtained agreements from gas stations to offer spaces for their trailers’ parking (Sarasvathy, 2001). Of course, to obtain this commitment, and because commitment can be
regarded as a calculated act (H. S. Becker, 1960), entrepreneurs often have to commit in return (Wiltbank & Sarasvathy, 2002). Their commitment is expressed by the fact that they proceed through a series of successive transactions. U-Haul didn’t start by devising a business plan (focused commitment) or by experimenting with the concept of trailer rental in a test market before launching the venture (Trial and error). They simply went on and started renting one, then two, then three and more trailers. To a potential customer, all that mattered was that they would get the trailer, use it and return it. Any commitment beyond that was unnecessary. Hence entrepreneurial commitment was key, but it was based on low cost actions.

This approach, which we label social commitment, rests on systematic commitments made with stakeholders. Unlike with the focused commitment approach, the target of commitment is not the organizational domain, but a transaction with a stakeholder. The social commitment approach can therefore be characterized as follows: (1) The definition of the venture’s organizational domain is progressive; (2) The progression is iterative; (3) Each iteration is made with a relatively low cost action (“affordable loss”); (4) The purpose of action is to transform the environment; and (5) Action consists in a transaction that entails a reciprocal commitment between the entrepreneur and a stakeholder - it is “on-line” (Miner et al., 2001). Key to success is the ability to create a growing network of committed stakeholders.

**Summary: reconceptualizing the flexible approaches based on commitment**

Our examination of the three different forms of progressive approaches – Adaptation, Trial and Error, and Social commitment - shows that while they all involve action by the entrepreneur, they differ in the objective of nature and purpose of action they imply. TABLE 1 summarizes the findings, and allows a comparison of the different types of progressive definition that we have described.
Commitment

TABLE 1
Reconceptualization of the Four Approaches Based on Commitment

<table>
<thead>
<tr>
<th>Focused Commitment</th>
<th>Adaptation</th>
<th>Trial and error</th>
<th>Social Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of organizational domain</td>
<td>Ex ante</td>
<td>Ex post</td>
<td>Ex post</td>
</tr>
<tr>
<td>Nature of iteration</td>
<td>N/A</td>
<td>N/A</td>
<td>Trial</td>
</tr>
<tr>
<td>Purpose of action</td>
<td>Implement plan</td>
<td>Prepare adaptation to environment</td>
<td>Learn about environment</td>
</tr>
<tr>
<td>Nature of action</td>
<td>Implement plan</td>
<td>Configure assets and organization form</td>
<td>Create trials to learn</td>
</tr>
<tr>
<td>Role of commitment</td>
<td>Pre-requisite for action</td>
<td>Delayed until information is available</td>
<td>Conditional on successful trial</td>
</tr>
<tr>
<td>Level of commitment</td>
<td>Organizational domain</td>
<td>Organizational domain</td>
<td>Trial</td>
</tr>
<tr>
<td>Target of commitment</td>
<td>Goal</td>
<td>N/A</td>
<td>Course of action</td>
</tr>
<tr>
<td>Cost of action</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Strength of commitment</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

The Two Dimensions of Commitment

This analysis highlights the importance of commitment as a basis to differentiate between distinct forms of progressive definition. Two dimensions of commitment are important to distinguish: 1) The cost of the commitment, i.e. what can be lost if the iteration is not successful, and 2) The strength of the commitment, i.e. the assumed ability to reverse the commitment if necessary. These approaches can be arrayed according to these two dimensions along with focused commitment, whereby the organizational domain is defined prior to the execution phase, which corresponds to a high commitment and a high cost. The results are indicated in Figure 1.

The two dimensions can vary widely. For instance, a recently laid-off engineer can decide to pursue an entrepreneurial idea by giving up job search for a fixed period of six months. The associated loss, six months of potential salary in a new job, plus some expenses, can be relatively low relative to her personal assets, but the commitment to explore the opportunity will probably very strong. Conversely, HP’s recent decision to shut down its recently acquired WebOS software platform for mobile devices and discontinue the TouchPad, a tablet product that was introduced less than two months before, is an example of weak commitment at the high cost of USD 1 billion. A selectionist approach as that of Sharp Corporation mentioned earlier enables low commitment (no decision is made until the outcome of the trials is known) but it is costly even if it succeeds as several trials must be conducted in parallel.
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INSERT FIGURE 1 HERE

Differentiating the approaches along the two dimensions of commitment

<table>
<thead>
<tr>
<th>Cost</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Trial and error</td>
<td>Focused commitment</td>
</tr>
<tr>
<td>Low</td>
<td>Adaptation</td>
<td>Social commitment</td>
</tr>
</tbody>
</table>

Strength

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ENTREPRENEURIAL ASSUMPTIONS AND RELEVANCE OF FORMS

We have distinguished the different approaches on the basis of commitment. We now need to examine in which context each form is relevant. This is necessary because each choice of form carries cost and must therefore be properly appraised by the firm. For instance, a trial might yield useful information but it is costly and takes time, thus delaying the introduction of a product to the market (Thomke, 1998). Similarly, securing new stakeholder commitments brings new resources, but also risks slowing down the progression and adds constraints as they will have a say in the definition of new goals for the venture (Sarasvathy, 2001).

By context, we mean the characterization of the environment as assumed by the entrepreneur as far as information is concerned. A debate exists among scholars about whether we should be concerned with the objective uncertainty of the environment or with the perception of this uncertainty by the entrepreneurs (Milliken, 1987). However, as Knight noted: “We perceive the world before we react to it, and we react not to what we perceive, but always to what we infer” (1957: 201). Hence, and following Milliken (1987), it is the perception that matters here, and we consider the environment in terms of the assumption entrepreneurs make about it in terms of information, and what they infer form this assumption.

Assumptions about the future: Prediction, Risk and Uncertainty and the meaning of flexibility

According to Knight (1957) and Sarasvathy (2001), entrepreneurs can make three assumptions about their environment regarding the future distribution of events: 1) They can assume that they know the distribution of events a priori and hence that they can make predictions based on this knowledge (Predictive environment, P). 2) They can assume that the type of event they consider is repeated, and that the corresponding distribution can be estimated by studying the occurrences over time (Risky environment, R); Or 3) they can assume that the type of event they consider is unique (e.g. launch of a radically new product) and therefore that the corresponding distribution is not only unknown, but objectively unknowable, not even in theory (Uncertain environment, or U). Sarasvathy observes that in addition to an objective lack of information, U is characterized by isotropy, a term introduced
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by Fodor (1983) to describe the fact that in decisions and actions involving uncertain future consequences, it is not clear ex ante which pieces of information are worth paying attention to and which not, i.e. which information is relevant or not.

The meaning of flexibility in each context

Hence we have three different types of environments depending on the assumptions made about the availability of information. What is the meaning of flexibility in each of these?

- In P (Prediction), information does not exist but can be created by prediction. Firms succeed if they make an accurate prediction of the future (i.e. which product for which customers, etc.) before acting. Hence, flexibility means the ability to reconfigure resources if the initial prediction turns out to be inaccurate and the goal (organizational domain) cannot be achieved as a result. To that effect, firms will accumulate resources in the hope that these might be useful when the goal needs to be changed.

- In R (Risk), information exists and can be acquired. Firms succeed if they are able to acquire information through the study of past events before setting a goal and acting. Such study can be passive (wait until information is available) or it can be active through the creation of trials (actively seek information). Hence, in R, flexibility means either the ability to configure resources to be able to commit quickly when information becomes available, or the ability to create and run trials to acquire enough information to enable commitment.

- In U (Uncertainty), information is either nonexistent or isotropic; its acquisition cannot be the basis for action and the definition of goals is impossible. Firms must solve isotropy (goal ambiguity) first before being able to decide which information is relevant or not. Because there is no objective way to decide which information is relevant, it can only be decided subjectively, by constructing some artificial binds on the problem space (Sarasvathy). Stakeholders’ commitment is a way for firms to use other economic actors to bind the problem space (Sarasvathy & Dew, 2005). Hence in U, firms succeed if they base the progressive definition of their organizational domain on a growing number of stakeholder commitments. In U, flexibility means defining new goals with committed stakeholders (binding) and doing so at the level of a transaction (affordable loss).

Because the three different assumptions about the environment imply different success factors, we can expect that entrepreneurs will choose the most relevant form of flexibility for each type of assumed environment. Hence:

\textit{Proposition 1. Entrepreneurs will choose the most relevant form of flexibility for each type of assumed environment.}

Let us now examine the question of the relevance of each form within each context.

Adaptation

Adaptation is relevant in R as the distribution of past events can be studied passively (i.e. the firm reacts to events when they occur but does not take action to find out). As mentioned earlier, the effectiveness and efficiency of the reaction can be enhanced by the use of real options or selectionism. Real options and selectionism, however, can only be undertaken when the alternative courses of action form a discrete set, when they can be identified ex-ante, and when they are relatively few in numbers. Adaptation is not relevant in U because of the isotropic nature of the environment: there is too much to possibly be ready to adapt to. The
firm should be ready to adapt to an infinite number of possibilities, which of course would put an infinite burden to asset configuration.

**Proposition 2. Entrepreneurs will use Adaptation only in Knight’s R environments.**

**Trial and error**

Trial and error is most relevant in R (environment characterized by risk). It is not relevant in P because the distribution is assumed to be known, hence running trials to estimate it does not make sense. In U, trial and error is not relevant for three reasons. The first reason is that by definition, trial and error is limited with regards to the actual learning that it allows. Trials (or experimentations) take place in controlled conditions, not in the real environment, and when they involve products, experimentations are conducted using prototypes. These prototypes can have varying degrees of fidelity with respect to reality (Thomke, 1998). As a result, learning is necessarily limited, and the trial and error process cannot resolve uncertainty entirely: “residual” uncertainty can be resolved only when the real product is introduced in the real environment (Thomke, 1998).

The second reason is that trial and error works well in conditions that can be controlled, i.e. when the causality between variables tested by the trial can be ascertained. Several authors (Chakravarthy, 1982; Lindblom, 1959; Quinn, 1978) suggest that trial and error is an appropriate process to guide the development of a venture under conditions of uncertainty (Garud & Van de Ven, 1992). However, researchers have shown the difficulty of learning effectively in the face of confusing experience, which limits the value of adaptive intelligence (Garud & Van de Ven, 1992; Levinthal & March, 1993; Tversky & Kahneman, 1986). Entrepreneurs are faced with causal ambiguity if too many variables are involved and as a result they cannot learn. Because experimentation is a form of problem solving (Thomke, 1998), trial and error is relevant in situations of search in a finite, if possibly large, solution space; i.e. in R, not U.

The third reason has to do with the uniqueness of events: According to Van de Ven & Polley (1992), the adaptive learning model assumes organizations respond to experience by repeating behaviors that have been found to be successful in the past and avoiding those which have not. This model has proven quite robust in situations where preferences are clear, alternative courses of action are specified in advance, and outcomes are unambiguous (March, 1982). Because uncertainty concerns events that are entirely new, there is no past experience to refer to (Knight, 1957; Tversky & Kahneman, 1986). The objective lack of information (Knight, 1957) in these areas makes it such that there isn’t anything to learn yet. Hence entrepreneurs will not use trial and error in U. As a result:

**Proposition 3. Entrepreneurs will use trial and error only in Knight’s R (Risk) environments.**

If both Adaptation and Trial and Error are relevant in R, how can firms choose which approach to use? Here again, the choice of approach will be made on the basis of the entrepreneur’s assumption about the environment, i.e whether or not the entrepreneur assumes trial and error can yield the necessary information.

**Social commitments**

Social commitment is relevant in U. It is not relevant in P because the assumption that the distribution is known ex ante means that it is also assumed that there is no isotropy; hence there is no need to put artificial binds on the problem space. Stakeholders commitments may
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be important, for instance to provide resources, but they are not instrumental in addressing the informational problem of the environment. Social commitment is not relevant in R either, because while working with stakeholders can be useful to learn about the environment, their commitment to the project is neither necessary nor useful, and it carries cost.

Proposition 4. Entrepreneurs will use social commitment only in Knight’s U environments.

Taken together, these results allow the association of each form to a particular area of relevance. The results are summarized in

<table>
<thead>
<tr>
<th>Type of environment</th>
<th>Relevant approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>P (Prediction)</td>
<td>Focused commitment</td>
</tr>
<tr>
<td>R (Risk)</td>
<td>Adaptation, Trial and Error</td>
</tr>
<tr>
<td>U (Uncertainty)</td>
<td>Effectuation</td>
</tr>
</tbody>
</table>

Flexibility, commitment and the entrepreneurial process

Differentiating the flexible approaches on the basis of commitment permitted us to associate each form to a particular area of relevance by taking into consideration the nature of the environment with regards to the information. Let us now study the implications of these results with regards to the entrepreneurial process.

As observed by Sommer et al. (2009), not all decision areas of a new venture are affected by the same level of uncertainty and therefore require the same approach. For instance when a venture introduces an existing technology to a new market, uncertainty level will be high for the market, but low for the technology. Hence the assumption about the nature of the environment should be made at the level of each decision area, not at that of the venture.

Proposition 5. Entrepreneurs will choose the relevant approach at the level of the decision area.

Each decision area should be viewed dynamically: the level of uncertainty of each area is likely to change over time, for two reasons: One reason is that the actions of the successful entrepreneur, inter alia, should reduce uncertainty as the entrepreneurial process unfolds; The other reason is temporal truncation (McGrath, 1997), ie information will become available through the actions of other actors involved in the nascent market (Santos & Eisenhardt, 2009).

Because each approach is relevant in a specific context, and because the level of uncertainty evolves over time for a given decision area, entrepreneurs will want to reevaluate the choice of approach over time. This is made possible by the iterative nature of the process. For instance, a software startup initially confronted with the uncertainty of the proliferation of operating systems might, after some time, end up with the choice of only one or two. In such a situation, running a development trial on each of them is a reasonable course of action in terms of resources and expected gain. To the extent that uncertainty is successfully reduced, entrepreneurs will consider branching from social commitment to trial and error. When uncertainty has been significantly reduced, making a focused commitment becomes the appropriate course of action. Hence,
Commitment

**Proposition 6.** Entrepreneurs will reevaluate the choice of approach for each decision area depending on the evolution of its assumed level of uncertainty over time.

In conclusion, the choice of approach is made on two dimensions: along the different decision areas of the business, depending on their assumed degree of uncertainty, and over time, depending on how this level evolves for each decision.

Hence, the different approaches form a repertoire that can be used by the entrepreneurs. How does it relate to the entrepreneurial process? At any point in time of the venture, entrepreneurs decompose the venture into various decisions areas. They then evaluate the uncertainty level of each area, and choose the appropriate approach as per the framework shown in Figure XX. They can then iterate and produce a new outcome. If the progression form was trial and error, the outcome is an increase in knowledge. If it was social commitment, the outcome is a changed organizational domain with a new committed stakeholder. In any case, the new outcome most likely reduces the uncertainty degree of some decisions area, and thus provides a base for a new iteration with possibly different approaches in each area. The iterations continue until the uncertainty levels on the various areas are sufficiently low for the organizational domain to take a stable form. The firm can therefore make a focused commitment to this organizational domain and start growing. The entrepreneurial action model is represented in Figure 2.

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**INSERT FIGURE 2 HERE**
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Consider as an illustration of how this model works the example of a startup launching a small electric car. The firm plans to use existing battery technology and a body sourced from an existing electric car manufacturer. Hence, because it relies on existing technologies, there is little uncertainty regarding the building of the small car. The firm will develop a plan and commit to specific goals in terms of deliverable and time. The firm is not so certain, however, about whether users will enjoy using the car. This is a typical problem with new products. This will be solved by a series of trials whereby potential users will test drive the car and give their impressions. Changes will be made to the product to reflect the information gained before the product is introduced. Really problematic feedback might result in the product being delayed. The success of electricity as the main alternative to combustion engine, however, remains highly uncertain at this stage, however. Here, the firm will rely on social commitments to build a network of filling stations, influence legislation and public awareness, improve electric engines efficiency, etc. The early market will be created by partnering with cities to offer electric car sharing (cite Realnetworks market creating actions case as example).

**DISCUSSION AND IMPLICATIONS**

**Resolving the Flexibility- Commitment Contradiction**

Differentiating various forms of flexibility on the basis of commitment makes it possible to address the apparent contradiction among scholars on the role of commitment that we have
Commitment highlighted. This paper suggests that entrepreneurs have a high degree of freedom in using commitment when it is most relevant and to do so in different forms. First, because entrepreneurs will be able to decompose the venture into decision areas and choose the relevant progression form based on their level of uncertainty (Sommer et al., 2009). Progression in some areas will be made through trial and error while progression in others will require social commitments. Second, the iterative nature of the three forms of flexibility provides entrepreneurs with an opportunity to change their approach at each iteration. While Sommer et al. (2009) state that the approach must be chosen at the outset of the venture for a given decision area, the analysis in this paper follows Ghemawat and Del Sol (1998) to suggest that it doesn’t have to. The choice that is made by the entrepreneur at each iteration, and for each decision area. With regards to the overall process, and to use Simon’s (1969) characterization, the behavior of the whole system displays flexibility while the behavior of the parts combines actions with commitment and actions without commitment. Flexibility means different things in different contexts. In Prediction, it means configuring assets to enable a reconfiguration if the initial prediction turns out to be wrong. In Risk, flexibility means the ability to learn as quickly as possible through trials before making a commitment. In uncertainty, flexibility means basing the progression on social commitments. Hence, entrepreneurs using commitments can have an intrinsically flexible approach. But flexibility in this approach does not come from the ability to revert to a prior decision, i.e. from avoiding commitments and leave the organizational domain unchanged. Rather, it comes from the reduced cost of the commitments made, i.e. the entrepreneur does not commit to much. Commitments are not per se a hindrance to flexibility.

The choice of forms and its implications
Entrepreneurs learn about their surroundings through an active approach (Daft & Weick, 1984). Indeed, as Baron (2007) remarks, if nothing else, entrepreneurs are persons who take action – they engage in vigorous, persistent efforts to convert their ideas and visions into profitable, operating companies. But the reason why action by entrepreneurs is important has not only to do with the ability to learn about their environment, but also with the very nature of the entrepreneurial process. As Sarasvathy (2004) remarks, action itself is a root cause of novelty in the world as opposed to action as a mere implementation of creative thought. For instance, an entrepreneur may determine if buyers want specific product features by actually introducing a product with those features (Simon & Houghton 2002) rather than conducting a market study (Dew, Stuart Read, & Sarasvathy, 2009).

Trial and error and social commitment are both based on actions by the entrepreneur. Both proceed with affordable actions and are iterative. They differ, however, by the objective of entrepreneurial action they pursue. The principal value of trial and error is the ability to return to the earlier stage and continue with the current organizational domain should the trial be inconclusive. A social commitment, because it involves a commitment with a stakeholder, will necessarily transform the environment, if only in a limited way. Hence, a social commitment cannot be reverted. The progression is necessarily cumulative and the entrepreneur starts from a new organizational domain after each iteration. The difference is represented in Figure 3.

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INSERT FIGURE 3 HERE

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Therefore, a key implication of entrepreneurs’ choice of approach has to do with their willingness to consider either the upside or the downside of a decision (Dew, Sarasvathy, Stuart Read, & Wiltbank, 2009), i.e. in managing type 1 and type 2 errors (Chesbrough, 2004; Sarasvathy & Dew, 2005). A commitment increases the chance of type 1 (false positive) errors, i.e. making a decision that will end up being unsuccessful. Indeed, the whole idea of delaying commitment is to reduce the chance of type 1 errors, while the idea of reducing the value of commitment is to reduce the cost of such an error. Alternatively, the absence of commitment increases the chances of a type 2 error (false negative), i.e. to forsake potential business opportunities for lack of action. Adaptation and Trial and Error will help entrepreneurs avoid type 1 errors. Social commitment will help entrepreneurs avoid type 2 errors while minimizing the cost of type 1 errors through affordable loss. Taken to the extreme, doing nothing would guarantee that no type 1 error is made, but it would also make it most likely to yield nothing as it relies only on temporal truncation. This is why Adaptation and Trial and Error – guarding oneself against type 1 errors – cannot be the only approach of the entrepreneur in nascent markets. In between the two extremes – lack of commitment and full commitment - lies the entrepreneur’s latitude of committing enough to avoid type 2 errors, but not too much to avoid type 1 errors.

In sum:
- Focused commitment is geared towards avoiding type 1 errors through prediction. The probability of type 2 errors is ignored.
- Adaptation is geared towards reducing type 1 errors through delayed commitment. The probability of type 2 errors can be reduced through real options and selectionism.
- Trial and error is geared towards reducing type 1 errors through learning prior to action. The probability of type 2 errors is ignored.
- Social commitment is geared towards avoiding type 2 errors. The cost, but not the probability, of type 1 errors is reduced by proceeding through low cost actions (affordable loss).

This also explains why proceeding with an affordable loss makes sense. As the entrepreneur makes commitments, and therefore incurs the risk of making a type 1 error, reducing the cost (potential loss) of the move is a sensible way to maintain a reasonable expected gain. In sum, making commitments is a rational attitude because it is the only way to make progress.

Further research is necessary to determine if the choice of a focus on avoiding either type I or type II errors is subjective (i.e. determined by a preference of the entrepreneur) or objective (ie determined by the nature of the environment).

IMPLICATIONS AND FUTURE RESEARCH

Managerial implications
Despite the pervasiveness of the idea in the literature that entrepreneurs experiment to define their products and markets under uncertainty, this article has proposed that, in fact, experimentation is only relevant for a subset of a new venture’s overall decision areas. To address uncertainty related to the nascent market, entrepreneurs use social commitment and, hence, depart from the exclusive experimentation approach. Depending on the degree of
Commitment uncertainty facing a decision area, entrepreneurs have the possibility of choosing among the three forms of flexibility, trial and error being only one of them. As we have suggested above, entrepreneurs are able to make commitments in order to progress while retaining a flexible approach when needed. More importantly, they have the possibility of changing their approach in one particular decision area as uncertainty clears out.

**Implications for theory and future research**

In analyzing how flexibility is implemented by entrepreneurs, this article proposes the following clarification in the use of terms to describe entrepreneurs’ action: First, that trial and error should be used to describe the use of tests with prototypes under controlled situation with a primary objective to learn and without commitment as to a future course of action in relation to the trial. Second, that binding be used to describe a way to proceed through a succession of low cost, high commitment actions, the objective of which is to shape rather than to learn. An immediate implication for theory would be that scholars studying progressive venture definition should now be able to describe the underlying phenomenon more precisely.

This paper offers a number of avenues for further research. First, there is clearly a need to further the characterization of the different forms of progressive definition, in particular the forms that are based on commitments. To give just one example, proceeding through a series of social commitments is not necessarily an effectual approach. This is because effectuation is much more than low cost, strong commitment iterations. This observation points to an obvious area for future research, which is a refinement of the circumstance-based categorization that is initiated here.

Second, we have considered the environment in terms of the assumption entrepreneurs make about it in terms of information (Milliken, 1987). These assumptions can be incorrect. Entrepreneurs can underestimate the level of uncertainty of some decision areas, and be unpleasantly surprised: Even supposedly stable markets have displayed unexpected levels of uncertainty and sudden changes. Conversely, entrepreneurs can overestimate the level of uncertainty and engage in a relatively costlier approach through trials or social commitments, when a focused commitment would have been simpler and faster. Further research is needed on how entrepreneurs can correctly estimate the degree of uncertainty of a given area beyond simply relying on Knight’s (1957) notion of the entrepreneur’s “judgment”.

**Conclusion**

The creation of markets is a central problem in entrepreneurship and scholars seem to agree that a progressive definition of a new venture’s products and markets is a relevant approach for entrepreneurs. This article has argued that differentiating between different forms of progressive definition on the basis of commitment can be particularly useful in understanding and describing entrepreneurs’ actions in nascent markets. Understanding the role of commitment can also enrich the novelty and strategic variety of the entrepreneur’s repertoire in dealing with uncertainty.
REFERENCES


Commitment


Differentiating the approaches along the two dimensions of commitment

<table>
<thead>
<tr>
<th>Cost</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Selectionism, real options</td>
</tr>
<tr>
<td>Low</td>
<td>Adaptation, Trial and error</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>
Commitment

FIGURE 2
A Model of Entrepreneurial Action in Nascent Markets

Entrepreneurs decompose the venture into decision areas (Px)

Each decision area has a different degree of uncertainty (Px)

Entrepreneurs choose the relevant form based on degree of uncertainty (Px)

If P (Prediction) is assumed, choice of Focused Commitment (Px)

If R (Risk) is assumed, choice of either Adaptation or Trial and Error (Px)

If U (Uncertainty) is assumed, choice of Social Commitment (Px)

If focus is on avoiding Type I error, choice of Adaptation (Px)

If focus is on avoiding Type II error, choice of Trial and Error (Px)

The degree of uncertainty for each decision area evolves over time (Px)
Commitment
Commitment
FIGURE 3 – ENTREPRENEURIAL ACTION AND RATIONALITY OF COMMITMENT

Trial and Error

Off-line

\[ \text{Trial}_1 \rightarrow \text{Trial}_2 \rightarrow \text{Trial}_3 \rightarrow \text{Trial}_n \]

On-line

\[ \text{OD} \rightarrow \text{GROWTH} \]

Social Commitment

On-line

\[ \text{OD}_1 \rightarrow \text{OD}_2 \rightarrow \text{OD}_3 \rightarrow \text{OD}_n \rightarrow \text{GROWTH} \]

*OD*: Organizational domain