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Corresponding Author: Dr. Pablo Muñoz, Ph.D.

Corresponding Author's Institution: Universidad Adolfo Ibáñez

First Author: Pablo Muñoz, Ph.D.

Order of Authors: Pablo Muñoz, Ph.D.; Dimo Dimov, Ph.D.

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THE CALL OF THE WHOLE IN UNDERSTANDING THE DEVELOPMENT OF SUSTAINABLE VENTURES

Pablo MUÑOZ
Business School
Universidad Adolfo Ibáñez
Diagonal Las Torres 2700, Peñalolén
Santiago, Chile
pablo.munozr@uai.cl

Dimo DIMOV
School of Management
University of Bath
Bath, BA2 7AY, UK
d.p.dimov@bath.ac.uk

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ABSTRACT

This paper examines the development process of sustainable ventures by focusing on three substantive markers, namely the ideas, actions, and exchange relationships articulated and instigated by the entrepreneurs in question. Based on data from 45 sustainability-oriented new ventures, it examines the causal configurations behind the manifestations of these markers using Fuzzy-Set Qualitative Comparison Analysis (fsQCA). The analysis also reveals two distinct opportunity development paths. The first, *conformist*, operates in an enabling supporting context as sustainability conveyor. The second, *insurgent*, path operates as a change agent against an establishment that is not conducive to sustainability ideals.

1. Introduction

In recent years, entrepreneurship has been seen as a catalyst for solutions to sustainability problems (York and Venkataraman 2010) and a central force in the development of an ecologically and socially sustainable economy (Pacheco et al. 2010). The existence of commercially viable ventures that advance the causes of environmental protection and social justice has captured scholarly attention (Hall et al. 2010) and spurred a burgeoning field of sustainable entrepreneurship (Shepherd and Patzelt 2011). This paper seeks to join this literature in search of substantive understanding of this phenomenon.

Taking stock of this literature, there are two conceptual challenges that need to be resolved towards such understanding. First, the literature makes a clear separation between opportunities and entrepreneurs (Shepherd and Patzelt 2011), representing two distinct levels of analysis, and tracing its intellectual roots to the notion of nexus of individual and opportunity as a unit of analysis (Venkataraman 1997). From a macro perspective, opportunities for sustainable entrepreneurship represent systemic imperfections (Cohen and Winn 2007; Dean and McMullen 2007) or conditions (Pacheco et al. 2010) that make entrepreneurial endeavors possible or desirable. From a micro perspective, individual entrepreneurs exhibit cognitions or behaviors such as opportunity recognition (Patzelt and Shepherd, 2010), opportunity assessment (Shepherd et al. 2012), entrepreneurial intention (Kuckertz and Wagner, 2010), and entrepreneurial action (Meek et al. 2010).

Such separation has been counter-productive for empirical research, which has struggled to operationalize the phrase 'pursuit of opportunities' that is implicit in it. While this phrase works as a metaphor in macro descriptions of the entrepreneurial system (Kirzner 2009; Klein, 2008), it is inoperable at the level of individual actors since whether what one currently pursues is an opportunity can be revealed only retrospectively (Dimov 2011). And yet, to make sense of and compare the behaviors of sustainable entrepreneurs, it is necessary

to account for what it is that they are trying to do.

The second challenge pertains to aligning the factors that drive entrepreneurial behavior for sustainable development. In this regard, the literature has discussed a number of different factors. Some of these are related to the individual entrepreneur, such as prior knowledge (Patzelt and Shepherd 2010), sustainability intention (Schaltegger 2002; Linnanen 2002; Schlange 2006; Schaltegger and Wagner 2011) and sustainability orientation (Gibbs 2009; Kuckertz and Wagner 2010). Others reflect the context in which the behavior occurs, such as social norms (O'Neill 2009; Meek et al. 2010) and the openness of the business context to sustainability practices (Clemens, 2006; Spence et al. 2010; Pacheco et al. 2010; De Clercq and Voronov 2011). Yet others discuss the nature of the value creation goals that define sustainable entrepreneurship (Young and Tilley, 2006; Cohen et al. 2008; Tilley and Young, 2009). To the extent that all these matter individually, any analysis that omits some of them provides insufficient explanation. In this regard, it is necessary to operate with them collectively as configurations rather than piecemeal predictors. At the same time, the dominant analytical methods in the field are built on linear model assumptions that presume decomposability of the overall effect into discrete partitions for each predictor and are limited in the degree of interaction they can accommodate. This calls for a shift in perspective from discrete variables to holistic configurations of conditions as well as for complementary methods that can analyze such configurations.

In this paper, we address these challenges in order to develop an empirical understanding of the process of sustainable entrepreneurship. First, we view this process as one of venture development, in which what can be empirically observed are the ideas, actions, and exchange relationships of the focal entrepreneur (Dimov 2011). We thus ask the following questions: (1) what factors explain the emergence of ideas, formulation of actions, and formation of exchange relationships in the development of sustainable ventures; and (2)

how are ideas, actions, and exchange relationships linked in this process. Second, we present a conceptual configuration of the cognitive infrastructure of entrepreneurial behavior for sustainable development. It combines a set of nested individual factors (knowledge, orientation, intention), with the underlying goals of venturing and the perceived support from the context in which it occurs. We seek to identify their causal conjunctions both within and across the three process markers by conducting Fuzzy-set Qualitative Comparative Analysis (fsQCA) (Ragin 1987) of the development process of 45 sustainability-oriented new ventures. The data come from a survey, documentary data, and semi-structured interviews of participants in twelve sustainability-oriented business competitions taking place over the 2009-2011 period.

By means of systematic comparison of causal and outcome conditions, the analysis yielded six empirically relevant combinations of conditions, two each for ideas, actions, and exchange relationships. Within each combination, we distinguish core and peripheral conditions. More importantly, the ways the entrepreneurs in our sample tend to use these combinations mark two distinct venture development paths. The first, *conformist*, operates in an enabling supporting context. It is characterized by dominance of supporting social context in the formulation of ideas, of value creation and an enabling business context in the deliberation of actions, and of intention and enabling business context in the pursuit of exchange relationships. In contrast, the second, *insurgent*, path operates against an establishment that is not conducive to sustainability ideals. It is characterized by lack of explicit consideration of sustainability ideas and dominated by absence of supportive social context in the deliberation of actions, and by intention and absence of supporting context in the pursuit of exchange relationships. This distinction enables a deeper understanding of the complexity and diversity of the phenomenon; in particular of how and when sustainability becomes part of the venturing process. Unlike prior work (e.g. Choi and Gray 2008), these

results paint a picture of a shifting mosaic in the development of sustainable ventures.

This study aims to make two main contributions to the literatures on sustainable entrepreneurship and entrepreneurship more broadly. First, the identification of two distinct developmental paths helps open up the black box of the process that connects initial ideas for sustainable development and their ultimate entrepreneurial enactment. Each path emerges from distinct social context and dictates specific logics of action and market interaction. Second, our work highlights the conjunctural and equifinal nature of causal relationships in the development process of sustainable ventures. Our work shows that factors that are normally attributed piecemeal importance are in fact intertwined with others and not sufficient conditions by themselves in explaining given outcomes. Such configurational logic complements currently dominant thinking organized around linear models and decomposability. More broadly, our work highlights the trade-off between complexity and generality as a major challenge for the empirical utility of current theories of entrepreneurship and offers a middle path. By being tuned to holistic configurations rather than discrete variables, our approach enables the identification of more complex, conjunctural causal patterns.

2. Theoretical Background

2.1 Explaining venture development

If we took a venture of interest to this paper, i.e. a commercially viable venture that advances the causes of environmental protection and social justice (Hall et al. 2010), how could we explain its emergence? One option would be to compare it against a counterfactual non-emergence and look for differential antecedent conditions in its past, i.e. factors attributed to this ventures but not to its counterfactuals. Aside from the difficulties (indeed,

impossibility) of accessing such counterfactuals empirically, determining the ways in which this venture is unique would in fact retrace its history. Thus, a second option for explaining the venture's emergence is to focus on its developmental path, its unfolding process (McMullen and Dimov 2013).

The entrepreneur (founder) is a main driving force behind the venture and perhaps one of the few factors present all along the venture's developmental path. Indeed, we could easily imagine the developmental path as consisting of continuous snapshots of the entrepreneur "doing" something. In fact, it is this "doing" that warrants ascribing the label "entrepreneur" to the person. But a sequence of behaviors can appear meaningless to an external observer without accounting for their underlying purpose. At this point, it is tempting to describe this purpose as "pursuing an opportunity". This stems from the broader notion that environmentally relevant market failure creates opportunities for entrepreneurial action – achieving profitability while reducing environmentally degrading behaviors (Dean and McMullen 2007). But other than being a useful metaphor, this description says nothing substantive about what the entrepreneur does (Kirzner 2009).

A venture is but a set of active exchange relationships and thus lies at the tail end of a development process that begins with an initial venture idea and is continuously shaped by action, social interaction, and learning (Dimov 2007). The path in between is marked by actions and interactions driven by some underlying, evolving purpose (Venkataraman et al. 2012). As such, to study the venturing process in a substantive sense, one needs to focus on its observable markers, namely the venture ideas at its onset, the actions through which these ideas are expressed to set or keep the process in motion, and the interactions through which the ultimate exchange relationships are instituted (Dimov 2011). But rather than simply enlisting what these markers are, we aim to account for the evolving symbolic blueprint behind them, i.e. how the entrepreneur defines them and deliberates them at each step of the

way. To use the metaphor of driving a vehicle off road, in addition to simply describing the twists and turns of its path, it is also useful to try to capture the forging of the path through the eyes of the driver.

The flow of time in a venture development process is irreversible, i.e. we cannot presume that what happens at different junctions can be known before it does, and thus incorporated in the action deliberations beforehand. What happens is a subset of what is possible, and the latter represents an unbounded set (Kauffman 2008). Thus, there is always an element of novelty as the path unfolds. The implication of this is that there is an empirical asymmetry to the explanation of particular ideas, actions, and exchange relationships: we can observe only the articulated ideas and undertaken actions and interactions but not the set of possibilities from which they were derived (Dimov 2011). Explaining them, therefore, entails an account of the considerations behind them, rather than a comparison to inaccessible counterfactuals.

2.2 The development of sustainable ventures

The central idea behind the development of sustainable ventures is that the activities performed by entrepreneurs in the pursuit of gains must not undermine the ecological and social environments in which they operate; and when necessary, they must restore or nurture such environments towards recovering the balance between nature, society and economic activity (Parrish, 2010; Shepherd and Patzelt, 2011). In Young and Tilley's view (2006) sustainable entrepreneurship is embodied by someone "who holistically integrates the goals of economic, social and environmental entrepreneurship into an organization that is sustainable in its goal and sustainable in its form of wealth generation" (p.88). This and other definitions of sustainable entrepreneurship (e.g. Dean and McMullen 2007; Hockerts and Wüstenhagen 2010; Pacheco et al. 2010) resonate with mainstream sustainability ideas. Ultimately, its overarching aim is to balance the competing demands for environmental protection and

economic development (Dresner 2008), emphasizing economic, ecological and social goals in equal degrees (Sharma and Ruud 2003).

Understanding how these elements are related requires an examination of how the different dimensions of sustainability are enacted in the development of new sustainable ventures. In view of the opening discussion, our focus is on how sustainability is embedded in the three markers of the venture development process: (1) the generation of venture ideas; (2) the elaboration of venture ideas in actionable terms, i.e. as a set of immediate goals and actions; and (3) the discourse through which entrepreneurs seek to establish market exchange relationships. As we strive to understand these through the worldview of the entrepreneur, we turn next to the literature to identify a set of personal factors and relevant considerations that are instrumental in this process.

2.3 Integrating sustainability in entrepreneurial action

Scholars have drawn from different perspectives to answer the question of why some individuals and not others decide to pursue opportunities with social, environmental and intergenerational components (i.e. sustainable outcomes) concurrent with pursuing economic viability (Dean and McMullen 2007; Tilley and Young, 2009; Hall et al. 2010; Shepherd and Patzelt, 2011). Implicit in this question is a comparison among a set of individuals in order to determine the distinguishing characteristics of those who step forward. By implication, the answer draws a crude line between entrepreneurs and non-entrepreneurs, which can help find a common denominator to sustainable entrepreneurs. Thus, we can say that they have prior knowledge of ecological and social environments and the perceived threats to such environments (Patzelt and Shepherd 2010), underlying attitudes and convictions towards environmental protection and social responsibility (Kuckertz and Wagner, 2010), and the intention to contribute to solving societal and environmental problems through entrepreneurial means (Gibbs 2009; Schaltegger and Wagner 2011).

While the above logic can help explain who might become a sustainable entrepreneur, it offers no insight into how this is done, i.e. how sustainable entrepreneurs, having stepped forward, develop their ventures. There is thus a need to move our explanations beyond invoking efficient causes – i.e. whether something such as idea, action, or interaction occurs – towards elaborating the material, formal, and final causes of what specifically happens (McKelvey, 2004). This implies a focus not on whether individual factors are present or absent, but on their combinations behind the outcome of interest.

Our review of the literature on sustainable entrepreneurship reveals a range of individual and contextual factors used to conceptualize or explain their behavior. We summarize this literature in Table 1, listing the purpose, explanatory constructs and summary of findings of each paper.

-- Insert Table 1 about here --

As is evident from the table, there is inconsistent terminology across studies and conceptual overlap among the constructs used in them. In order to synthesize this work, we examined the substantive meaning of each listed construct and mapped it onto an appropriate archetype, as shown in the table. Four archetypal constructs pertain to the individual entrepreneurs and two pertain to the context in which the entrepreneur operates.

We present the derived archetypal constructs in Figure 1, which also seeks to elicit the interrelationships among the factors. Thus, Figure 1 presents a set of concentric circles that capture the nested nature of the factors in question based on their proximity to the entrepreneurial action. Closest to the action are the immediate goals of the entrepreneur, i.e. the value he or she wishes to create. In turn, this is nested in an entrepreneurial intention, which represents a general inclination to employ entrepreneurial means but offers no suggestion for how this is to be done. At the next nesting level lies sustainability orientation,

which represents attitude and convictions about environmental protection and social responsibility, but offers no suggestion of how these are to be enacted. Furthest away is prior knowledge of ecological and social environments and threats to them, which offers no suggestion of how such knowledge is to be used or if it is to be acted upon at all. These four individual factors are in turn interlinked with the perceived social and business support for engaging in sustainability-oriented behaviors. We discuss each of these factors in detail.

-- Insert Figure 1 about here --

Prior knowledge. This factor reflects the entrepreneur's extant knowledge of ecological and social environments and the perceived threats to such environments (Patzelt and Shepherd 2010). Because individuals vary in the knowledge that they possess – reflecting their idiosyncratic personal, educational, and work experience – the recognition of opportunities for sustainable development stems from relevant prior knowledge. This reflects the broader argument that entrepreneurs discover opportunities that are related to the knowledge and information they already posses (Shane 2000). Thus, Patzelt and Shepherd (2010) argue that individuals who attend to the social or ecological environments are more likely to recognize changes in that environment and eventually the opportunities that arise from social or environmental market imperfections. Therefore, compared to individuals whose attention is more focused on the business environment, those individuals are more likely to form beliefs about opportunities for sustainable development even if they show no intention to personally pursue such opportunities (Shepherd et al. 2011).

Sustainability orientation. Kuckertz and Wagner (2010) define sustainability orientation as underlying attitudes and convictions towards environmental protection and social responsibility and show that it is instrumental for the intention to start a sustainability-oriented new business. Similarly, Walley and Taylor (2002) argue that sustainable entrepreneurs are distinguished by an orientation that combines all three principles: economic,

ecological and social-ethical sustainability. In the same vein, Parrish (2010) indicates that maintaining the balance between social, environmental and economic dimensions requires a specific orientation for guiding the venture design process. He suggests that the values and motives that give rise to sustainable entrepreneurship, based on equanimity between self, other people, and nature, result in specific organizing tensions that have the potential to challenge the viability of enterprises that embody these values. This approach highlights essential values and beliefs of sustainable entrepreneurs (Shepherd et al. 2009).

Entrepreneurial intention for sustainability. Entrepreneurial intention pertains to the intention to create a new venture or create new value in existing ventures (Bird, 1988). As such, it is seen as a major pillar of the decision to become an entrepreneur (Boyd and Vozikis, 1994). Thus, the pursuit of sustainability ideals through entrepreneurial means depends on the strength of the individual's intention to contribute to solving societal and environmental problems through the realization of a successful business (Schaltegger and Wagner 2011). Entrepreneurial intentions depend on the perceived desirability and feasibility of the venture opportunity (Fitzsimmons and Douglas 2011). As such, they are intertwined (as Figure 1 suggests) with the entrepreneur's prior knowledge and sustainability orientation, channeling them towards an entrepreneurial approach. Sustainable entrepreneurs desire to change the world (Walley and Taylor 2002; Linnanen 2002) as well as to make money through the pursuit of entrepreneurial opportunities (Schaltegger and Wagner 2011; Schlange 2006). In other words, their main goal is to promote sustainable development through the realization of a successful business.

Desired value creation. With the intention to create new value (through a new venture), there is no indication of what that value would be. In this regard, desired value creation pertains to the value that sustainable entrepreneurs aim to create both for their business and for society (Gibbs 2009). By means of articulating a holistic value proposition, i.e.

intertwined social, economic, ecological and inter-generational value (O'Neill et al. 2009), sustainable entrepreneurs have proven capable of reconciling the dual goals of sustainable development and wealth accumulation (Tilley and Parrish 2009) and, therefore, of resolving the dualistic divide between opportunistic business and altruistic charity (Parrish 2007). In this regard, Cohen et al. (2008) propose seven elements of sustainable value creation: economic performance, promise, perpetuity, socio-efficiency, stewardship, eco-efficiency and sustainability. These values are consistent with the notion of the triple bottom line, developed by Elkington (1997), which sets the standard to identify a form of business value that delivers simultaneously economic, social and environmental benefits. The pursuit of such desired outcomes prompt the elaboration of business strategies and practices capable of tackling pressing challenges such as inequality, pollution, unfair trade, deforestation and poverty (Hart and Milstein 2003)..

Perceived social support. In pursuing sustainability opportunities, social context and culture operate as an enabling environment for sustainable value creation and capture (O'Neill et al. 2009). Social norms capable of fostering or nurturing the creation of socially and environmentally responsible economic activity are thus needed to promote the emergence of sustainable new ventures (Meek et al. 2010). Some scholars have used insights from institutional theory and sociology to study how social norms, i.e. unwritten rules of conduct, and centralized institutions (e.g. state-sponsored incentives) impact the creation of environmentally oriented new ventures (Meek et al. 2010). These studies have demonstrated that decentralized, socially determined institutions, such as consumption patterns, norms of conformity and of family interdependence, not only affect the individual-level decision-making of entrepreneurs towards pursuing environmentally responsible opportunities, but also mediate the effect of government incentives on sustainable firm foundings. O'Neill et al. (2009) stress the relevance of cultural settings in generating entrepreneurial value beyond

profit and market penetration. Similarly, Pacheco et al. (2010) point out that only appropriate conditions may lead to producing social, environmental and economic wealth. If the appropriate conditions do not prevail, unproductive or destructive forms of entrepreneurship can take hold instead (Harbi and Anderson 2010).

Perceived business support. Sustainable ventures need to exhibit, ultimately, financial viability in order to survive. In this sense, they need to be embedded in an enabling business context, i.e. where the commitment to solving societal and environmental problems gives a competitive edge of the business and thus helps improve its long-term prospects (DeSimmone and Popoff, 2000; Mitchell et al. 2010). This is well illustrated by the question '*Does it pay to be green?'* (Orlitzky et al. 2003). In a meta-analysis of 29 studies dealing with returns over sustainability, Dixon-Fowler et al. (2011) demonstrate a positive relationship between the development of proactive environmental initiatives and financial performance. In a supportive business context, sustainability practices have proven relevant to accessing markets, obtaining investment, recruiting employees, building acceptance, reducing cost of material, energy, and services and differentiating products (Ambec and Lanoie 2008). Sustainability initiatives such as ISO 14001 certification, fair-trade agreements or having eco-labeled products, can be an effective means for obtaining competitive advantage (Orsato 2006). In this regard, the receptivity of the business context can affect the perception of aspiring entrepreneurs regarding the feasibility an opportunity that both sustains and develops (Shepherd and Patzelt 2011).

3. Method

As discussed above, sustainable entrepreneurship involves a complex interrelationship of various factors. The developmental paths of particular sustainable entrepreneurs never hinge on a single factor; they highlight multiple factors at play. The complexity of each path is related not to the number of factors at play but to how they are enmeshed together.

Therefore, explaining the development of sustainability oriented ventures places the focus on those interrelationships rather than on the individual factors contained in them. In this sense, the associated causal relationships have a conjunctural rather than discrete nature. To capture these relationships, it is necessary to go beyond the logic of decomposability associated with linear modeling, in which an outcome of interest is explained as the sum of the effects of the individual predictors. Instead, outcomes need to be represented as configuration of causes, some necessary and others sufficient (Ragin 1987). This requires a different analytical approach.

We employ Fuzzy-Set Qualitative Comparative Analysis (fsQCA), a set-theoretic method that uses counterfactual analysis and logical minimization to analyze causal complexity (Ragin 2000). Instead of looking at individual predictors, this approach operates at the level of observed cases and treats each case as a holistic configuration of factors (Rihoux and Lobe 2009). In this sense, the causal conditions for analysis are the configurations of factors rather than the individual factors themselves. Through the comparison of causal conditions across outcomes, fsQCA extracts simplified causal recipes that collectively explain the outcomes under examination and offers formal tests for necessity and sufficiency of conditions or combination of conditions.

Unlike traditional approaches to causal explanations that focus on cases displaying a specific outcome and search for antecedent common conditions shared by all instances of the outcome, fsQCA focuses on and allows for the possibility that the same outcome can follow from different combinations of conditions. Rather than establishing relationships between variables, the purpose of this analytic technique is to enable comparing and contrasting possible configurations of conditions (Ragin 2008b). QCA was conceived as a small-N approach (Ragin 1999) and it works robustly with smaller numbers of cases, i.e. between 15 and 60 cases (Fiss 2011).

3.1 Case selection and data collection

We identified and sent a survey invitation to 289 new ventures that had taken part in 12 sustainability-related business plan competitions in the USA and the UK over the period 2009-2011. Of these, 67 entrepreneurs responded to the survey, 45 of which met three specific criteria: the survey must have been completed by the founder, he or she identifies him/herself as a sustainable entrepreneur, and the venture aims to balance environmental, social and economic objectives and allocates the relevant resources to accomplishing these objectives. Our analysis is based on these 45 cases. They represent a diverse group of new ventures. They belong to 17 different sectors in 5 countries. 34% of the cases have been trading for more than 4 years and 66% of them for 3 years or less, with a median of 3 years of trading for the entire sample[1], and 59% of the cases reported having started measuring their sustainability impacts and developing targets and actions to reduce those impacts. Appendix A provides a summary of the 45 cases.

In order to maintain close connection to the cases, we complemented the survey data with qualitative evidence from a number of follow-up activities comprising semi-structured interviews, non-participant observation and a comprehensive review of documents (e.g. business plans, organizational records, marketing material, press releases, media articles promotional videos, third-party audio and video interviews, and personal writings). The data from these follow-up activities serve to validate our survey measures and corroborate the results of the configurational analysis by illustrating how different configurations of conditions produce the outcomes of interest.

Despite their effectiveness in capturing abstract concepts (Babbie 1995), survey questionnaires on topics related to sustainability might present methodological issues

[1] This is in line with the research framework used by the Global Entrepreneurship Monitor (Bosma et al. 2012), which considers within the group of 'Early-Stage Entrepreneurial Activity' to those ventures that are up to 3.5 years old.

associated with social desirability bias. In order to reduce this risk, we followed Roxas and Lindsay's (2012) guidelines for self-administered survey questionnaire on sustainability topics and implemented three methodological techniques. First, at the pre-survey stage, we conducted a thoughtful development of new measures and adaptations of existing measures, and then pilot tested them to ensure their validity and reliability. Second, at the survey administration stage, we triangulated data sources by making use of the information from the interviews and secondary data. Such procedure is key for reducing and detecting response biases. Finally, at the post-survey stage, we assessed the validity of survey data by comparing the responses with data from the follow-up interviews.

3.2 Measures

As our data pertain to recently developed ventures, the focus of our analysis is on how their development has occurred, i.e. we seek to explain how the sustainable ventures in question came to be such. As the venture development process is marked by the ideas, actions, and interactions (exchange relationships) along the way, our outcomes of interest pertain to the degree to which sustainability was integrated in these markers. In turn, as the process is driven by the entrepreneur's mental blueprint for the venture, our causal conditions capture the entrepreneurs' knowledge, orientation, and perceptions that help define the blueprint. The development of the measures was assisted by information collected from five semi-structured interviews conducted in an exploratory study[2]. We then engaged four experts from academia to assess the content validity, readability and optimal flow of the instrument. The instrument was refined based on their feedback and the experts further assessed its construct and criterion validity by evaluating (1) the conceptual relation between constructs and measures, and (2) the extent to which the measures are useful in explaining the different constructs (Hardy et al. 2011). The details of all our measures are provided in Appendix B.

[2] The exploratory study was conducted in June 2011 with sustainable entrepreneurs, who graduated from two different MBA programs in Sustainable Enterprise, and with the respective program directors.

Outcomes. To measure the articulation of sustainability-oriented *venture ideas* (IDEA), we asked about the entrepreneurs' awareness and attention at the time they had been exploring possible ideas for the business. The measures is based on an 8-item Likert scale (α=.90) and was adapted from Tang et al. (2012) to refer to sustainability issues. It captures the degree to which the entrepreneur was driven by sustainability considerations when scanning the environment, searching for alternatives and making associations and connection between relevant pieces of information regarding the idea under formation.

Our measure of the organization of sustainability-oriented *entrepreneurial actions* (ACTION) focused on the extent to which the entrepreneurs aimed to solve sustainability problems in setting up immediate objectives in the course of developing their ventures. We used an 8-item Likert scale (α=.84). For the individual items, we used dimensions developed by Dyllick and Hockerts (2002), Schlange (2006), and Cohen et al. (2008) to represent eight traditional sustainability objectives.

The measure of the formation of sustainability-driven *exchange relationships* (EXCHANGE) focuses on the extent to which the entrepreneur integrates sustainability-related elements in his or her discourse with potential customers, suppliers and investors. It is based on a 7-item Likert scale (α=.92). The evaluation of the cases was done by two independent raters, based on information provided in a collection of 45 files, each summarized on a standard form that contained nine different categories: (1) mission, vision, values or/and principles, (2) business opportunity or/and challenge, (3) description, value proposition or/and selling pitch, (4) sustainability orientation, (5) impact, (6) business model, products or/and services, (7) founders' profile, (8) story of the venture, and (9) awards, achievements or/and recognitions. These forms organized information from different sources but did not alter the character of the included texts. To aid the evaluation, the raters were provided with links to external sources where the information is embedded, for example press

articles, interviews, videos, photos, and the ventures' profile provided by their respective competitions. There was a high degree of agreement between the raters (.82).

Causal conditions. We measure *prior knowledge* (KNOWLEDGE) by asking about the extent to which entrepreneurs understood the economic, social, environmental problems of society. We used a 5-item Likert scale (α=.71). The items are not separable aspects of the concept, but rather intertwined components that respond to the systemic nature of sustainability problems (Dresner 2008).

To measure *sustainability orientation* (ORIENTATION), we asked about the entrepreneurs' attitudes and convictions about sustainability as reflected in their perceptions of the venture they were creating. We used a 6-item Likert scale (α=.71) adapted from Kuckertz and Wagner (2010), to reflect the fact that we were referring to a specific venture (rather than entrepreneurship in general).

Our measure *entrepreneurial intention for sustainability* (INTENTION) assesses the respondent's inclination to engage in entrepreneurial activities as the means to solve societal and environmental problems at hand. We used a 5-item Likert scale (α=.8) based on the dimensions of the ideal type of sustainable entrepreneurship developed by Schaltegger and Wagner (2011). The measure captures the entrepreneur's core motivation to contribute to solving societal and ecological problems through the realization of a successful business.

We measure *desired value creation* (VALUE CREATION) by the extent to which the entrepreneur considered the four dimensions of sustainability – social, economic, environmental, and inter-generational – in articulating the venture's value proposition. Because each dimensions is assessed independently and not necessarily in sync with the other, the 4-item scale is formative rather than reflective (Coltman et al. 2008). As such, this measure captures the search for holistic value creation (Young et al. 2006; Tilley et al. 2009).

We measured the *perceived social support* (SOCIAL SUPPORT) by the perceived support from the community where the venture was created. We use a 4-item Likert scale (α=0.94), based on Meek et al. (2010) and O'Neill et al. (2009), which refers to the social norms and culture of the community in the promotion of sustainable behaviors and the development of new businesses.

Finally, we measured *perceived business support* (BUSINESS SUPPORT) by the extent to which the entrepreneurs perceive that the sustainability focus of the business would give them an advantage in conducting their business. We used a 9-item Likert scale (α=.89), which covers different areas of impact such as competitive advantage, and attracting customers, employees, suppliers, and investors.

Calibration. Once measures have been collected, they need to be calibrated. Calibration is an essential process in fsQCA in that researchers need to ensure that their measurements match or conform to dependably known standards (Ragin, 2008b) in order to make the measurements directly interpretable (Byrne 2002). Since comparison across cases is based on the degree of membership of each case in a theoretical set of interest, this degree of membership needs to be established *a priori*. In this regard, the need for calibration is based on the notion that not all variation in a measure is theoretically relevant: beyond certain qualitative thresholds changing values may not make material difference. For instance, if 20 years signifies extensive experience, then having 25 versus 50 years of experience is theoretically irrelevant even though the two (non-calibrated) values vary by a factor of 2. Calibration converts a raw score into one that reflects degree of membership in a set, rescaling the original measure into scores ranging from 0.0 to 1.0 (Ragin 2008b), the two ends signifying the qualitative thresholds of full membership and full non-membership. Appendix C provides further details of our calibration method; the calibrated scores for all 45 cases on the outcome and causal conditions are available from the first author upon request. Table 2

provides the descriptive statistics and correlations for the calibrated scores. The low correlation values do not raise concerns with divergent validity among the conditions used in the analysis.

--Insert Table 2 about here --

3.3 Configuration analysis

The next stage in QCA is the construction of a *truth table* listing the different logically possible combinations of causal conditions along with the cases conforming to each combination. A truth table is thus a data matrix with 2^6 rows, where 6 is the number of conditions used in the analysis (Fiss 2011). There are two characteristics of truth tables that require careful consideration by the researcher in reducing them to simplified combinations for analysis. First, not all of the combinations of conditions are observed empirically and the observed combinations have different frequencies. Therefore, we set a frequency threshold that specifies the minimum amount of cases that will be considered in the analysis. We use one observation, which is recommendable when the aim is to build theory from a relatively small sample (Ragin 2006; Crilly et al. 2012). Second, not all of the observations of a particular combination yield the same outcome. The proportion of observations that yield the dominant outcome is referred to as the consistency of the particular solution. We set a consistency threshold that specifies the minimum acceptable level to which a combination of causal conditions is considered reliably associated with each of the outcomes. We set consistency thresholds at 0.92, 0.92 and 0.84 for our analyses of ideas, actions, and exchange relationships respectively[3]. Consistent with prior studies (e.g. Schneider et al. 2010), we use thresholds that correspond to a gap observed in the distribution of consistency scores.

Based on frequency and consistency thresholds, fsQCA applies a Boolean algorithm

[3] Consistency thresholds of 0.8 and up to 0.95 are recommended, but they should not be applied mechanically (Ragin, 2008b).

using counterfactual analysis and logical minimization to reduce the truth table rows to a solution table comprising simplified combinations of conditions (Ragin et al. 2006; 2008a), which can be understood as different solution paths or recipes for the outcome. Solution tables distinguish core and peripheral conditions. The distinction between conditions is based on how causal components are connected to a specific outcome. In any solution term there are decisive causal ingredients (core) that distinguish configurations, and complementary ingredients (peripheral) that only make sense as contributing factors (Ragin 2008b). Their role is to reinforce the central features of the core conditions (Grandori and Furnari 2008).

4. Results

We conducted and present the results of the configurational analysis in two stages. In the first, we focus on the three outcomes that signify the empirical markers of the venture development process – i.e. ideas, actions and exchange relationships – and identify the configurations that characterize each. In the second stage, mindful that each empirical case consists of a particular combination of idea, actions, and exchange relationships, we examined whether the configurations identified in the first stage occurred in particular combinations across the cases.

4.1 Configurations within ideas, actions, and exchange relationships

Because we used a minimum frequency threshold of one observation, the analysis yielded a large number of solutions that varied in their coverage, i.e. the degree to which a solution is present across the observed cases. There were seven solutions for ideas, four solutions for actions, and six solutions for exchange relationships (the truth tables full solution tables are available from the authors upon request). Many of these solutions had low unique coverage, i.e. they contained relatively unique combinations of conditions that

nevertheless pointed to viable paths to the outcome of interest[4].

In summarizing our results, we sought to facilitate intuitive understanding and thus set the stage for the subsequent analysis. Therefore, in our summary Table 3, we selected only the high-coverage solutions, i.e. solutions with raw coverage over 0.25. The full solutions and associated truth tables are available from the first author upon request. Set-theoretic coverage evaluates the degree to which a causal combination accounts for instances of an outcome. It therefore provides a more detailed assessment of the empirical importance of each configuration of conditions (Ragin, 2006). While raw coverage refers to the portion of the outcome set that is overlapped by the causal configuration, unique coverage controls for overlapping explanations by partitioning the raw coverage (Schneider et al. 2010). In analyzing the results, we consequently focus on those solution terms with the highest explanatory power within their solution table. In addition, we combined solution terms with overlapping core conditions into super-sets. For example, the union of sets A1 and A3 yields the super-set *Action A,* which in Boolean notation reads: A=V*B*(K+~K+I+S), or *Action* is the result of a combination of *desired value creation* and *perceived business support* with either *knowledge*, *absence of knowledge*, *entrepreneurial intention* or *perceived social support*. The combination of sets with overlapping core conditions allows for greater parsimony (Rihoux and Ragin, 2008) while maintaining the integrity of each solution term. This is in line with current practice: for example, Fiss (2011) uses this approach to resolve the issue of neutral permutation or within-type equifinality.

-- Insert Table 3 around here --

There were two solutions for ideas. The first (Idea A) consist of social context as a core condition and prior knowledge, desired value creation, and sustainability orientation as

[4] Although they lack empirical power, such solutions do not necessarily represent noise or errors as they enable visualizing how the outcomes are produced under odd conditions. An important benefit of considering counterintuitive solutions and outliers is the reduction of expectation bias, meaning that regardless of the presence of expectations, no causal path has been disbelieved, discarded, or downgraded.

peripheral conditions; entrepreneurial intention and perceived business support are irrelevant in this solution. The second solution (Idea B) consists of desired value creation and absence of perceived business support as core conditions and of prior knowledge, entrepreneurial intention, and sustainability orientation as peripheral conditions. Thus, in some cases the ideas for sustainable entrepreneurship are driven by the perception of social support (Idea A), while in others by the creation of value (Idea B).

There were two solutions for actions. The first (Actions A) is a superset combination of solutions 1 and 3 in the full solution table. It consists of value creation and business support as core conditions, of sustainability orientation as a peripheral condition, and of presence and absence of prior knowledge, entrepreneurial intention, and social support as interchangeable peripheral conditions. The second solution (Action B) consists of lack of social support as core condition and of prior knowledge, sustainability orientation, and entrepreneurial intention as peripheral conditions. These solutions outline two qualitatively different logics for action. The first is driven by value creation and business support (Action A), while the second is motivated by the lack of supportive social context (Action B).

There were two solutions for exchange relationships. The first (Exchange A) is a superset combination of solutions 2, 3, and 4 in the full solution table. It consists of sustainability orientation and business context as core conditions and of prior knowledge, entrepreneurial intention, desired value creation, and perceived social support as interchangeable peripheral conditions. The second solution (Exchange B) consists of lack of supportive social context and entrepreneurial intention as core conditions and of prior knowledge and sustainability orientation as peripheral conditions. Again, these solutions outline two qualitatively different logics for discourse with potential exchange partners. The first emphasizes sustainability values and is oriented towards the business context (Exchange A), while the second is motivated by the lack of supportive social context and is driven by

strong entrepreneurial intention for sustainability (Exchange B).

4.2 Configurations within cases

The above analysis focused on the configurations of conditions behind ideas, actions, and exchange relationships. Since these represent the stepping-stones of an overarching venture development process (Dimov 2011), the next step in our analysis is to explore the grouping of these configurations within each case. To do so, we listed the cases according to their membership in empirically relevant solution terms for idea, action, and exchange relationships, as presented in Table 4 below.

-- Insert Table 4 around here --

A careful look at the table reveals two remarkable patterns. First, in 21 cases, solution Action A is combined with solution Exchange A. In 11 of these cases, solution Idea A is present; 6 cases are associated with no particular idea; 4 cases are associated with counterintuitive, low-coverage idea solutions. This pattern points to a distinct idea-action-exchange path that we label ***conformist***. It is characterized by strong influence of perceived social support in the formulation of venture ideas, strong emphasis on value creation and the perception of an enabling business context in the deliberation of actions, and strong emphasis on sustainability orientation and an enabling business context in the formation of exchange relationships.

The story of HFR provides a narrative illustration of this path. HFR is a global impact digital media company that delivers content, social networking and other web-based products and services that focus on sustainability issues. At the time the founder was formalizing the venture idea, there were some other similar initiatives starting up that he recognized as part of an emerging ‘impact infrastructure’ (perceived social support). In his view, it signified true understanding of current pressing - social, environmental and economic - problems and

consequently sought to create and support companies that were rigorously certified triple-bottom line. This infrastructure consisted of like-minded people who believed that, in order to achieve a sustainable world, one needed to read the vital signs of the planet and to tweak business as usual. In line with supporting social context and a strong search for holistic value creation, HFR was structured as a triple-bottom line certified B Corporation[5]. In this sense, its founder indicates:

> Becoming one of the first B Corps, and really embracing the best of this new infrastructure (rating system, mission markets and impact investing platforms) as it came out, actually added significantly to our value proposition, as an initiative.

HFR's founder was convinced about the relevance of the B Corp movement, and most importantly about the fact that, by means of building new, sustainable businesses, he and the people around him would be capable of improving and taking mainstream the supporting impact infrastructure. While doing so, he decided to integrate the principles of sustainability in a systemic way through the practice of blended value. In the founder's account, HFR was indeed one of the first companies to actually start with that principle:

> That is actually how we are doing it. We created ourselves as a company to model, to try to model the emerging, best thinking around triple-bottom line. Yeah, what it means for HFR again is setting ourselves up to operate as a triple-bottom line company.

The conformist aspect of HFR is also evident in building exchange relationships (ORIENTATION*BUSINESS SUPPORT). Referring to a recent dialogue with an angel investor, the founder reflects:

> Wait a second. You do not make any mention of this (relevance of social or environmental values and the need for paradigm change of business), and I really think that for entrepreneurs like me this is not a direction we would spend time going in because we need conscious and patient capital (…) Conscious and patient capital means not sitting down and in the first five minutes starting to talk about three-to-five year exit strategies. It means talking about ten-to-twenty year

[5] B Corporations are certified by the non-profit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency. More information available at http://www.bcorporation.net

dividend returns with heavy reinvestment of profits in not only the company but also in the triple-bottom line economy.

In regard to the second pattern, in nine cases, solution Action B is combined with solution Exchange B. In seven of these cases, there is no particular idea for sustainable development as part of the process; only one case was associated with solution Idea B. We label this path ***insurgent***. There are no explicit ideas for sustainable development that drive it or, in the two cases where ideas are present, they evidently lack focus on value creation or an enabling business context. In regard to the deliberation of actions, the lack of supportive social context dominates, indicating that the actions are defined mainly in terms of their anti-establishment nature. In the formation of exchange relationships, the lack of supportive social context is now combined with strong intention for using business methods to enable sustainable development.

ODS exemplifies this path. This is a technology venture that designs, manufactures, and distributes solar energy products in Kenya, Africa. It provides portable energy to help improve health care, education, household productivity and commerce. ODS began after its founder spent years working in Liberia and Kenya leading energy and technology initiatives for the health sector. While doing so, he realized that over 90% of the clinics in the area had no electricity and were forced to close at sundown. In his view, there was a critical need for community-based care. In responding to the opportunity behind the lack of electricity, he developed a solution for clean and affordable hands-free lighting and phone charging for use by community health workers, small businesses and families. While working on the idea for ODS there was a deep understanding of the sustainability problems the community was facing and he showed a strong intention to create sustainable value and contribute to their solution. However, there was no explicit consideration of sustainability in the development of the venture idea. It was a pure and simple reaction to a serious health problem. The pattern

continues in the way he formalizes the venture idea. For ODS's founder, sustainability is not about being socially responsible, reducing waste or meeting carbon targets; in his view, sustainability is part of the *organic evolution of the business*, which needs to be translated into improving the well being of communities:

> Business sustainability is one of our lower priorities. Sustainability (in the ideological sense) is what we do; it is part of the organic evolution of the business. Although our operations have an impact on the reduction of kerosene consumption and health systems, I do not look at what we do as 'ok, we are reducing carbon emissions', I look at that as 'ok, this family is better, they are saving money and sending their kids to school'. It depends on how you look at it, but that is for me sustainability.

With the aim of contrasting the two paths, *conformist* and *insurgent*, we provide in Table 5 representative quotations reflecting actions, events and circumstances involved in the development of sustainability-oriented venture ideas; initial actions after specifying the venture idea; and the discourse whereby entrepreneurs position their ventures. These quotations illustrate the conjunctural nature of the represented solutions, i.e. it is their combination that leads to the integration of sustainability in the venture development process.

-- Insert Table 5 around here --

5. Discussion

In the midst of much excitement about the recent phenomenon of sustainable entrepreneurship, in this paper we sought to provide a substantive account of its underlying process. We focused on three observable markers of this process – the ideas, actions, and exchange relationships articulated and instigated by the entrepreneurs in question – and examined the factors that account for their emergence. We explored the configurations of these factors behind the manifestations of ideas, actions, and exchange relationships using Fuzzy-Set Qualitative Comparison Analysis (fsQCA).

Our analysis revealed two empirically relevant configurations for each. When relating

back to the cases in which these configurations were embedded, we identified two distinct venture development paths. The first, *conformist*, pertains to the inspiration of ideas from the perception of a supportive social context, deliberation of action based on the creation of holistic value, the perception of an enabling business context, and conveying strong orientation towards sustainability and an enabling business context in the formation of exchange relationship. In contrast, the second, *insurgent*, path is characterized by lack of explicit ideas for sustainable development, action deliberation against a lack of perceived social support, and exchange discourse that echoes a lack of contextual support and strong intention to deliver business solutions to sustainability problems.

5.1 Theoretical contribution

Our work makes two main contributions to the literatures on sustainable entrepreneurship and entrepreneurship more broadly. First, by staying tuned to the notion of entrepreneurship as an unfolding process (McMullen and Dimov, 2013; Van de Ven and Engelman, 2004), it helps open up the black box of the process that unfolds from initial business ideas to their ultimate realization. Our results show that the importance of different factors shifts across the actions and market interactions that comprise the process. This helps us understand the different ways in which sustainable ventures can be developed, as represented by the two distinct paths we identify. Along the conformist path, a supportive social context that inspire ideas gives way to value creation and an enabling business context returns in the deliberation of actions, which in turn give way to sustainability orientation in the discourse behind seeking to establish market relationships. Along the insurgent path, the lack of perceived social support persists at the action and exchange stages, but is backed by strong intention to solve sustainability problems by means of a new business in the formation of exchange relationships.

These findings can help enrich our theoretical language around sustainable

entrepreneurship and appreciate its diversity. In supportive communities with shared norms around sustainability, potential entrepreneurs find ready sources of ideas and a receptive audience for market relationships that can create returns for the nascent venture. In contrast, where the social context does not support sustainability behaviors, potential entrepreneurs find inspiration in the desire to create sustainable value, albeit with no visible prospects for returns, and have to persevere against the established norms, driven by strong intention. In addition, our findings help theorizing move away from the restrictive assumption of fixed entities over time that is necessary for the application of linear models (Abbott, 1988) and appreciate the shifting landscape within each entrepreneurial journey in response to its emerging challenges.

Second, our work highlights the conjunctural and equifinal nature of causal relationships in the development process of (sustainability) ventures. Against traditional focus on piecemeal importance that can simply be added to the cumulative explained variance, our results indicate that factors that are commonly seen as important are in fact intertwined with others and not sufficient conditions by themselves in explaining given outcomes. In fact, their importance may vary over time or be altogether peripheral in nature. Prior knowledge is a particularly potent example in this regard. While it is seen as fundamental for the identification of entrepreneurial opportunities (Shane 2000; Patzelt and Shepherd 2010), our results show that it is peripheral in effect and a necessary condition at best. It is present in all solutions but does not dominate them. This means that it needs to be complemented by other (perhaps more important) factors in driving the entrepreneurial process forward. The point here is not that prior knowledge is not important, but that it represents just a piece of a large puzzle of factors. By elucidating the conditions under which entrepreneurs pursue sustainable ventures, we respond to a central question posed by Hall, Daneke and Lenox (2010), who stress that it has been, and will remain, one of the dominant questions in the field.

Our work also enables the drawing of a more meaningful distinction among entrepreneurs based on the considerations that drive them, whether simple economics or more complex constellations of economic returns, social justice, environmental protection and intergenerational equity. *Insurgents* and *conformists* exhibit distinct features arising from the way conditions consistently combine to produce the outcomes and shape the paths. *Insurgents* are primarily change agents. Facing lack of support from their social context, they embark in venture development as a way of inducing socio-economic shifts. They exhibit capacity and willingness to create sustainable value as part of the business proposition, yet this only emerges in the final stretch, being merely peripheral in early stages. Unlike traditional entrepreneurship, where the promise of rewards has an effect on the ability to recognize opportunities (e.g. Shepherd and DeTienne, 2005), the potential strategic return of sustainability (i.e. supportive business context) is irrelevant for *insurgents*. Even more, in most of the *insurgent* cases the belief in future benefit is absent from the development of venture ideas, where what matters is the comprehensiveness of the value that can potentially prompt change.

Conformists, on the other hand, are sustainability conveyers. Sustainability business ideas emerge as a response to and expression of collective sustainability concerns. In building sustainable ventures, holistic value and expected rewards derived from a supportive business context shape and channel concern and ideas. The cognitive resources of the entrepreneur focus more on increasing the comprehensiveness of the value of the pursued venture rather than on the obligations of the business towards society. This changes when connecting to exchange partners. The search for holistic value moves to the periphery and the entrepreneur's vision regarding sustainability and the obligations of the business toward society come into play to reflect and channel personal values. This is relevant for theorizing about the development of sustainable ventures. Sustainability-related values do not influence the

motivation to act entrepreneurially on opportunities that both sustain and develop, as Shepherd and Patzelt (2011) suggest. They rather emerge and become instrumental when facing market structures, and as a way of channeling collective sustainability concerns turned into ideas.

Conformists invite a rethinking of the "what, where and when" of entrepreneurial action. The development of new means–ends relationships (Kirzner 1997) is not meant to produce economic value for the entrepreneur and its shareholders. It rather conveys supporting social norms, holistic thinking and an intertwined set of personal principles (Leiserowitz et al. 2006) to create economic value for relevant stakeholders, while achieving social justice, environmental protection and intergenerational equity.

In a broader sense, our work highlights the trade-off between complexity and generality in theories of entrepreneurship. Although our phenomena of interest involve distinct entities such as entrepreneur or venture, current theories tend to reduce them to a set of variables and seek general relational patterns between these variables that both exist independent of context and occur in the absence of time flow (Abbott 1988). The implication of this is that if we add all the ingredients together, we would derive the desired entrepreneur or venture. But just as simply adding egg yolk and vegetable oil does not produce mayonnaise – a lot of intensive stirring and gradual pouring is needed – so it is important not to ignore how the ingredients mix together. Thus, while the search for generality distils the essential ingredients, appreciation of complexity reveals how they interact. Our work provides a counterweight to exclusive focus on generality at the expense of contextualization, whereby it stresses the importance of particular configurations and sequences. By being tuned to holistic configurations rather than discrete variables, our approach enabling the identification of more complex, conjunctural causal patterns.

5.2 Limitations

There are, inevitably, limitations to our study. One concern relates to the use of retrospective self-reports as source of primary data relates to possible common-method and retrospective biases. We sought to mitigate this concern through careful case selection and data and method triangulation (Jick 1979), comparing the entrepreneurs' recollections with data from venture documents. Entrepreneurial events typically occur only once, early in the life of the firm, thus the use of contemporaneous records is beneficial for reducing this threat to validity (Schjoedt and Shaver 2005). Nevertheless, our data did not allow us to establish proper temporal sequence of the factors in question.

A second concern relates to the use of sustainable business competitions as the sampling frame for the study. Although participants of sustainable business competitions may have a favorable inclination towards sustainability or particular in other ways, this is not necessarily an issue in diversity-oriented comparative studies (Collier 1995). As with other QCA studies (e.g. organization research, Fiss 2011), the central focus of this research is not on entrepreneurs in general, but on a theoretically defined population of entrepreneurs with a clear orientation towards sustainability. The substantive variation within our data points to achieving maximum heterogeneity over the minimum number of cases within the defined conceptual domain (Rihoux and Ragin 2008). Nevertheless, generalization of our results beyond the population of entrepreneurs explicitly oriented towards sustainability should be done with care.

The fact that most of the cases are based in the United States may limit the generalizability of the results. There are, however, some elements in the sample strategy that minimizes this risk. The cases belong to 17 different sectors and are spread out across the country (i.e. 15 different states), in regions that it has been demonstrated present significant fine-grained cultural and psychological differences (Henrich et al. 2010). In addition, the fact

that 13 of these cases operate in markets outside the US, such as Sub-Saharan Africa and India, helps reducing the risk of homogeneity of institutional setting and consequently of a biased perception regarding the role of institutional conditions.

A final concern relates to the logic and procedures used in setting up thresholds for the calibration of the measures. The mechanical application of calibration techniques is particularly problematic, because it leads to the under-appreciation of the importance of standards for imposing thresholds external to the data (Schneider and Wagemann 2012). In other words, calibration becomes a threat when qualitative anchors are not based on theoretical and substantive knowledge, but rather on simplistic formulas, for example, the use of the mean score as the point of maximum ambiguity with no further justification. Alongside the justification provided in the method section, we corroborated the appropriateness of the calibration procedure by conducting sensitivity tests based on adjusting the calibration thresholds, which showed that the results remained robust.

5.3 Conclusion

In conclusion, entrepreneurship is a complex phenomenon; sustainable entrepreneurship is perhaps more so, given the presence of commercially viable ventures that pursue economic, social and environmental outcomes concurrently. While current manifestation of such complexity in the academic literature has been to point to the sheer number of factors involved, this paper takes a step towards highlighting the conjunctural nature of their effects. It calls for a reorientation in analysis away from individual variables pried away from the empirical entity in which they operate towards the configuration of conditions that the entity itself represents.

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THE CALL OF THE WHOLE IN UNDERSTANDING THE DEVELOPMENT OF SUSTAINABLE VENTURES

HIGHLIGHTS

- This paper examines the development process of sustainable ventures by focusing on three substantive markers, namely the ideas, actions, and exchange relationships articulated and instigated by the entrepreneurs in question
- It uses Fuzzy-set Qualitative Comparative Analysis of 45 sustainability-oriented new ventures to identify the causal conjunctions of six relevant factors
- It reveals two distinct opportunity development paths: *conformist*, that operates in an enabling supporting context as sustainability conveyor, and *insurgent*, that operates as a change agent against an establishment that is not conducive to sustainability ideals.
- It opens up the black box of the process that connects initial ideas for sustainable development and their ultimate entrepreneurial enactment.
- It highlights the conjunctural and equifinal nature of causal relationships in the development process of sustainability opportunities.
- It highlights the trade-off between complexity and generality as a major challenge for the empirical utility of current theories of entrepreneurship and offers a middle path.

Figure
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Figure 1. Visual representation of relevant causal conditions

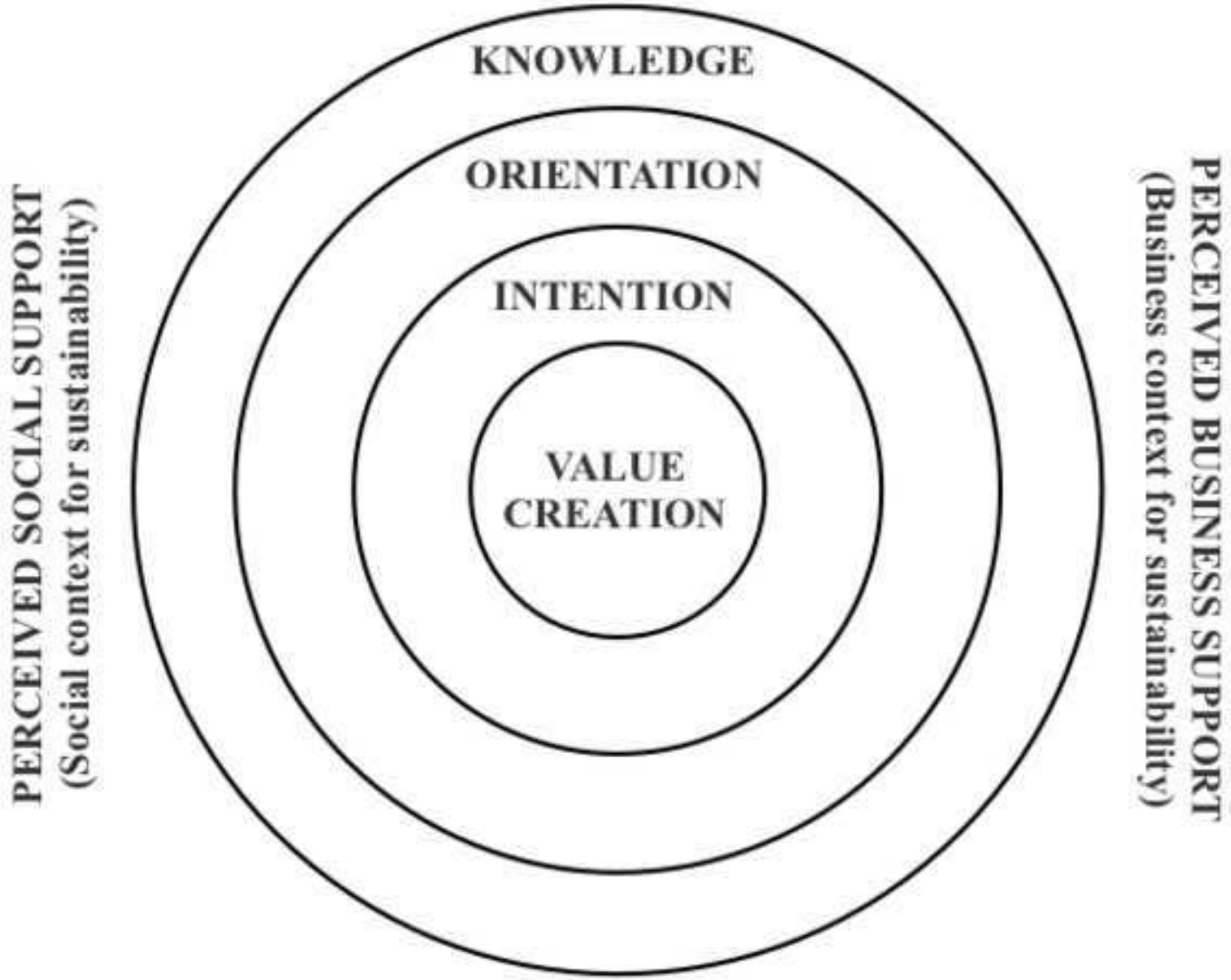

Table 1. Summary of Literature

Paper*	Purpose	Main Constructs	Findings, contribution or proposition	Knowledge	Orientation	Intention	Value Creation	Social support	Business support
Hostager, T. et al., 1998. (C)	Understand how can ventures take advantage of environmental opportunities	Ability, efficacy (perceived ability), motivation and desirability (perceived motivation), opportunity recognition	Ability, efficacy, motivation and desirability affect the performance of a key intrapreneurial task: seeing opportunities	◦	◦	◦			
Larson, A., 2000. (E)	Understand how environmental and sustainability considerations can be successfully integrated into business strategy of new venture	Environmentally related opportunity. Process through which the entrepreneur created innovation through the cultivation and leadership of a network of players	Product and process innovation is significant when sustainability principles are applied to business		◦				
Schick, H., et al. 2002. (E)	Identify the points where environmental management could be incorporated into the start- up process	Start-up-process, sustainability orientation in corporate culture, sustainable business practices and measures	It is easier to introduce sustainable thinking into new ventures than into established enterprises		◦				
Walley, L., Taylor, D., 2002. (C)	Develop a typology of green ventures focused not only on those founded on the principle of sustainability but also those that are opportunistically or accidentally green	Internal motivations and external structural influences	Green entrepreneurs are best characterized by a combination of internal motivations and external (hard and soft) structural influence. There are four 'ideal types' of green entrepreneurs: innovative opportunists, visionary champions, ethical mavericks and ad hoc enviropreneurs.		◦			◦	
Isaak, R., 2002. (C)	Establish the ecopreneurial strategies used by entrepreneurs that seek to transform the economic sector in which they operate, and the incentives to promote ecopreneurship	Formal institutions and green business strategy	Changes in tax regimes, competitions, the building of public-sector ecopreneurship standards and the creation of ecopreneurship centers to attract blended value VC will promote ecopreneurship.						◦
Wheeler, D. et al., 2005. (E)	Examine successful, self-reliant and sustainable enterprise-based activities in developing countries, and develop a model of Sustainable Local Enterprise Network	Market opportunities, network-based resources and venture's capabilities	Sustainable Local Enterprise Network Model (SLEN) involve dense networks of for-profit businesses, local communities, not-for-profit organizations and other actors, working in a self-organized way to create value in economic, social, human and ecological terms. SLENs create value and open market opportunities				◦	◦	
Cohen, B. 2006.	Enhance collective knowledge about how sustainable innovations may come about.	Sustainable entrepreneurial eco-system (set of interdependent formal and informal actors that influence the formation and trajectory of entrepreneurs in a given region) and venture development	Components of the formal and informal network, physical infrastructure and culture within a community contribute to a sustainable entrepreneurial ecosystem.					◦	◦
Clemens, B., 2006. (E)	Investigate the relationships among green performance, financial performance and green economic incentives for small firms. Investigate green economic incentives that encourage green practice.	Green economic incentives, green performance and financial performance	Positive relationship between green and financial performance. Going green pays for small firms. Green economic incentives would weaken the positive relationship between green and financial performance for small firms.						◦
Schlange, L.E., 2006. (E)	Understand the nature, motivation and drivers of so-called ecopreneurs, green entrepreneurs, or sustainable entrepreneurs.	Nature, motivation and drivers of sustainable entrepreneurs	A main characteristic of sustainable entrepreneurs is a strong emphasis on ecological aspects in their business vision as opposed to the traditional entrepreneurial aspiration to grow		◦	◦			

Paper*	Purpose	Main Constructs	Findings, contribution or proposition	Knowledge	Orientation	Intention	Value Creation	Social support	Business support
			and create profits. The main drivers for a sustainable entrepreneurial motivation may be structured along the social and ethical dimension.						
Young, W., Tilley, F., 2006. (C)	Develop an integrated approach that links in the social and natural cases	Integrated Models of Corporate Sustainability: eco- and socio-effectiveness, sufficiency and equity	It proposes a new model for sustainable entrepreneurship that highlights the value and importance of moving the sustainable business agenda beyond the notion of eco- and socio-efficiency.				◦		
Cohen, B., Winn, M., 2007. (C)	Identify market imperfections that have contributed to environmental degradation, explore their role as sources of entrepreneurial opportunity, and introduce a model of sustainable entrepreneurship.	Market imperfections (inefficient firms, externalities, flawed pricing mechanisms and information asymmetries) and venture development	Environmental degradation provides significant opportunities for the creation of radical technologies and innovative business models. Founders can obtain entrepreneurial rents while simultaneously improving local and global social and environmental conditions.	◦					
Dean, T., McMullen, J., 2007. (C)	Understand the concept and domain of sustainable entrepreneurship, and explain how entrepreneurship can help resolve the environmental problems of global socio-economic systems.	Environmentally relevant market failures (public goods, externalities, monopoly power, inappropriate government intervention, imperfect information), entrepreneurial opportunities and venture development	Environmentally relevant market failures represent opportunities for achieving profitability while simultaneously reducing environmentally degrading economic behaviors. Entrepreneurial action can resolve environmental challenges by overcoming barriers to the efficient functioning of markets for environmental resources.	◦		◦			
Dixon, S., Clifford, A., 2007. (E)	Extend research into social and ecological entrepreneurship by examining how ecopreneurs can create an economically viable business whilst retaining their core environmental and social values.	Entrepreneurial ideals, sustainability values, triple bottom line and balance of goals	There is a strong link between entrepreneurialism and environmentalism. It presents a 3BL, network-based business model offering economic sustainability (returns) for environmental and social enterprises.		◦		◦	◦	◦
Katsikis, I., Kyrgidou, L., 2007. (E)	Provide a holistic approach to the entrepreneurial phenomenon by introducing the concept of Sustainable Entrepreneurship.	Sustainability opportunities (embedded in sustainability problems) and strategic decisions for development	Strategies, three-dimensional measures and intrapreneurial initiatives, form a holistic business approach that contributes to the reconstruction and reorganization of the total business mindset.		◦		◦		
Choi, D., Gray, E., 2008. (E)	Examine the venture development processes of sustainable entrepreneurs by investigating decisions and management practices through key stages of companies' growth.	Venture development processes, key decisions and activities throughout the venturing process and business practices of sustainable entrepreneurs	Sustainable entrepreneurs are an unusual breed with limited business backgrounds. Business concepts originate from the founders' broad idealism and drive to make a small difference in the world. They find innovative methods for balancing their financial goals against their objectives of making a difference in their environment and society. Donating company profits and other resources was considered not an afterthought but an important function of business.	◦	◦		◦		
Cohen, B., et al. 2008. (C)	Provide an expanded view of the consequences of entrepreneurship by broadening the scope of entrepreneurship	Value creation (as a sum of performance, promise, perpetuity, socio-efficiency, stewardship, eco-efficiency, and sustainability) and sustainable	Consistent with the notion of the triple bottom line (i.e. sustainability benefits) the paper elaborates a typology of entrepreneurship value creation (dependent variables) that				◦		◦

Paper*	Purpose	Main Constructs	Findings, contribution or proposition	Knowledge	Orientation	Intention	Value Creation	Social support	Business support
	research to include economic, environmental and social value.	venturing	broadens the scope of entrepreneurship research to include economic, environmental and social value.						
Gibbs, D., 2009. (C)	Investigate the role that sustainability entrepreneurship may have in engendering a shift in the practices and operations of contemporary capitalism.	Environmental progress, sustainability orientation and sustainable entrepreneurs as change agents and the renewal of the economy	A widespread sustainability orientation in start-ups could speed up the overall process of sustainable restructuring of industry and commerce.		◦				
O'Neill, G., et al. 2009. (E)	Examine sustainability entrepreneurship within a specific cultural setting. It discusses sustainability entrepreneurship from the perspective of value creation by focusing on the holistic value proposition (HVP) created by a sustainability venture.	Cultural influences on sustainability entrepreneurship and holistic value proposition (HVP)	Because cultural factors highly influence both sustainability and entrepreneurship, the global impact of sustainability entrepreneurship may depend on the adaptability of its value proposition to a variety of cultures. HVP is negotiated between the sustainability venture and its full range of stakeholders.				◦	◦	
Parrish, B., Foxon, T., 2009. (E)	Investigate the possible catalytic role of sustainability entrepreneurship in the equitable transition to a low-carbon economy.	Values, motives and strategies of SEs, sustainable entrepreneurship action and transition to sustainability	Sustainability-driven entrepreneurs design ventures with the primary intention of contributing to improved environmental quality and social well-being in ways that are mutually supportive. In doing so, the act as catalysts to socioeconomic structural transformations.			◦	◦		
Schlange, L., 2009. (C)	Explore how sustainability-driven entrepreneurs perceive their stakeholder relationships	Stakeholder relationships and perception-driven behavior based on an impact philosophy and urgency	Sustainability-driven entrepreneurs view their ventures as integral parts of a larger societal context in which they are able to contribute to the improvement of life conditions in the most general sense. They are thus distinct in the way they deal with stakeholder identification due to the triple-bottom-line nature of their ventures.				◦	◦	
Tilley, F., Young, W., 2009. (C)	Develop a model of sustainability entrepreneurship by articulating a broad view of wealth creation away from ecological modernization theory	Multidimensional model of sustainable entrepreneurship (practices and values), triple top line value creation, and wealth creation	Sustainable entrepreneurs could potentially be the true wealth generators of the future. The model introduces an entrepreneurial holistic value proposition, which is required, to reducing the environmental and social problems society faces today.		◦		◦		
Shepherd, D., et al. 2009. (M)	Explore the nature of sustainability values and develop a reliable and valid measure of values underlying sustainable development.	Sustainability values (freedom, equality, solidarity, tolerance, respect for nature, and shared responsibility), attitudes and behaviors towards sustainable development	Drawing on the specific values underlying The Millennium Declaration of the UN, the paper develops a scale for each of the fundamental values. The measures have valid psychometric properties and provide a solid foundation for future research on the psychology underlying ecological economics.		◦				
Meek, W., et al. 2010. (E)	Develop and test a model of the relationship between centralized and decentralized institutions on entrepreneurial activity.	Centralized (state-level business incentives) and decentralized (socially determined) institutions, founding rates and sustainable venture development	Both decentralized institutions that are socially determined as well as centralized institutions that are designed by governmental authorities are important in promoting firm foundings in the environmental context. It demonstrates that social norms, by themselves and in conjunction with state-level incentives, have the ability to influence environmental					◦	◦

Paper*	Purpose	Main Constructs	Findings, contribution or proposition	Knowledge	Orientation	Intention	Value Creation	Social support	Business support
			entrepreneurship.						
Patzelt, H., Shepherd, D., 2010 (C)	Develop a model of how sustainable development opportunities are recognized based on the individual's prior knowledge and motivation.	Prior knowledge, altruism and sustainability values, perception of threat, opportunity discovery and venture development	Entrepreneurs are more likely to discover sustainable development opportunities the greater their knowledge of natural and communal environments become, the more they perceive that the natural and communal environment in which they live is threatened, and the greater their altruism toward others becomes. Entrepreneurial knowledge plays a central role by moderating these effects.	◦	◦	◦			
Hockerts, K., Wüstenhagen, R., 2010. (C)	Analyze the interplay between incumbents and new ventures, and theorizes about how it is their compounded impact that promotes the sustainable transformation of industries.	Value-based approach, emergence of sustainability start-ups and transformation of market incumbents	What sets sustainability start-ups apart from normal start-up companies is their pronounced value-based approach and their intention to effect social and environmental change in society. In the early stages of an industry's sustainability transformation, new entrants are more likely than incumbents to pursue sustainability-related opportunities. Incumbents react to the activities of new entrants by engaging in corporate sustainable entrepreneurship activities.		◦	◦			
Kuckertz, A., Wagner, M., 2010. (E)	Study how sustainability orientation and entrepreneurial intentions are related in practice.	Sustainability orientation, entrepreneurial intentions, and business experience	Individual sustainability orientation can explain entrepreneurial intention to some degree. Positive relationship between sustainability orientation and intention. The positive impact of sustainability orientation vanishes with business experience.	◦	◦	◦			
Pacheco, D., et al. 2010. (C)	Explore how entrepreneurs can engender institutional incentives to sustainable development and achieve the normative expectations implied in the concept of sustainable entrepreneurship.	Market incentives, formal and informal institutions (norms, property rights, and legislation), environmentally degrading behavior, individual rewards, collective goals for sustainable development and sustainable venture development	The efficacy of entrepreneurial activity is dependent upon the nature of market incentives. In this vein, entrepreneurs are compelled to environmentally degrading behavior due to the divergence between individual rewards and collective goals for sustainable development. Entrepreneurs can escape from the green prison by altering or creating the institutions—social norms, property rights, and legislation—that establish the incentives of competitive games.					◦	◦
Parrish, B., 2010. (E)	Investigate the organization design expertise necessary for sustainability-driven entrepreneurs to succeed in a competitive market context.	Sustainability-driven values and motives, and organizational design in venture development	Results reveal five principles of organization design that diverge in important ways from the conventional principles of entrepreneurship, suggesting the expertise required for venture success differs depending on entrepreneurial values and motives.		◦	◦			
York, J., Venkataraman, S., 2010. (C)	Examine the conditions under which entrepreneurial action will address the opportunity of resolving environmental issues while creating economic and ecological value.	Environmental uncertainty and problems, resource allocation to address environmental degradation and opportunity for sustainable venturing and value creation	The problem of environmental degradation represents an opportunity for new value creation. In pursuing such opportunity entrepreneurs are likely to supplement, or surpass, the efforts of governments, NGOs and existing firms to achieve environmental sustainability. Entrepreneurs can contribute to solving environmental problems by contributing			◦	◦		

Paper*	Purpose	Main Constructs	Findings, contribution or proposition	Knowledge	Orientation	Intention	Value Creation	Social support	Business support
			to helping extant institutions reviewed above in achieving their goals, and creating new, more environmentally sustainable products, services and institutions through doing things incumbent institutions do not, and cannot do.						
Spence, M., et al. 2010. (E)	Determine the fundaments of sustainable entrepreneurship in an international perspective and to shed the light on the potential impact of economic, institutional, and cultural dimensions upon diverse levels of sustainability in SMEs	Socio-cultural practices, countries' priorities, sustainability motives and values and firms' levels of openness to sustainability	Socio-cultural specificities and institutional realities can be more or less inductive to the adoption of sustainable practices in SMEs. SMEs' wide adoption of integrated sustainable practices is influenced both by the owner– managers' values and beliefs as well as by external elements.		◦			◦	
Schaltegger, S., Wagner, M., 2011. (E)	Analyze which actors are most likely to bring about sustainability innovation under different conditions and develop a framework to position sustainable entrepreneurship in relation to sustainability innovation.	Sustainability motivation and goals (economic and non-market goals) and venture development challenge	Those individuals that apply an entrepreneurial approach towards the primary goal of meeting societal goals and mobilize efforts to change institutions such as market regulations despite pressures towards stasis, are more likely to bring about sustainability innovation.		◦	◦			
De Clercq, D., Voronov, M., 2011. (C)	Explore how the characteristics of the field, as well as entrepreneur characteristics and actions, influence the legitimacy derived from adhering to the field-prescribed balance between sustainability and profitability.	Entrepreneurial legitimacy, business logic and orientation, prior knowledge (balance sustainability and profitability logics), social norms and legitimation process as embedded agency	The impact of field-imposed expectations on entrepreneur legitimacy may be amplified for dominant and mature fields. Whilst previous experience of the field-prescribed balance between sustainability and profitability may amplify the impact of field-imposed expectations on legitimacy, strategic actions can suppress this impact.	◦	◦			◦	
Shepherd, D., et al. 2012. (E)	Investigate what conditions influence the role of moral disengagement in decisions by founding entrepreneurs holding pro-environmental values to actively pursue opportunities that will generate outcomes inconsistent with these values.	Pro-environmental sustainable values, moral disengagement and perceived opportunity attractiveness.	Entrepreneurs' assessments of the attractiveness of opportunities that harm the natural environment depend on the simultaneous impact of values and personal agency. By cognitively disengaging their pro-environmental values, entrepreneurs can (under certain circumstances) perceive opportunities that harm the environment as highly attractive and thus suitable for exploitation		◦				

*(C) Conceptual, (E) Empirical, (M) Methodological

Table 2. Descriptive statistics and correlations

		Mean	SD	1	2	3	4	5	6	7	8
1	KNOWLEDGE	0.761	0.217								
2	INTENTION	0.821	0.232	.329*							
3	VALUE CREATION	0.836	0.212	.347*	0.226						
4	ORIENTATION	0.871	0.199	.482**	.310*	0.166					
5	BUSINESS SUPPORT	0.734	0.282	0.237	0.127	.430**	0.177				
6	SOCIAL SUPPORT	0.613	0.367	0.018	0.034	0.14	-0.186	-0.038			
7	IDEA	0.716	0.262	0.247	-0.053	.310*	.317*	0.157	0.079		
8	ACTION	0.759	0.253	.406**	0.129	.379*	0.275	.311*	0.028	.344*	
9	EXCHANGE	0.611	0.319	.342*	0.186	0.247	.357*	.358*	-.313*	0.129	.360*

*. 0.05
**. 0.01

Table 3. Summary of findings: empirically relevant causal paths

Configurations for	IDEA		ACTION			EXCHANGE			
	Idea A	Idea B	Action A		Action B	Exchange A			Exchange B
	I1	*I2*	*A1*	*A3*	*A2*	*E2*	*E3*	*E4*	*E1*
KNOWLEDGE	●	●	●	⊗	●	●	-	●	●
INTENTION	-	●	-	●	●	-	-	●	●
VALUE CREATION	●	●	●	●	-	●	●	-	-
ORIENTATION	●	●	●	-	●	●	●	●	●
BUSINESS SUPPORT	-	⊗	●	●	-	●	●	●	-
SOCIAL SUPPORT	●	-	-	●	⊗	-	●	-	⊗
Consistency	0.92	0.97	0.94	0.91	0.9	0.84	0.8	0.85	0.92
Raw Coverage	0.60	0.29	0.73	0.25	0.38	0.81	0.55	0.79	0.48

Black circles indicate the presence of the condition, and circles with "X" indicate their absence. Large circles indicate core conditions; small circles indicate peripheral conditions. Blank spaces indicate irrelevant condition (Ragin, 2008b; Fiss, 2008).

Table 4. Cases and relevant solutions

		Relevant solution path					
	Case	**Idea**	**Scores**	**Action**	**Scores**	**Exchange**	**Scores**
1	AWW	A (1)	0.71,0.95	0		0	
2	ACO▯	0		B (2)	0.57,0.86	B (1)	0.57,0.46
3	BTR◆	A (1)	0.82,0.98	A (1)	0.98,0.96	A (2)	0.98,0.57
4	BGF	A (1)	0.501,0.46	0		A (3)	0.501,0.97
5	BCY	3	0.61,0.35	3	0.61,0.39	0	
6	BST	5	0.57,0.69	0		0	
7	BVG	3	0.68,0.97	3	0.68,0.94	6	0.61,0.57
8	CLI◆	A (1)	0.82,0.9	A (1)	0.86,0.82	A (2)	0.86,0.94
9	CLE◆	0		A (1)	0.89,0.89	A (2)	0.89,0.97
10	CHU◆	A (1)	0.95,0.88	A (1)	0.77,0.82	A (2)	0.77,0.35
11	CUL▯	5	0.54,0.95	B (2)	0.57,0.46	B (1)	0.57,0.65
12	DLI◆	3	0.57,0.95	A (3)	0.57,0.71	A (3)	0.57,0.94
13	DFL◆	0		A (1)	0.89,0.98	A (2)	0.89,0.82
14	EPU◆	A (1)	0.71,0.98	A (1)	0.89,0.82	A (2)	0.89,0.16
15	ECV◆	A (1)	0.89,0.98	A (1)	0.89,0.92	A (2)	0.89,0.35
16	ECW▯	0		B (2)	0.57,0.89	B (1)	0.57,0.82
17	ECZ◆	3	0.501,0.55	A (3)	0.501,0.89	A (3)	0.501,0.86
18	GSU▯	0		B (2)	0.71,0.23	B (1)	0.71,0.46
19	GTR▯	0		B (2)	0.95,0.35	B (1)	0.95,0.86
20	HAR◆	A (1)	0.71,0.32	A (1)	0.71,0.92	A (2)	0.71,0.1
21	HFR◆	0		A (1)	0.96,0.99	A (2)	0.96,0.82
22	IPA▯	0		B (2)	0.82,0.96	B (1)	0.82,0.77
23	IWB▯	0		B (2)	0.57,0.65	B (1)	0.57,0.43
24	KOR◆	0		A (1)	0.94,0.99	A (2)	0.94,0.94
25	MCP	A (1)	0.95,0.83	0		0	
26	MST	6	0.54,0.65	4	0.54,0.82	0	
27	MOG	A (1)	0.57,0.93	0		5	0.77,0.46
28	ODS▯	0		B (2)	0.57,0.5	B (1)	0.57,0.94
29	PEM◆	A (1)	0.96,0.97	A (1)	0.96,0.99	A (2)	0.96,0.97
30	PRE	A (1)	0.71,0.43	0		0	
31	PRI	B (2)	0.57,0.5	0		0	
32	PWO◆	0		A (1)	0.89,0.99	A (2)	0.89,0.92
33	PLY	A (1)	0.501,0.55	0		A (3)	0.501,0.57
34	RMA▯	B (2)	0.71,0.94	B (2)	0.71,0.99	B (1)	0.71,0.96
35	RNA	A (1)	0.98,0.88	0		0	
36	STW	A (1)	0.71,0.86	0		0	
37	STR◆	A (1)	0.71,0.46	A (1)	0.71,0.92	A (3)	0.92,0.77
38	SSG	5	0.54,0.46	0		0	
39	TGT◆	4	0.54,0.77	A (1)	0.82,0.77	A (2)	0.82,0.86
40	TOU◆	3	0.68,0.5	A (3)	0.68,0.82	A (3)	0.82,0.29
41	TPS◆	0		A (1)	0.96,0.94	A (2)	0.96,0.99
42	VEH◆	A (1)	0.95,0.96	A (1)	0.99,0.95	A (2)	0.99,0.92
43	WEW◆	A (1)	0.94,0.46	A (1)	0.94,0.99	A (4)	0.99,0.99
44	WHT◆	A (1)	0.82,0.98	A (1)	0.86,0.99	A (4)	0.86,0.77
45	WIS	7	0.501,0.46	0		5	0.501,0.1

▯Insurgent ◆Conformist. In parenthesis the configuration number from full solution table

Table 5. Substantive evidence supporting venture development paths

	Conformist	Insurgent
Idea	While in the rainforest of Costa Rica we witnessed the abusive labor practices of unsustainable agriculture. And so we were moved to create our business, to share this healthy food, and to support organic family farmers and their communities by connecting them with the growing market of people who care about the quality of the food they eat as well as the social and environmental conditions under which it is grown, produced and traded (KOR)	You start it with this intention and then you go out into the main stream economy and you got all this feedback and half of the people don't know what you are talking about and the other half tell you that it is never going to work, and is going to be a marginal piece of the economy and I'm here to say not necessarily, so let's take those intentions, let's put them in a little bit more sophisticated business term, and then let's grow, so and on the individual level is for people that are interested in doing that, and they are nice, not necessarily as intricate as companies are (IPA)
	In our area, riders typically fall into the Lifestyle of Health and Sustainability (LOHAS) spectrum, eager to "do the right thing" and willing to try new products from authentic companies, especially if products compliment their performance on the trail, road, or street (STR)	I don't look at things from a 'here's a problem here's the solution'. I look at things from a very much eco system holistic level. I don't necessarily wait for permission; I just kind of do it (IPA).
Action	We always see it and talk about this (sustainability value and profit) all the time, and it becomes more critical as the team grows, but money always comes when you do amazing stuff. As long as you stay focused on your values and what you believe in, and you're transparent with the people you're serving, in this case our customers, money comes (BTR)	We aim to support social, economic and ecological sustainability in Europe. Our main objective is the interlinking of single organizations and private individuals, above all youngsters, around subjects like Sustainability and Social Entrepreneurship in order to give space to innovation & creativity and to allow a cultural change (GSU)
	What we try to do is to include all three types of those goals within our investment, but also create income streams for the communities where we're based. Not only do they receive the lease payments for use of their land but we also try to hire exclusively from within the community so they're working their own land and getting paid for it, but also have the social impact that as far as we try to offer scholarships for the communities (PEM)	Although our company is developing partnerships with downstream and biodiesel companies, customers may not want to buy the product because they are locked into other systems. We work with other algae companies to develop public awareness of the benefits of algae oil for the environment and society (CUL)
	We are all about of being sustainable, so we are talking about being environmentally sustainable in the way that we actually interrelate with farmers, to the way we interrelate with the environment by reducing waste, by the fact that we actually work in a community to help us commercially to be sustainable. So throughout the whole of our business model and the whole of the way we operate we aim to be sustainable, and actually create something for the future (TPS)	(Talking about a recent project) Our aim must be to protect and preserve the water supply for future generations. To make this goal achievable, immediate rising of awareness and sensitizing of the population is needed, above all the young people all over Europe/in Europe. Change how we think. Change how we drink. Our mission is to change the way people consume by offering healthy, on-the-go beverage options while reducing waste (GSU)
Exchange	Every day more and more people is discovering and becoming loyal fans of our company as well as the mission behind what we do. We are tremendously excited to continue to delight and have a positive impact on the health and lives of a rapidly growing number of fans, farming communities and on the ecosystems of the planet we all share (KOR)	I think that if you couple a few things, there is a lot of room for growth in the sustainable economy. Because you are, sort of, setting the stage. Because, most people aren't entrepreneurs. Most people they want a job, they want security, which of course you want as an entrepreneur but you are willing to sacrifice a lot because you see this broader vision (IPA)
	An experienced investor was looking to diversify his portfolio. A young couple wanted	We need cooperation instead of competition

to leverage their investment for social good. Each of these investors had different financial goals, but they all chose the Forest Investment to help get them there. The Forest Investment helps to mitigate tropical deforestation while creating jobs and opportunities for rural Panamanians. And it produces real financial benefits for investors. We generate these returns through the cultivation and selective harvesting of mixed-species timber plantations, managed in partnership with local communities. Through the Forest Investment, investors have the opportunity to do good while profiting (PEM)

and new opportunities at all levels of society. The old system had outlived its usefulness. We and many other visionaries have paved the way to a new system. A system in which money lost its meaning and values of solidarity, humanity and trust are the principles of our actions (GSU)

This is a different model and I feel like it has its place in the market, that is really my pitch, saying look this is worthy of your capital because we are addressing these issues that, although they do not seem they are a big deal, we are on the front of the market and not everybody is aware of the scarcity of resources that is coming down the line (IPA)

Appendix A. Overview of the cases

	Case	Sector	Location	Founded
1	AWW	Recycling	Washington, DC, USA	2008
2	ACO	Consulting	Kalama, WA, USA	2010
3	BTR	Food	Oakland, CA, USA	2009
4	BGF	Fuels	Philadelphia, PA, USA	2004
5	BCY	Transportation	Ft. Collins, CO, USA	2009
6	BST	Furniture	San Jose, CA, USA	2008
7	BVG	Retail	Brooklyn, NY, USA	2005
8	CLI	Services	Palo Alto, CA, USA	2009
9	CLE	Food	San Francisco, CA, USA	2004
10	CHU	Internet platform	New York, NY, USA	2007
11	CUL	Fuels	New York, NY, USA	2011
12	DLI	Energy	San Francisco, CA, USA	2008
13	DFL	Energy	Salt Lake City, UT, USA	2011
14	EPU	Internet platform	Boise, ID, USA	2009
15	ECV	Packaging	New York, NY, USA	2008
16	ECW	Vending	Pullman, WA, USA	2009
17	ECZ	Appliances	Portland, OR, USA	2011
18	GSU	Consulting	Graz, Austria	2007
19	GTR	Consulting	Vienna, Austria	2009
20	HAR	Food	Brewster, MA, USA	2009
21	HFR	Media	Sheffield, MA, USA	2006
22	IPA	Project development	Washington, DC, USA	2010
23	IWB	Project development	Pittsburgh, PA, USA	2008
24	KOR	Food	Miami, FL, USA	2004
25	MCP	Energy	La Motte-Fanjas, France	2007
26	MST	Media	Sunderland, UK	2010
27	MOG	Urban agriculture	Washington, DC, USA	2007
28	ODS	Energy	Philadelphia, PA, USA	2009
29	PEM	Agriculture	Washington, DC, USA	2006
30	PRE	Health care	Portland, OR, USA	2006
31	PRI	Services	New York, NY, USA	2010
32	PWO	Packaging	San Rafael, CA, USA	2011
33	PLY	Water	Beaverton, OR, USA	2007
34	RMA	Services	Houston, TX, USA	2009
35	RNA	Food	New York, NY, USA	2009
36	STW	Services	Felton, CA, USA	2009
37	STR	Fuels	San Rafael, CA, USA	2011
38	SSG	Internet platform	Washington, DC, USA	2011
39	TGT	Consulting	Vienna, Austria	2009
40	TOU	Architecture / design	Los Angeles, CA, USA	2007
41	TPS	Retail	London, UK	2010
42	VEH	Urban agriculture	Jackson, WY, USA	2010
43	WEW	Water	New York, NY, USA	2008
44	WHT	Architecture / design	Stoddard, WI, USA	2007
45	WIS	Energy	Canberra, Australia	2003

Appendix B: Measurement

Sustainability-oriented venture ideas (IDEA)	**Please think about your awareness or attention to what was occurring by the time you were exploring possible ideas for this business. In this context, to what extent do you agree or disagree with the following statements?** • I was fully aware of the sustainability problem(s) I was trying to solve • I was conscious of the existence of a number of business opportunities that might have been useful for solving the sustainability problem • I was fully aware of the business opportunity I was pursuing • I spent enough time gathering information about the business opportunity • I was conscious of the relation between the business idea and my willingness to solve some sustainability problem • All of my ideas and concerns were consciously considered in the business evaluation • I considered the potential economic, social and environmental impacts • I knew that pursuing this business idea implied more than just making money
Sustainability-oriented entrepreneurial actions (ACTION)	**The following objectives can be present in any organization. Please indicate how important these objectives were in starting this new business** • Improving health and well-being • Creating and distributing economic value amongst all stakeholders • Improving the quality of life in a particular community • Creating employment opportunities • Protecting or restoring the natural environment • Creating ethical and fair products • Establishing fair trading with suppliers • Promoting democratic business models
Sustainability-driven exchange relationships (EXCHANGE)	**Based on this definition and the information provided** (in files), **please indicate the extent to which these statements apply to the firm in question** (assessed by raters) • The firm clearly states the sustainability problem or challenge is trying to address • There is a clear intention to tackle sustainability issues (mission statement, value proposition) • The firm frames the business opportunity in the context of sustainability • The firms seeks to build relationship with the broader audience based on a sustainability logic • The firm presents its products/business model in connection to sustainability • The firm communicates its commitment to sustainable business practices • The firms' language and images reflects sustainability
Prior knowledge (KNOWLEDGE)	**The following statements can be used to describe some people. How well would they describe you?** • I can understand the economic problems we are facing as a society • I can understand the social problems we are facing as a society • I can understand the environmental problems we are facing as a society • I can understand the problems new generations will be facing in the future • It is easy for me to understand current world's issues and how these issues relate to each other
Sustainability orientation (ORIENTATION)	**The following statements describe considerations that any entrepreneur can have during the process of development of business ideas, please indicate the extent to which these apply to you?** • I strongly believe in the power of my business in contributing to solve

	many of the problems we have as a society • My firm has an obligation to society that extends beyond making money • My firm has to give back to society since it derive its profits from society • Regardless of the nature of my business, it has to trade fairly with customers and suppliers • Regardless of the nature of my business, it has to make a responsible use of natural resources • When I was choosing between the business ideas I had in mind, I always chose the one that contributed to building a better society
Entrepreneurial intention for sustainability (INTENTION)	**The following statements can be used to describe some people. How well would they describe you?** • I am able to find solutions to current challenges and problems • I am regularly coming up with new business ideas on how to create a better world • I like taking ideas and make something important of them • I am constantly seeking business ideas with the potential of making contributions beyond making money • I do what it takes to create value for others
Desired value creation (VALUE CREATION)	**I was exploring business opportunities or ideas that have potential…** • Economic value • Social value • Ecological value • Value for future generations
Perceived business support (BUSINESS SUPPORT)	**In the context where [the venture] operates, the sustainability orientation of this business…** • Gives [the venture] a competitive advantage • Helps [the venture] be valued by its customers • Affects the purchase decisions of the [the venture]'s customers • Helps [the venture] sell products and/or services • Helps [the venture] recruit employees • Helps [the venture] retain employees • Helps [the venture] to be valued by potential investors • Helps [the venture] establish meaningful relationships with the community • Helps [the venture] establish meaningful relationships with suppliers
Perceived social support (SOCIAL SUPPORT)	**With regards to the community where [the venture] was created (including friends and family). Please indicate the extent to which you agree or disagree with the following statements. The social norms and culture of your community...** • Encourage sustainable behaviors • Emphasize the responsibility that the individual has in contributing to address community issues • Promote environmental responsibility • Encourage young people to be independent and start their own businesses

Appendix C: Calibration method and table

We used the direct method for calibration, which is based on specifying three qualitative anchors: threshold for full membership (to be calibrated as 0.95), threshold for full non-membership (to be calibrated as 0.05), and a cross-over point (to be calibrated as 0.5), i.e. the point of maximum ambiguity as to whether a case is in or out of the target set (Ragin, 2000). The deviation score for each case (i.e. distance from the cross-over point) is then multiplied by the ratio of the log-odds of full membership or non-membership to the deviation score of the threshold of membership or non-membership; and the resulting value converted to a membership score using a logit transformation (Fiss, 2011). In setting the calibration thresholds, we aimed to create fuzzy-set scores that represented strong membership in casual conditions and outcomes. This decision is based on the fact that, in the context of sustainability, respondents tend to report higher levels of internal attributes when they complete the questionnaire by themselves (Roxas and Lindsay 2012). Therefore, we set the crossover point above the middle of the five-point Likert scales (3.5), the threshold for full membership close to the maximum score (4.5), and the threshold for full exclusion close to the minimum score (1.5). For example, an individual will be considered to have sustainability orientation if his or her raw score is ≥3.5 (0.5 after calibration). The log-odds of membership and non-membership are respectively 2.94 and -2.94[1]. Thus, a raw score of 4 would be calibrated as 0.81 and a raw score of 2.8 would be calibrated as 0.26[2]. This calibration strategy creates a well-ordered distribution of cases that optimizes the configurational analysis and reduces the

[1] $\ln \frac{0.95}{0.05}$ and $\ln \frac{0.05}{0.95}$ respectively

[2] The two deviation scores are respectively 0.5 (4 – 3.5) and -0.7 (2.8 – 3.5). The multipliers for each the log-odds of membership and non-membership divided by the deviation scores for the thresholds, i.e. 2.94/(4.5-3.5) = 2.94 and -2.94/(1.5-3.5) = 1.47. This yields log-odds of 1.47 and -1.029, which are then logit transformed to 0.81 and 0.26, e.g. exp(1.47)/(1+exp(1.47)) = 0.81.

possibility of leniency effects (Kane et al. 1995) and rating errors.