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What It Takes to Lead Sustainability Transitions from the Bottom-Up: Strategic Interactions of Grassroots Ecopreneurs

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Abstract: This paper studies features of grassroots ecopreneurs' leadership in their attempt to ignite transformations in production-consumption systems from the bottom up. It builds on a comprehensive approach of change agency based on institutional work, innovation, and learning intermediation literature. The paper describes grassroots ecopreneurs' interaction strategies to resource business models for sustainability. Empirical data comes from an action research project that consisted of implementing a sustainability experiment in Sur de Bolívar (Colombia). The experiment shows grassroots ecopreneurs' arrays of activities around making sense, shaping, securing support, nurturing, expanding, and scaling the value proposition, the business infrastructure, the customer interface and the financial model of their ventures. Our findings suggest that leading businesses transition into a more sustainable field requires grassroots ecopreneurs acting as change agents by performing a diverse array of boundary, practice, and knowledge circulation strategies, aiming at securing the societal and environmental impact of their ventures. Change agency manifests in the ways ecopreneurs maneuver to bring about transformations and strive to sustain it. The study contributes to a better understanding of processes of socio-technical change for sustainability in highly diverse institutional contexts, such as (but not exclusively) the developing world. An agency-based approach is proposed as an alternative to a managerial approach.

Keywords: sustainability transitions; grassroots ecopreneurs; grassroots innovations; change agency; sustainability experiments; strategic interaction; knowledge stances; business models for sustainability; developing countries

1. Introduction

It has been argued that promoting a more sustainable development requires deep transformations intended to change sociotechnical systems of production and consumption into greener and more inclusive ones [1,2]. Within this approach, known as sustainability transitions, the notion of sociotechnical experimentation has played a central role. This consists of the introduction of alternative technologies and practices into real-life settings in order to purposively re-shape social and material realities into more sustainable ones, thanks to real-world actors who are willing to participate and commit, despite the conditions of uncertainty and ambiguity that such experiments may entail [3].

The introduction of alternative technologies and practices requires a focus on both technological and social innovations. However, the domain of innovation studies and the domain of social innovation are currently separate [4]. Recent systematic reviews of large bodies of academic literature have suggested diverse research avenues to forge bridges between the two. This article follows one of these

avenues, specifically the one that explores the process of value creation [4] in order to identify the ways in which social innovators (e.g., social and environmental entrepreneurs) create room for sustainable business models to emerge.

Scholars have found evidence of social and environmental entrepreneurs around the world who organize their ventures in novel ways [5], coming up with business models able to create value ‘across a wide spectrum’ [6]. Therefore, entrepreneurs are seen as actors that might greatly contribute to sustainable development, because they are able to create social and environmental value, besides the economic one [7–10]. Furthermore, some have argued that placing entrepreneurs at the center of the leadership analysis could highlight their role as change agents [11] as well as explaining environmental governance outcomes [12].

Grassroots ecopreneurs are ‘defined as grassroots entrepreneurs moved by social and environmental concerns, coming up with simple and eco-friendly solutions in their quest to resolve everyday life problems’ [6] (p. 327).

Grassroots ecopreneurs are also considered social innovators because they promote more sustainable practices that embrace change in social relations in order to solve relevant problems that critically affect humanity [4,6,13]. In this way, ecopreneurs act as change agents [11], leading the creation of opportunities for developing a more just and environmentally sustainable economic system by establishing a different way of thinking and acting that modifies existing paradigms prompting deep social and institutional change [14,15].

Additionally, although the innovativeness of these ecopreneurs usually lies on the social dimension, their businesses are in most (if not all) cases socio-technical in nature [16]. These innovations are driven by values of solidarity and equity, at the same time that are able to deal with market principles. In this way, grassroots ecopreneurs are active designers of the value-exchange structure due to their understanding of native roles, identities and social structures that shape value within this structure [17].

This structure is particularly complex in contexts characterized by the presence of well- and ill-functioning institutional pockets. (The concept of pockets has been extensively used in the development literature to refer to ‘poverty pockets’. Alkire et al. [18] have found evidence of pockets of poverty within prosperity. Even though these pockets are commonly found in the Global South, they exist in the Global North too.) This ‘illness’ consists of formal and informal institutions being contested and personalized at different extents, undermining the well-being of many and strengthening the privileges of a few [19] (p. 217). These pockets are usually found in contexts of market imperfection, clientelist and social exclusive communities, patriarchal households and patrimonial and/or marketized states [20,21]. (It is likely that the presence of both well and ill-function institutions expresses tensions created by overarching rationales within and in interaction with the expansive hegemonic economic system. Even though this paper does not address this phenomenon [22], the agency-based approach developed in this article highlights coping and accommodating strategies related to such tensions.) Here, the role of socio-technical innovation is not only about becoming more resource efficient, but about reconfiguring power balance within production-consumption systems [19].

The ways in which an organization creates and delivers value has been described as its business model [23]. From the research perspective, the business model is an adequate unit of analysis for studying businesses’ contribution to sustainability because it integrates several disciplines, it goes beyond the resource-efficiency technological approach, it presents a systems perspective and it uncovers both the environmental and social aspects of business activities [24–26]. Through its different components, the business model shows who, and in which ways, gains from the innovations that entrepreneurs bring into the market [4].

Specifically, a business model for sustainability describes, analyses, manages and communicates (i) a company’s sustainable value proposition to its customers, and all other stakeholders; (ii) how it creates and delivers its value; (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries [25] (p. 6).

This article studies the ways in which grassroots ecopreneurs negotiate with diverse local actors in order to shape the business model of their ventures, aiming at transforming systems of production and consumption from the bottom up. This negotiation process implies for grassroots ecopreneurs an active engagement with the sustainable business field, embracing the paradoxes [27] of fostering a more resource-efficient and socially inclusive local economic development. In his study of farmers' organizations in Colombia, Balanzo [28] addressed processes of farmers' active engagement with practice fields, uncovering their change agency strategies. Thus, we build here on his framework, in order to study the role of grassroots ecopreneurs as change agents [11], by exploring the practice-related, institutional and cognitive aspects of grassroots ecopreneurs' strategies to ignite sustainable development.

Following an ethnographic approach, we have documented the business-related activities of four grassroots ecopreneurs, who actively and voluntarily participated in a socio-technical experiment for developing business models for sustainability, from October 2014 until October 2016. This experiment took place in a rural region in Colombia that exhibits great sustainability challenges known as Sur de Bolívar. This is a region characterized by long-lasting violence and migration. Main economic activities include illegal coca plantations and gold mining in river banks, which bring about environmental degradation and biodiversity loss because of large deforestation and heavy-chemical pollution. Additionally, these economic activities have negative social consequences such as informal jobs, violence, corruption (public and private) and short-term mentality.

By paying attention to both narratives (expressions of sense-making) and practices (shared behavioral routines) related to the definition of the value proposition, the business infrastructure, the customer interface and the financial model, we have found evidence of specific interaction strategies that grassroots ecopreneurs deploy to shape business models for sustainability. This agency-based approach constitutes a contribution to the understanding of entrepreneurial processes at the grassroots level in contexts of institutional diversity [19] as building blocks of sustainable production-consumption systems.

This article is structured as follows. Section 2 presents the conceptual background of our study. Section 3 explains the methodology we have used to carry out this research. Section 4 presents our findings, which will be discussed in Section 5. Finally, Section 6 presents some key concluding remarks to expand the research field on leading sustainability transitions in highly diverse institutional contexts, such as (but not exclusively) the developing world.

2. Theoretical Background

In order to highlight the role of grassroots ecopreneurs as change agents [11], we use Balanzo's *knowledge stances perspective* [28], which allows analyzing change agency by exploring its practice-related, institutional and cognitive aspects. This perspective addresses diverse features of agency, bringing about a comprehensive understanding of grassroots ecopreneurs as drivers of social change [13]. The following sections discuss the theoretical foundations of this perspective, which builds on institutional work and innovation and learning intermediation literature.

2.1. Exploring What It Takes to Bring Change about

Change agents have been defined as 'leaders, groups, coalitions and others that can initiate and drive positive changes towards the achievement of a development goal' [29] (p. 11). This definition highlights the potential of actors to ignite institutional change [30].

In his study of farmers organizations in Colombia, Balanzo [28] identified five distinct strategies these organizations deploy in order to act as change agents: (1) perform innerwise; (2) extend a practice field; (3) bypass bottlenecks and re-scale; (4) broker a knowledge cycle; (5) take part in the public sphere.

First, actors perform innerwise when their behavior intentionally reflects specific values and drivers, demonstrating consistency and reflecting a specific identity. The second strategy consists of

creating alliances to collaborate and nurture a practice field in order to extend and deepen it. Third, bypassing bottlenecks and re-scaling is a strategy based on shifting a negotiation position, usually by framing issues at a different scale, calling attention from a wider spectrum of actors. The fourth strategy, broker a knowledge cycle, refers to acquiring new knowledge and translating it into understandable concepts for all and step-by-step protocols for practice. Finally, actors act beyond the practice field, engaging in public deliberation in order to access wider fora and gain support or impact policymaking.

This reading of change agency strategies comes from a broader discussion on agency, for which Balanzo [28] builds on institutional work and innovation and learning intermediation literature.

The notion of institutional work is used to describe ‘the broad category of purposive action aimed at creating, maintaining and disrupting institutions’ [31]. Here, institutions are understood as ‘the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction’ [32].

As a field of study, institutional work builds on and interconnects various roots. First, it builds on discussions about agency within and about institutions [30,33]. A second root comes from discussions on practice [34,35], drawing attention to how institutions are expressed in embodied, incarnated forms. A third root comes from literature on boundaries. Boundaries separate practices, organizations, constituencies, domains, fields or stakeholders. Boundary work refers to various forms of agency oriented to ‘establishing, expanding, reinforcing, or undermining’ these borders [35–37]. A fourth root of institutional work brings to the fore the role of boundary objects. Boundary objects are different kinds of processes or artifacts establishing a shared context between boundaries [38–41].

Innovation intermediation is understood here as the support of innovation processes between various parties [42] that aim to obtain and sustain knowledge-related assets such as skills, competencies and/or new knowledge. Here, innovation should be broadly understood as the incorporation of alternative ways of thinking, doing and organizing.

Innovation intermediation literature appears as a subset of innovation studies, aiming at understanding the actors, repertoires, domains, and extent of intermediation practice [43–50]. Another scholar stream, less focused on agency, brings about the discussion about knowledge mediation started by Latour [51] and intermediation [52–54]. Innovation intermediation literature adds conceptual richness to the understanding of forms of knowledge circulation, scaling out and scaling up and its relation to institutions. It draws attention to the fact that, as a function, innovation intermediation can be performed by a variety of agents.

2.2. *The Knowledge Stances Perspective*

Building on these sources, Balanzo [28] develops a comprehensive framework that aims to point at those agency repertoires discernible in the attempt of bringing change about. He describes this kind of agency as an act of positioning [55], describing strategies as adaptive forms of practical coping [56]. This is, strategies respond to agents’ relative positions in their contexts.

Knowledge stances work as heuristics addressing moments, scopes, situations or performance of the various repertoires taking place: they could be seen as agency gestures. The synthesis conceptually intertwines key notions from both scholar streams, institutional work and innovation and learning intermediation literature, pointing at the various ways in which practice, boundaries and institutions link to one another.

Figure 1 presents this idea. The figure depicts agency as a rough, uneven, adaptive, landscape. Repertoires of boundary exploration, practice work and boundary setting position and expand a practice base. Repertoires of knowledge exploration, intermediation, and supply enlarge its cognitive base.

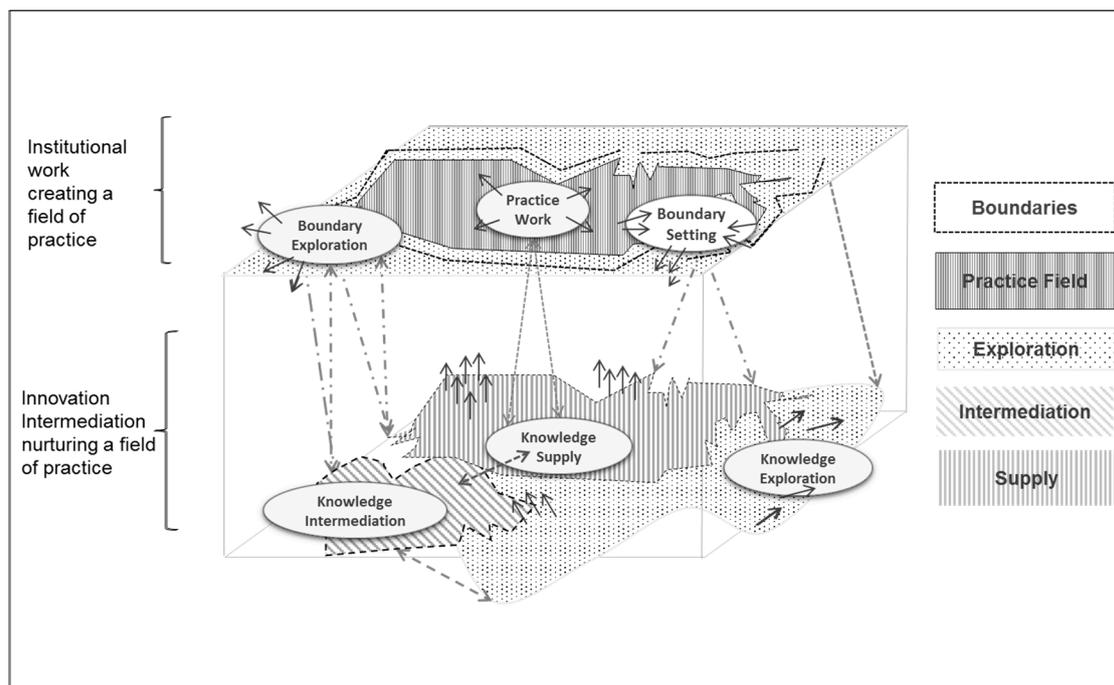


Figure 1. Adapted from Balanzo [28]. The Knowledge Stances Perspective.

Figure 1 depicts knowledge repertoires as interdependent dimensions. The layer at the top shows knowledge repertoires in function of institutional work. Boundary and Practice stances are means of identity creation and interaction to create and strengthen a field of practice. The bottom layer shows the interplay of innovation repertoires around practice. It illustrates the reinforcing dialogue of research, intermediation and supply repertoires around a practice base. Below we explain each knowledge stance:

- Boundary exploration. Strategies under this category refer to coping strategies linking actors to their peers or to other partners. Boundary exploration summarizes moments of ‘collaborating’, ‘joining forces’, ‘working together to achieve’ or ‘finding solutions together’.
- Practice work describes those arrays of activity enacting, making possible, sustaining in time and shaping the rationale and values of a practice field. Practice work refers to those activities describing how actors ‘go about’ creating and sustaining a practice field for a long time.
- Boundary setting describes the contexts—both actor related and normative—bounding an actor’s agency, as well as the ongoing actions of an actor towards these contexts. Boundary setting focuses on agency reacting to and coping with the given circumstances in which actors perform vis-à-vis other actors. Boundary setting can refer to boundary situations, focused on the position of an actor in relation to other actors, or can refer to boundary conditions, focused on the effects on the actor of norms, rules or regulations. Boundary conditions and situations (are set to, and) bound the extent and means to which organizations can actually interact.
- Knowledge intermediation refers to forms of knowledge work (that is, knowledge storage, manipulation, and delivery) aiming to protect a practice field. Knowledge intermediation describes here creative forms of receiving, filtering and delivering knowledge in the attempt to adequately fit boundary crossroads.
- Knowledge supply refers to knowledge delivery, nurturing or complementing other stances. Contents of knowledge supply include all kinds of knowledge, e.g., local, contextual, objectified, technical, expert and/or scientific forms of knowledge.

- Knowledge exploration is the process of knowledge unveiling and production. Knowledge exploration includes research (broadly understood), as well as facilitating access to unknown contexts and scaling out of tacit knowledge.

Balanzo [28] discusses some crosscutting resemblances amongst knowledge stances. He argues these resemblances relate to four given domains, common to the various stances in which agency is performed. The first domain relates an existential domain, marking the core underpinnings of agents as actors, that of identity positioning. The second domain is normative. It refers to agency with and about rules, norms or regulations taking place within and outside organizations. The third domain refers to interaction. In a broad sense, it refers to those activities linking organizations to other actors or fields looking for, sharing, creating, contesting or protecting means to go about practice. The fourth domain refers to practice, including arrays of collaborative activity to strengthen the practice field. The last domain is cognitive. It refers to agency about producing and reproducing knowledge for and within the practice field.

3. Methodology

3.1. Experimenting for Sustainability Transitions

In the last two decades, a new form of collaborative initiatives between science (academia) and society (local governments, communities and/or firms) have emerged, which consists of socio-technical experiments that aim to support sustainability transitions [3,57]. These initiatives are characterized by five core elements: (1) the introduction of new technologies or novel social practices into society; (2) the context of system innovation; (3) the normative orientation towards sustainability; (4) the inclusion of diverse social actors in order to foster social learning, i.e., following a transdisciplinary research approach [58]; (5) the practice-based approach, which consists of deliberately trying out something new in a dynamic real-life social context with the purpose of contributing to a societal transformation [3]. Additionally, this sort of experiments are ‘research endeavors’, in the sense that they produce evidence of unsustainable technologies and/or social practices and of possible solutions to them [57] (p. 3).

This article refers to a socio-technical experiment developed as the doctoral research project of the corresponding author [59]. It consisted of introducing a support system into a real-life setting, in order to purposively re-shape social and material realities. Specifically, the support system targeted grassroots innovators interested in developing feasible business models that contribute to sustainable development on the ground. This support system is a program called Product Co-creation Centers (PC3). PC3 is an interdisciplinary alliance of three departments at the University of Twente (UT), which aims at enabling local innovation, based on sustainability principles, social entrepreneurship rationale and design methodologies. The research that is carried out throughout this project investigates the development of suitable business models to boost the sustainable development of underprivileged regions from the bottom up. In the end, four grassroots ecopreneurs participated in the experiment from the beginning until the end. Their daily innovation-related activities constitute the empirical data of this paper.

3.2. Action Research

The sort of research that is carried out throughout the experiment is exploratory in nature, rather than explanatory, so we do not aim at verifying theoretical hypothesis related to causal links, but to revealing insights that can inspire new ideas for further study [60]. To contribute towards a more nuanced and empirically informed understanding of the dynamics of sustainability-driven innovation at the grassroots level, an ethnographic approach has been taken in order to uncover the ways in which grassroots ecopreneurs contribute to transitions to sustainability on the ground.

Ethnographic research uncovers intersections between the lived experience of actors, their social relations, and practices in specific contexts [61]. Understanding these dynamics is key to inform the research agenda and action in the nascent field of socio-technical experimentation for sustainability

(mainly in the developing world) [3]. Additionally, ethnographic researchers have made explicit the 'recognition that fieldwork is personal, emotional and identity work' [62] (p. 2), which is essential for being an action researcher.

Empirical data has been collected during the fieldwork done by the corresponding author. She has used a mixture of qualitative methods, including interviews, focus groups, direct observation and ethnographic work. All data has been registered in a field diary, which in the end shows the chronological design and implementation processes of the PC3 in Colombia. These notes are diverse, including the discussions and relevant events at UT, in Sur de Bolivar, all interactions between the two, and her own observations and reflections. The subsequent transcription of these notes lead to *memoing*, making sense of the data in an organized way [63]. In this exploratory study, we attempted to make sense of patterns or themes that could surface [60] throughout the experiment. The collected data was systematically organized according to specific events. Appendix A describes the codes used for this purpose.

Another important data source has been the business model canvas (BMC) that each ecopreneur worked on. The BMC is a strategic management and entrepreneurial tool, used to describe, design, challenge, invent, and pivot a business model (Strategyzer). This tool identifies nine aspects that the entrepreneur should define in order to have a clear picture of the business model. These aspects are value proposition, customer segments, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure. Additionally, the canvas offers specific questions per aspect, which guide the shaping process of the business model (See Appendix B).

These canvases were systematically filled in at three different moments of the process (October 2015, February 2016 and April 2016), which allowed the analysis of the aspects that evolved over time. On the one hand, from the ethnographic perspective, we could understand the ways in which each ecopreneur negotiated the value proposition, the business infrastructure, the customer interface and the financial model of each venture. On the other, canvases themselves registered the ways in which ecopreneurs framed and defined each dimension of the business model.

The qualitative analysis has consisted of an inductive and critical activity of immersing ourselves in the empirical data, searching for relevant topics according to the goal of this research. Because of the iterative nature of action research, the analysis process did not take place once all data was collected. The process required constant interaction between action and reflection, which started to dialogue with theoretical sources gradually.

4. Results

This section describes the results the sustainability experiment has brought about, both in terms of the business models that were developed and the every-day activities that the grassroots ecopreneurs performed in order to shape those business models. Section 4.1 describes the former, presenting the process of value creation of the ventures. Section 4.2 describes arrays of activities that the four grassroots ecopreneurs have performed in the process of negotiating and shaping the business models.

4.1. Processes of Value Creation

During the two-year experiment, the grassroots ecopreneurs developed the business model of their ventures. At the beginning of the experiment, they all had a business idea in mind which corresponded to a sustainability-related driver (see Table 1).

Table 1. Ecopreneurs' drivers to develop their business ideas.

Business Idea	Ecopreneur's Driver
Solar energy equipment shop	'If farmers manage to have a comfortable life in rural areas, they won't want to leave to the city'. 'Electricity provision in rural areas is needed to increase the love to the land'. 'If you have a fridge, you can keep more fruit and vegetables, improving your nutrition'. 'When they brought a solar panel to the school, they bought a freezer. (. . .) It was the first time children saw solid water'. (SS_210715; SS_180815)
Roasted coffee exports	'It's important that young people see that businesses that do good can bring good revenue. There's more than gold and coca in this region'. 'This company is contributing to bringing peace to the region'. (SS_150316)
High-quality parchment coffee	'Coffee farmers can take good care of Serrania de San Lucas'. 'They deserve a fair price (. . .) They do many environmental conservation activities' (W2_311015)
Consultancy firm	'Community organizations need to develop their capacity to manage their own resources so that they can become more autonomous' (SS_160216)

Throughout the process they developed new perspectives, redefining their business models into more complex ones. The result were business models that represented organizational settings that increased the socio-political capabilities and access to resources of the community [64], and environmental protection was promoted thoroughly. Table 2 shows how the initial business idea transformed into one that would create social, environmental and economic value in more significant ways.

Table 2. Product/service transformation.

Initial Idea	Final Idea
Solar energy equipment shop	Rural energy community-based enterprise
Roasted coffee exports	Network of cafes, selling high-quality low-price coffee to locals
High-quality parchment coffee	Certified coffee (own certification)
Consultancy firm	Strategy consultancy firm focused on capacity building

Below we describe the ways in which the value proposition, the business infrastructure, the customer interface and the financial model of these four ventures contribute to simultaneously create social, environmental and economic value.

- Value proposition. We have found that sustainability is at the heart of the value proposition of all four business models. It includes elements of community ownership and empowerment and elements of environmental protection. Each venture offers to its clients a product or service characterized by a prominent social and environmental component, as can be read below.

High-quality environmentally friendly coffee, differentiated by its organoleptic features given by the protected ecosystem where it is grown. Produced by small-holder farmers. Fair Trade certified.

- Business infrastructure. We have observed that the local community represents a key partner to all four ventures. The community is not seen as provider of either raw materials or economic resources, but as an actively engaged actor with the business. Therefore, capacity development is a key activity to all four ventures, aiming at decreasing the community vulnerability to middlemen or corrupted officials. Additionally, ecopreneurs attempt to show to the local government the benefit of their business infrastructure, so that they could become a partner, or at least not an obstacle, to the venture. Examples of this are the high-quality parchment coffee association and the solar energy community-based enterprise.
- Customer interface. In the attempt to define the customer interface, we have found that PC3 ecopreneurs challenged conventional social relations in order to become more inclusive and diminish social differentiation. For instance, the roasted coffee company changed the market segment, targeting the local market for which capacity development of local actors became an

important component. These actors included bakery managers and street vendors alike. In the case of the consultancy firm, they changed the nature of the relationship with their clients, refocusing on capacity development.

- Financial model. The financial model of the vast majority of businesses in Sur de Bolivar consists of buying cheap and selling expensive. Beyond economic value for the trader, this model creates little value in other realms. Understanding the interconnections between the different components of the business model, PC3 ecopreneurs realized that there were alternative solutions to the financial model. An example of this is the rural energy community-based social enterprise. Its configuration allowed money flows between the community, the company that provides the equipment and the local government, creating an affordable and financially sustainable system of energy provision.

4.2. Experimenting with Business Models for Sustainability

By paying attention to both framing narratives (expressions of sense-making) and practices (shared behavioral routines) related to the definition of the value proposition, the business infrastructure, the customer interface and the financial model, we have identified arrays of activities that the four grassroots ecopreneurs have performed to negotiate and shape business models for sustainability in a context of 'informal security' [19].

These arrays are sets of related activities that share agency features. Each set shows patterns of strategizing, e.g., some relate to positionality, some to building capabilities. We have grouped activities according to those patterns that the experiment created room for. These arrays will be later discussed (Section 5) according to the theoretical framework presented above.

(1) Joining the PC3

In April 2015 a community leader, who was familiar with PC3 and considered it interesting for the Sur de Bolivar region, invited other leaders to attend a meeting where we presented the experiment proposal. We discussed the meaning and implications of sustainable businesses, the challenges and trade-offs that have to be dealt with when addressing the social, environmental and economic dimensions of the business activity and the entrepreneurial opportunities that emerge from this perspective. The participants were motivated by the entrepreneurial approach, which they found relevant in a context where the prevalent attitude consists of complaining and claiming all solutions to the government instead of taking action. Additionally, the existing community-based organizations (CBOs) such as cooperatives and associations had become experts in writing and executing development projects for international aid organizations, neglecting the entrepreneurial dimension of these organizations. These leaders, then, voluntarily chose to join the PC3 experiment.

(2) Leading teamwork

Participants were asked to build a team to work on their business ideas. Throughout the experiment, all teammates developed great admiration for their leaders. To them, the work they had done so far had been inspiring, eye-opening, motivating and had enabled them to think of the business in a different way, more aligned to their own beliefs (I_{1_311015}; I_{1_041115}; I_{1_051115}; OBS_291015; OBS_311015; OBS_021115; W1_301015), as it can be seen in the following quotations.

'I'm really grateful with [the PC3 participant]. His support has helped me to keep going. Thanks to the work we've done together this business is taking the direction I've always dreamed of.' (I_{1_051115})

I've worked with my teammates using the methods we've learned. We can better organize our ideas and bring them into practice. I've seen that what we've learned works and makes my job easier. (W1_301015)

Additionally, the life experience of the participants had much in common with their teammates. They all had left illegal economic activities voluntarily, after realizing the long-term damage they

were doing to society and to the environment. At the same time, they all had experienced the change from having much money and little peace, to having decent money and much work to do. These experiences kept them inspired (I₁_311015; I₁_041115; I₁_051115). They treated themselves as equals and often referred to their own previous challenges in order to make a point (OBS_291015; OBS_041115; I₁_031115). They felt they were working on something big. They felt that working on innovative business ideas (i.e., ideas no one else has worked on before in this region) with support from well-known community leaders and a foreign university was a right mix to bring high positive impact to the region. They wanted to show young people other ways to make a living, different from gold mining and coca cultivation (OBS_291015; OBS_311015; OBS_011115; OBS_021115; REF_301015; W1_301015).

(3) Working collaboratively among participants

When the experiment started, there were at least six strong CBOs in this region, which were interconnected and provided services to each other. These CBOs constitute a core network that promotes a more equitable and environmentally friendly economic development in the region. All grassroots ecopreneurs and their teammates were members of these organizations. In consequence, this experiment involved not only four ecopreneurs, but a network of several hundreds of families, creating different layers of radiation. Figure 2 graphically represents the way each business idea connected with all six CBOs (connecting, in this way, with hundreds of families).

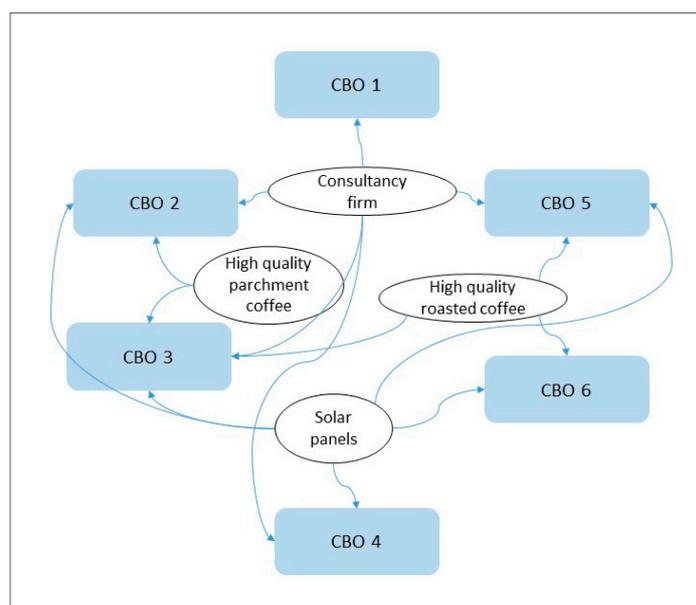


Figure 2. Relationships between business ideas and existing community-based organizations (CBOs).

(4) Searching for other sources of knowledge

The four ecopreneurs attended diverse workshops and courses along the two years of the experiment. These trainings were offered by NGOs, the provincial government, the Colombian national agency for learning (SENA), among others. In general, they all were about standards and best practices.

Additionally, we invited three different experts to join this experiment. They contributed with practice-oriented knowledge. They all were Colombian working on well-known companies in the corresponding sector. Meetings with experts took place in February 2016. According to PC3 participants, it was a valuable experience because they had a sort of conversation they had not had before, characterized by technical aspects and real-life practicalities, mainly related to commercial and

legal issues. Additionally, in these conversations, they managed to get a clearer picture of their role in the value chain of each sector (SS_150216; SS_160216).

(5) Lobbying to include the objective of their businesses in the municipality's development plan

Regional elections took place on 25 October 2015. This vibrant political scenario allowed our ecopreneurs to bring key topics into the political arena, such as rural energy, formalization of businesses and public-private partnerships.

(6) Opposing to join already established profit-driven producer associations

Specifically, in the case of coffee-related ventures, the institutional configuration of this sector is highly developed in Colombia. However, the two ecopreneurs working in this sector felt coffee farmers would benefit in a better way if they did not take the pathway suggested by this institutional framework (I1_291015; I1_041115).

(7) Partnering with and supporting other organizations

Instead of making connection with individuals, these ecopreneurs looked for like-minded organizations that could provide the resources they needed, such as knowledge, equipment, money or access to other actors/markets. Thus, searching for complementarity and reciprocity (I1_291015; I1_311015).

(8) Inviting new actors to become partners

By analyzing the sort of business models they were developing, our grassroots ecopreneurs realized they did not need donors but business partners. Therefore, together with Santa Rosa's mayor, they arranged a meeting with the USA ambassador in Colombia. The objective of this meeting was to invite them to invest in Santa Rosa's social enterprises. A few months later, USAID's director in Colombia personally visited Sur de Bolivar (SS_160216; OBS_241016).

(9) Organizing TEDxSantaRosaDelSur

As participants were interested in telling others about the PC3 experience, we suggested the possibility of organizing a TEDx event (a local gathering where live TED-like talks and videos previously recorded at TED conferences are shared with the community. TEDx events are fully planned and coordinated independently, on a community-by-community basis. The content and design of each TEDx event is unique and developed independently, but all of them have features in common (see <https://www.ted.com/participate/organize-a-local-tedx-event/before-you-start/what-is-a-tedx-event>)). They watched some TED talks and felt motivated about having a video on the internet that they could share with others (SS_160216; W3_260416). Once the TEDxSantaRosaDelSur license was approved, they started recruiting other speakers. This activated a network of community leaders beyond the PC3 team (SS_020616; SS_210616; SS_020816; SS_270916). The event took place on 25 November 2016 (www.ted.com/tedx/events/19543). Since then it has had 65 Likes on Facebook (www.facebook.com/tedxsantarosadelsur/) and over one thousand views in total on the TEDx Talks YouTube channel. Therefore, it has served as a dissemination tool, reaching an audience that would have been hard for these leaders to reach via other means.

(10) Positioning themselves by using PC3

As community leaders, PC3 participants were constantly positioning themselves in relation to highly contested topics related to the development of the region (OBS_301015). Here, the discussions that had taken place in the context of this experiment were particularly relevant and they used our presence in Sur de Bolivar to legitimate their arguments in front of others, such as the elected mayor, school teachers, leaders of recently-finished electoral campaigns (OBS_291015; OBS_311015; OBS_041115). One of the participants said *'it's a good idea you come with me to see this person, so that he'll know what I'm up to'* (OBS_311015).

(11) Devising a business strategy

The process of developing business models was an iterative context-dependent process, characterized by bringing a specific vision to the fore and making room for the ways in which it could be realized, by exploring, fitting or mobilizing actors and resources.

5. Discussion

Following the conceptual approach explained in Section 2, below we analyze the strategies that PC3 ecopreneurs have deployed to negotiate and shape their business models. In order to do so, we have above-identified eleven arrays of activities that ecopreneurs recursively performed along the PC3 process. These arrays are: (1) Joining PC3; (2) leading teamwork; (3) working collaboratively among participants; (4) searching for other sources of knowledge; (5) lobbying to include the objective of their businesses in the municipality's development plan; (6) opposing to join already established profit-driven producer associations; (7) partnering with and supporting other organizations; (8) inviting new actors to become partners; (9) organizing TEDxSantaRosaDelSur; (10) positioning themselves by using PC3 and (11) devising a business strategy.

We will first discuss these arrays in the light of the *knowledge stances perspective* explained above. Table 3 describes the relation of each array with a specific knowledge stance. We have assigned these arrays to each knowledge stance by choosing the one that best illustrates an agency gesture.

Table 3. Corresponding knowledge stances to each array.

Arrays of Activities	Knowledge Stances					
	Boundary Exploration	Practice Work	Boundary Setting	Knowledge Intermediation	Knowledge Supply	Knowledge Exploration
1	X					
2				X		
3		X				
4					X	
5			X			
6			X			
7	X					
8	X					
9		X				
10			X			
11						X

Table 3 shows that grassroots ecopreneurs focus their agency on doing institutional work [35]. Patterns visible in their activities combine an interplay of boundary work, practice work and knowledge work [28] in the attempt to create and nurture sustainable businesses as a practice field.

When we talk about sustainable businesses as a field, we follow the sociological notion of field [65], which refers to a social arena with an inherent rationale and specific relational protocols. In this arena actors occupy diverse positions from which they maneuver to either conserve or transform the structure of forces within the arena. Thus, we argue, the ecopreneurs who are the focus of this research are actors capable to play a role in transforming the forces that rule the field of doing business in an informal-security setting (such as Sur de Bolivar).

Each of these arrays represents in itself both a knowledge stance and a change agency strategy. Table 4 describes the change agency strategies that each array listed above contributes to.

As it can be learned from Table 4, all the activities that PC3 ecopreneurs have deployed to negotiate and shape their business models constitute change agency strategies.

Specifically, it can be argued that this experiment has promoted extending the practice field as the main strategy to ignite change. Joining PC3, working collaboratively among participants, lobbying to include the objective of their businesses in the municipality's development plan, partnering with and supporting other organizations, inviting new actors to become partners and organizing

TEDxSantaRosaDelSur are the arrays of activities that have contributed to extending the field of sustainable businesses. These arrays are characterized by the fact that ecopreneurs jump into new collaborative arenas, developing and diffusing new shared languages and searching for support and novel resources.

Table 4. Interactions between strategies related to knowledge stances and to change agency.

Change Agency Strategies	Knowledge Stances					
	Boundary Exploration	Practice Work	Boundary Setting	Knowledge Intermediation	Knowledge Supply	Knowledge Exploration
Perform innerwise		9		2		11
Extend a field	1, 7, 8	3, 9	5			
Bypass and re-scale			6, 10			
Broker a knowledge cycle				2	4	11
Take part in building the public sphere			5			

Additionally, these ecopreneurs have ignited change via performing innerwise through arrays 11, 2 and 9, i.e., devising a business strategy, leading teamwork, organizing a TEDx event. These arrays of activities refer to processes in which grassroots ecopreneurs developed a specific identity and intentionally showed and expressed their visions and acted accordingly.

Third, bypassing bottlenecks and re-scaling was attempted by grassroots ecopreneurs through arrays of activities characterized by demarcation intentionality. These arrays are opposing to join already established profit-driven producer associations and positioning themselves by using PC3.

Grassroots ecopreneurs aimed at fostering change also by nurturing the cognitive dimension of the practice field. Leading teamwork, searching for other sources of knowledge and devising a business strategy can be read as processes of exploring and fulfilling knowledge gaps. Finally, grassroots ecopreneurs used the political activity of the time when the experiment took place as an opportunity for reaching public actors, influencing policy and securing support.

In sum, our findings suggest that leading businesses transition into a more sustainable field requires grassroots ecopreneurs acting as change agents by performing a diverse array of boundary, practice and knowledge circulation strategies to secure the societal and environmental impact of their ventures. Thus, change agency manifests in the ways ecopreneurs maneuver to bring about transformations and strive to sustain it.

6. Conclusions

Despite a few exceptions [66], little attention has been paid to the role of actors involved in sustainability experiments in the developing world, i.e., change agents that aspire to lead sustainability transitions within settings of informal security or insecurity [19]. The introductory section mentioned that the role of socio-technical innovation in institutionally ill-functioning settings is not only about becoming more resource-efficient, but also about reconfiguring power balance within production-consumption systems. In contexts characterized by loose 'layered' scenarios where different institutional 'pockets' can be present or absent at various degrees [19], innovation actors, in this case grassroots ecopreneurs, adjust their behavior to each pocket, deploying specific strategies to bring their visions and ideas into reality, in order to create change.

This article has contributed to fill this gap, by paying attention to grassroots ecopreneurs developing business models for sustainability. It has been illustrated how change agency relates to the creation or maintenance of emerging sustainable fields of practice. Grassroots ecopreneurs cope with institutionally diverse contexts by strategizing on boundaries while securing cognitive and support resources for the emergent practice.

This agency-based approach contributes to a better understanding of more diverse and somehow messy processes of socio-technical changes for sustainability [67]. This approach (which we will call here ‘strategic interaction approach’—SIA) pays attention to the interaction of bottom-up strategies in order to support nascent sustainable innovations in contexts where well- and ill-functioning institutions interact. This complements the frameworks currently used in the literature on sustainability transitions which mostly discusses empirical cases in Western European contexts. These frameworks, such as the strategic niche management (SNM) [68], suggest top-down approaches based on a managerial rationale.

The SNM fosters policies able to protect, nurture and empower juvenile novelties, aiming at bringing about change at the socio-technical regime level. While SNM addresses core niche structuration processes, SIA addresses action principles for change agency. Table 5 describes this contrast, in order to highlight some features that the managerial approach misses, which might be addressed by an agency-based bottom-up approach.

Table 5. Contrasting strategic niche management (SNM) (managerial focus) with Strategic Interaction (agency-based focus) approach.

Strategic Niche Management	Strategic Interaction
Shielding	<ul style="list-style-type: none"> - Inclusion - Information and transparency - Building on community resources (allies, CBOs) - ‘Shielding from within’ - Demarcating boundaries
Nurturing	<ul style="list-style-type: none"> - Grassroots and ‘expert’ knowledge interact to build a shared sustainability discourse
<ul style="list-style-type: none"> - Learning - Articulation of expectations - Networking 	<ul style="list-style-type: none"> - Local visions of future prevail - Networking among equals to weaken patron-client relationships - Networking to expand a field and secure support
Empowering	<ul style="list-style-type: none"> - Stretch and transform - Local voices - Local leadership - Local resources - Re-scaling

Contrasting both approaches means, for instance, that while a managerial approach would suggest shielding policies, the agency-based approach would support processes of inclusion, information, and transparency, building on community resources (allies, CBOs), shielding from within and demarcating boundaries. Similarly, the equivalent of nurturing processes from an agency-based perspective would focus on grassroots’ knowledge, local visions and a sort of networking that strengthens the community’s capacities. Finally, the kind of empowering that an agency-based approach brings to the fore relates to ‘empowering to stretch and transform’ [67], based on local voices, local leadership, and local resources.

Overall, a *strategic interaction* approach describes ongoing processes of creation, nurturing, leveraging, positioning and securing of grassroots’ ecopreneurship as a feasible alternative field. In contexts of institutional insecurity [19], rather than *managing*, grassroots ecopreneurs *iteratively cope* with immediate pressing circumstances by shaping practice and demarcating supportive boundary schemes.

This suggests implications for policy aiming at transforming production-consumption systems into more sustainable ones. First, an agency-based approach highlights the importance of grassroots actors and bottom-up dynamics in transformational processes. Additionally, it calls for openness to a sort of experimentation characterized by creating room for grassroots ecopreneurs to deploy strategies that ignite and sustain change in social relations, challenging exclusive and unsustainable systems. This could imply transforming rationales in existing practice that supports leadership for sustainability.

Even though the application of Balanzo's *knowledge stances perspective* into the sustainability experiment carried out in Colombia has brought about interesting insights about the dynamics of sustainability transitions at the bottom, further research is needed. Its application in other empirical cases could expand the institutional practice-related and cognitive understanding of change agency in innovation processes.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, A.B.; Methodology, M.R.-M.; Investigation, M.R.-M. and A.B.; Writing-Original Draft Preparation, M.R.-M. and A.B.; Writing-Review & Editing, M.R.-M. and A.B.; Visualization, M.R.-M. and A.B.; Project Administration, M.R.-M.; Funding Acquisition, M.R.-M. and A.B."

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Appendix A

Table A1. Codes used to organize the empirical data collected throughout the experiment.

Code	Date	Description
Ix_(date)	(date)	Data with this code refers to interviewee's comments made on the date specified in the code. 'x' refers to the initial field work (0), field work 1, field work 2 or field work 3.
ID_(date)	(date)	Data with this code refers to internal discussions among the PC3 team at UT.
OBS_(date)	(date)	Data with this code refers to my own observation, made on the date specified in the code.
PP_070415	7 April 2015	Participant's profile. Refers to the form they filled in during the introductory workshop, where they wrote down their personal information and described their profile.
REF_(date)	(date)	Data with this code refers to my own reflections, registered on the date specified in the code.
SS_(date)	(date)	Data with this code refers to participants' comments during the skype session that took place on the date specified in the code.
W0_070415	7 April 2015	Introductory workshop that took place in Santa Rosa del Sur. Data with this code refers to participants' comments.
W1_301015	30 October 2015	Evaluation workshop that took place in Santa Rosa del Sur. Data with this code refers to participants' comments.
W2_311015	31 October 2015	Workshop that took place in Santa Rosa del Sur. Data with this code refers to participants' comments.
W3_260416	26 April 2016	Evaluation workshop that took place in Santa Rosa del Sur. Data with this code refers to participants' comments.
W4_191016	19 October 2016	TEDx planning workshop that took place in Santa Rosa del Sur. Data with this code refers to participants' comments.

Appendix B

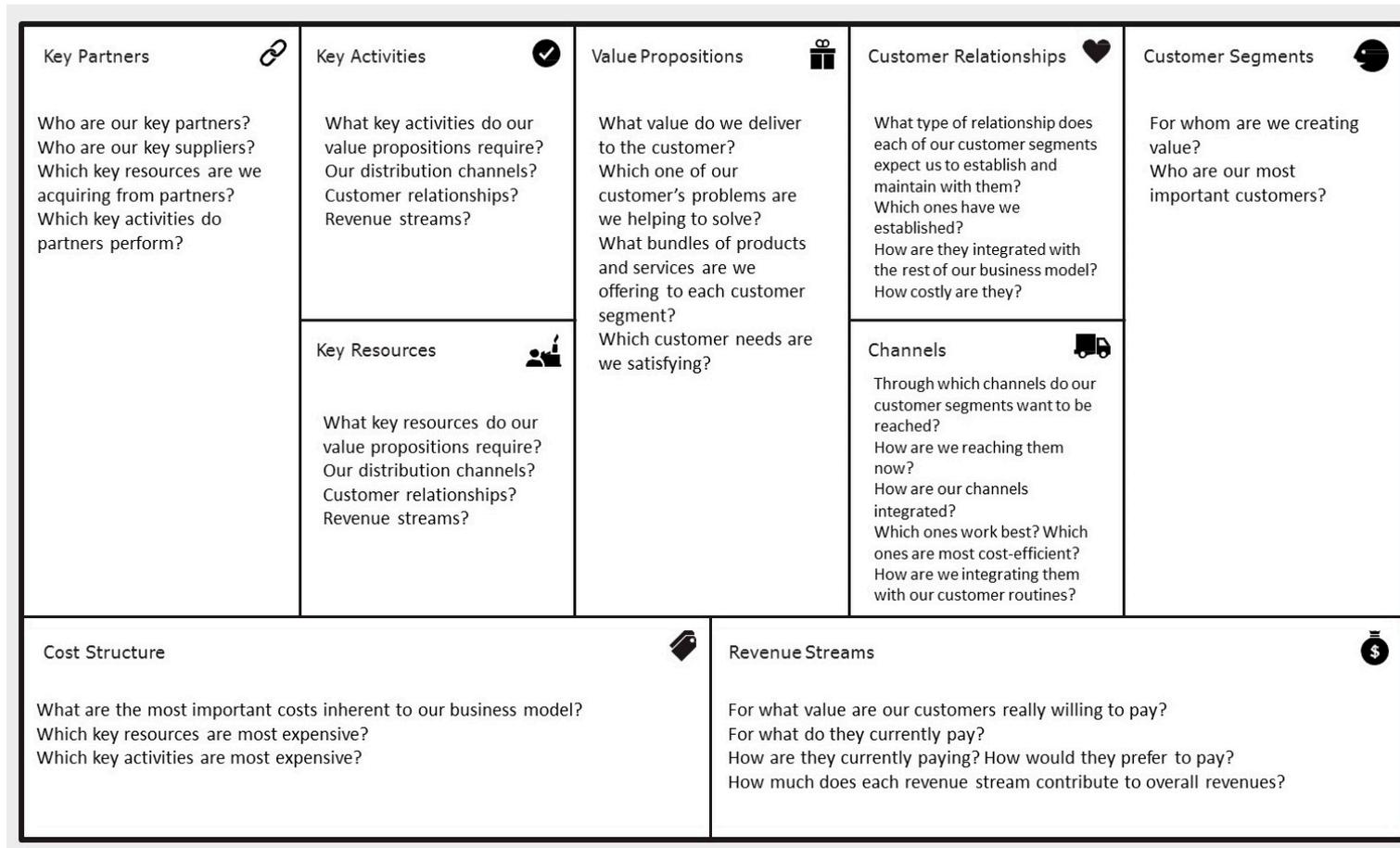


Figure A1. The shaping process of the business model.

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