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A Territorial-Driven Approach to Capture the Transformative Momentum of the Social Economy Especially from the Agricultural Cooperatives

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Abstract: In the last few lustrums, the literature has searched for more precise methods to assess the socio-economic importance of the Social and Solidarity Economy (SSE). On that basis, this article offers a new way of assessing the SSE impact, enhancing the understanding of the SSE potential for socio-economic transformation. An evolutionary micro–meso–macro and territorial theoretical framework is developed, utilizing, along with the assistance of a qualitative methodology, studies on the transformation promoted by the SSE on the sugar cane cluster of Veracruz (Mexico). The main results of the article are that the SSE boost beneficiaries, while the protagonists of the transformation cannot be defined a priori, but are rather conformed by transformation vectors promoted by the SSE: their values shared by a wide spectrum of actors, the SSE socio-economic and organizational specificities, and their rooting in the productive system. The fundamental conclusion of the article is the need for a “territorial-driven approach” of the SSE’s impact, compared to the dominant “stakeholder-driven approach”. The main limitations (and suggestions for future studies) are the empirical investigation of a single case, and the need to develop a qualitative and quantitative system of indicators of the transformative drive of SSE.

Keywords: social and solidarity economy; evolutionary approach; territorial-driven approach; agricultural cooperatives



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1. Introduction

In recent decades, an extensive literature has been developed to explain how to value and measure the socioeconomic importance of SSE (Social and Solidarity Economy) [1–7]. A part of this literature quantified the sets of SSE activities with a series of variables, such as production, employment, etc. This exercise has also been carried out at different levels on the reality of the SSE, covering individual initiatives (micro-level), initiatives in different sectors or regions (meso level), or the economic level as a whole (macro-level) [2,3,5,6]. The analysis underlying the SSE, measured in these terms, is very important, especially when its evolution over time is analyzed, showing some highly relevant dynamic aspects such as its greater resilience than capitalist companies when faced with crises, measured, for example, by their greater ability to maintain employment or production [8,9].

Nowadays, this way of measuring the significance of the SSE is only an indication that does not allow us to capture other aspects that acquire great importance in the projection of the SSE within the whole socio-economic system.

We will argue that SSE constitutes an essential transformation instrument for socioeconomic systems. However, this role goes beyond the scope of the SSE itself. Thus, to capture and measure this transformation potential, we need to understand how it contributes to, and drives, change on the path of socio-economic development.

This article will try to demonstrate the transformative potential in SSE by showing its ability to promote a more socially inclusive and environmentally friendly development path.

We have considered that analyzing the potential for transformation that SSE may possess, is not separate from the socio-economic structures in a social formation. Therefore, it is convenient to delimit the type of realities under study.

In this sense, although the analysis contained in this work could have a more general field of validity, the article will focus on the problems of Latin America and, more specifically, on a set of countries and regions that face important obstacles to their development. Such is the case of the different behaviors of SSE entities in the sugarcane cluster in Veracruz, Mexico.

Indeed, the article will pay special attention to a type of society in which the entities that are created following the legal forms of the SSE, especially cooperatives, are captured since their formation by the network of dominant political and economic actors.

Recently, however, this has not prevented some of these initiatives from developing in a spontaneous, endogenous, and territorial-rooted process, generating a new transformative path promoted by the SSE values. This process will be connected with other local movements and civil society, which have shown a huge transformation capacity [10–13]. This is the case, in particular, of a series of regions and clusters in Latin America that show a certain capacity to exhibit a more inclusive and environmentally sustainable development process [14].

In line with the latter, is important to clarify the different types of SSE entities that exist in the Veracruz sugarcane cluster and whose essential role will be analyzed in this article. In the first place, it must be said that in the sugar cane of Veracruz we have not found companies that had the legal form of cooperatives, surely for the reasons indicated above. However, we do find a new type of SMEs (small and medium-sized companies) organized almost strictly following cooperative principles, although without presenting the cooperative legal form. This is specifically true regarding firms such as Mastevia or Balandra Foundry both in Cordoba, Veracruz, México. Along with these firms, we also have two types of associations. On the one hand, the associations of sugarcane producers or sugarcane growers. While some of them are part of the politico-economic sugarcane system dominated by multinationals, other alternative associations have recently appeared that behave according to the principles of the SSE and that have developed a different strategy. Among the associations also stand out Asociación de Cañeros Independientes (ACI), and the UPV (Union of Piloncilleros de Veracruz); this last one has behavior similar to that of a second grade agri-food cooperative.

In this sense, the theoretical–empirical originality of the article lies in showing how, compared to the business model of the sugarcane cluster organized and dominated by multinationals, which has high participation in the sugar mills (sugarcane producing companies and derived from it), based on a standardized product and a plot that minimizes relationships and marginalizes local knowledge and actors, another alternative organization is possible. Indeed, another trajectory has emerged that tries to develop a differentiated product based on local relationships and knowledge.

In this context, this article offers in the following section a conceptual framework that will show the SSE capacity to promote a process of the clusters transformation in developing countries (particularly in Latin America).

To address this conceptual challenge, and this is the main theoretical contribution of the article, a micro–meso–macro evolutionary approach (initially conceptualized by Dopfer, Foster, and Potts [15,16] will be developed, in which these three different levels are defined in dynamic and structural terms, with meanings in some cases different from how they are usually understood. In a third section, we will use this framework to illustrate the case of the Veracruz sugarcane cluster, where the SSE is managing to promote the creation of a new path of inclusive and environmentally sustainable development. The leadership that a series of SSE entities exercises over a broader set of actors will be evidenced, thanks to the

existence of a series of world views and values shared by these actors, which are largely those of the SSE: cooperation, trust, acknowledgement, and transparency relationships. The article will end with a discussion and conclusions section.

The theoretical contribution of this article develops an evolutionary approach that articulates the micro and meso levels, allowing the derivation of a series of vectors for explaining an essentially spontaneous process of endogenous base transformation driven by SSE entities.

In the practical field, the capacity for self-organization of civil society led by the SSE is evident. Furthermore, this process may indeed have limitations in the absence of support from public administrations. However, it is no less true that this process of self-organization shows a series of behaviors and relationships that could constitute safe references (because they are rooted in the territory and the local actors themselves) for the definition of an alternative policy to promote an endogenous trajectory and development of the territories and clusters of Latin America.

2. Conceptual Framework and Methods

2.1. *Moving from a Stakeholder-Driven Approach to a Territorial-Driven Approach*

2.1.1. Evolutionary Roots of the Shift from the SSE Impact

We will start with the thought that, “the evaluation of the social economy reflects the role the social economy is expected to play in the development model and its transformation”, Bouchard [2]. Insisting on this same idea, Richez-Battesti [14,17] emphasizes that, “what is at stake with the evaluation is also—and above all the definition of the field of the SSE and its modes of regulation.”

Bouchard argues that diverse evaluation approaches are associated with different underlying theoretical approaches or paradigms. She connects the managerial and strategic perspective, the neo-institutionalist economics, and the institutionalist sociology perspective with different approaches to assessing the importance of the SSE [2]. In this sense, the emphasis of [2,17] on the transformation and modes of regulation that the SSE is capable of printing, is part of the latter institutionalist approach. Now, based on our perspective, it is key to complete this institutionalist sociology approach with an evolutionary approach, where retaining the sociological importance of power relations, and in the search for a more democratic and inclusive economic model, the contribution of the SSE to a process of change and transformation is inserted, where new actors, competencies, relationships, and values appear.

Both at the theoretical and empirical levels, the article focuses on the problem of clusters and territories. By cluster, we understand a network of companies connected by their link to the same value chain that participates in the production of a good, as well as a set, of activities of actors and support activities (universities, technology centers, service companies, etc.) within a more or less wide geographic space [18]. By territory, we understand a space socially constructed by the actors through their individual and collective interactions, and their interaction with the environment [19–22]. A key hypothesis of this article is that in the same movement, SSE entities enhance relations and territorial knowledge and could also contribute to developing the clusters that a territory hosts.

The SSE actors can promote a transformation in the clusters and territories in which they operate because, by involving a plurality of players with partially different competencies, relationships, and values, they are capable of promoting (through interaction with these other actors) the shift (territorial) from the micro to the meso level, and this shift is of vital importance for the effective institutionalization of individual SSE initiatives [2,23,24].

In this sense, an important literature advancement to evaluate the incidence of SSE is the work of Ebrahim and Rangan [4]. As they synthetically point out, “outputs don’t necessarily translate into outcomes, and outcomes don’t necessarily translate into impact”. What this means is that the true impact of SSE entities lies in the meso-sphere of the diffusion and institutionalization of individual (micro) initiatives. Now, to appreciate the true impact of the SSE on this meso level, we have to conceptualize how this meso

impact goes beyond the SSE entities themselves, and how this process is linked to the transformation mechanism associated with the SSE. For that purpose, first, we are going to formulate this general principle of transformation in the remainder of this section. Then, in the next section, it will be shown how the SSE gives direction and how this transformation process is supported in its productive territorial rooting, which precisely confers to the SSE its scope in terms of generating a path towards more inclusive and environmentally sustainable development.

We will begin by advancing the general element of the evolutionary foundation of the need for a territorial-driven approach to the impact of SSE. A characteristic that Saïd et al. [5] attribute to some quantitative approaches that try to assess the impact of SSE, is that of stakeholder-driven approaches. In other words, a static approach that seeks to assess the impact of the SSE by measuring the effects of its entities on the stakeholders (interest groups) [5]. With this approach, stakeholders are defined a priori. Now, from an evolutionary perspective, SSE initiatives generate ideas and innovations that in turn connect with other ideas and innovations, which likewise stimulate the development of new ones [25]. An emerging process of transformation and structural change is generated, which cannot be anticipated a priori [25–27]. The territory is expected to constitute a privileged space within which these chains of ideas, innovations, and connections are produced. Especially when it is reasonable to expect that the actors are going to be favored by interacting with other actors on these same terms, and which are also very close concerning their expectations, worldviews, and values [28]. Hence, in this article, we support the hypothesis that there is a need to assess the impact of SSE as territorial driven. Because, in coherence, with the open nature of the interaction and change in complex systems [26], the stakeholders will define themselves by the process of structural transformation itself, while they will also give it feedback. This is what we are going to conceptualize in more detail below with the help of the micro–meso–macro approach, but connecting it with the territorial roots of the SSE.

2.1.2. The Values of the SSE: Motor of Transformation and Basis of the Development Trajectory and Its Rooting in the Production System

The Micro–Meso Articulation

We are defending the hypothesis that in the context of clusters in developing countries, SSE may be the engine of a change in the dominant development model in the territory.

This development model consists of the emergence of new economic activities and a new development path in the territory [28]. To support this hypothesis, we developed an evolutionary approach that emphasizes the generation of micro-variety (actors, competencies, relationships, and values) at the heart of change [25,27,29–32]. Now, in the micro–meso–macro evolutionary approach [15,16] being defended, innovations and changes do not occur when they are generated by an entity or organization (micro), but through a meso-trajectory of generation, adoption, diffusion, and institutionalization of these innovations (meso-rule) in the set of entities or organizations that define a population. These meso-rules are new routines in the behavioral, cognitive, technological, and socio-organizational fields [15,16].

The macro-order is generated through the adjustment between different meso-trajectories. Therefore, the deployment of a meso-trajectory can destabilize it, which frequently does not happen because there is a set of institutions or meta-institutions that operate at a high level of abstraction (values, beliefs, etc.), which allow coordination behaviors, limiting the variation margins of the meso-trajectories, so that they are compatible within a macro-order [16,33,34].

From an evolutionary perspective, the macro-order supposes the existence of a behavior pattern and this can only happen when there is a structural coherence between the activities that make up this order [25]. This reasoning is very important to appreciate the macro level of incidence of SSE from a new perspective. The core of the approach that concerns us constitutes the passage from the micro to the meso. We will anticipate that it is

the internal heterogeneity of the aforementioned population, which can promote both the institutionalization of change and the transformation process itself.

In this sense, emphasis is placed on the need to focus on the capabilities of the SSE to reach the underlying problems (of inequality, discrimination, etc.) [4] or, as previously advanced, the need to institutionalize individual SSE initiatives [23]. In Latin America, Coraggio has pointed out that, “there is a clash between: (1) The urgent survival needs of the impoverished and excluded sectors, as well as the targeted public programs of individuals or small groups related to self-employment designed to deal with this urgent situation; and (2) The longer time frames required to give proper consideration to the possibilities of building a system of SSE and to allow for the cultural changes it entails.” Both levels are needed. At the very least it is necessary to intervene at the first level while keeping the second level in mind, to shift from a micro to a meso-level perspective (promoting articulation, complementarity, in territories, and communities)” (Coraggio) [24].

Our perspective also places the micro–meso articulation as being of vital importance for the SSE, but placing more emphasis on the dynamic and all-encompassing virtues of the SSE. In effect, we argue that the actors, competencies, relationships, and values of the SSE can promote a transformation in clusters and territories by promoting interaction between actors that are at the same time similar as well as different. This capacity of the SSE will be supported by two key elements. First, the ability of SSE values to bring together different players who share a series of world views and essential values in the face of the status quo, represented by the dominant actors [10,13,14,32,35]. These values are supported by a set of principles “involved in the institutionalization of new economic activities” [24]. Principles that go from the market or the in-depth use of power relations, which are usually used by the dominant actors [14,24,36], to other values more typical of the SSE, such as reciprocity, fair trade, redistribution, non-exploitation of work, non-extractive development, responsible consumption, the transformation of property relations [24], and the recognition of knowledge from other actors, transparency, trust, and non-discrimination [13]. Second, linking the SSE to the productive system gives it a potential capacity to transform the development model. Thus, for example, Coraggio [24] highlights that policies to stimulate the development of new forms of production should be seen as a necessary complement to redistributive policies.

The combination of both elements gives the SSE entities the ability (so far dismissed) to have an impact on the territory. It has been argued that the principles and values of the SSE lead them to commit to the needs of the community in which they operate. This can favor both a commitment to local development initiatives (which favors the inclusion of groups with difficulties/disadvantaged groups), as well as a predisposition to address environmental problems and to attract people committed to both, inclusiveness and equity, as well as to environmental sustainability [37,38]. Now, the connection with the productive systems in the framework of clusters in Latin America, means that there is an impact at a deeper level, from a structural perspective, in which the SSE and its integration in the territory can promote a process of change and transformation through a new development model. From this perspective, on the issue of inclusiveness, it is not only about showing the capacity of the SSE to develop programs and activities that incorporate people and groups with difficulties into employment and services. It is about showing that the SSE, because of its values, socio-economic, and organizational characteristics, promotes a shift towards a development model based on previously marginalized resources, actors, capacities, and relationships.

In the same way, these values and worldview, are what make a certain type of institutions (rules of the game) and coordination mechanisms between actors based on reciprocity, trust, recognition, and acceptance of grass-root knowledge (for example, a tacit character and based on the experience of the others) [13,36]. This then causes a type of embeddedness [39] and an organized (cognitive, organizational, and institutional) proximity between actors [20,21,40], which constitutes an essential condition for cooperation between

actors so they can introduce innovations in industrial ecology (the use of waste from some productive activities as inputs to others, as occurs in natural ecosystems) [13,41,42].

In this section, we have shown that the essential drivers of micro–meso articulation and the basis of the role of the SSE to drive this process are: the generation of micro-diversity that SSE entities can set in motion and the capacity of the SSE itself to bring together various actors, linked in turn, to the nature of their values and the roots of the SSE in the production system. Both engines define the transformative capacity of the SSE, which is at the core of this article. Now, these two engines operate concretely through their articulation with the organizational characteristics of the SSE, and this will allow us to deduce a series of transformation channels promoted by the SSE.

The Channels of Transformation Carried by the SSE in Terms of Territorial Networks

It should be noted, on the one hand, the link between values and principles of the SSE are shared by actors who do not always belong to the SSE, but who are marginalized (in various ways) by the status quo, and, on the other hand, the development of SSE's innovative initiatives from the production system itself. These two elements have another essential implication from the (meso) perspective of the institutionalization process of the SSE's innovations [23]. It is about the SSE capacity to promote the development of a whole series of practice, epistemic, and political communities among different actors capable to spread transformative impulses from the micro to the meso level, creating a transformative territorial network [13,25]. This ability of the SSE proceeds in three essential ways. First, the organization of the SSE into second- and higher-degree entities gives them a great capacity to spread the new routines among all the other SSE entities that are related to each other [43,44]. This is an area in which agricultural cooperatives have played an essential role because they constitute the paradigm of commitment to the community and the territory highlighted above. This commitment leads a cooperative, concerning its members, or in a second-degree cooperative concerning its base cooperatives, to exercise its *voice* in the sense of Hirschman [45]. For example, when the production of the members or the base cooperatives, respectively do not meet the quality standards required for the successful commercialization of agricultural production, the cooperatives do not suspend these members, or these base cooperatives (*exit*), nor do they maintain the relationship as if there was no problem (*loyalty*). On the contrary, what cooperatives do is express (*voice*) their dissatisfaction with the situation and systematically demand, as well as aid, members to improve their routines and achievements. This enables the cooperatives and grass-root cooperatives to raise the skills and capacity for innovation of their members [43]. However, in the framework of social and political realities where cooperatives are systematically captured and denatured by the dominant political-economic powers, other collective entities such as associations could play a similar role.

Second, through the specific resources and know-how of the territory. The commitment of cooperatives and other entities of the SSE with the community and the territory, places them in excellent condition to mobilize a set of resources that are the result of collective-learning processes developed by local actors when dealing with productive, organizational, and commercial problems [19,46], as well as the in-house know-how developed by the actors who actively participate in this process. It is a process in which the cooperatives and other entities of the SSE reinforce the ties of their organizations with the community and the territory through a whole web of social relations and social capital linked overall to the productive system [47].

Third, due to the richness of inter-sectoral relationships that innovative actors frequently carry in clusters of developing countries. This is usually associated with the development of a great diversity of venture activities in the territory by the most proactive and critical actors with the status quo, as a way to face uncertainty and improve their resilience. The growth of this productive diversity makes the same (more dynamic) local actors belong to and vitalize different practice and epistemic communities, which operate with different values, organizations, and knowledge. This process is going to have a special

scope in terms of creating a space of structural coherence when the activities of these pioneering actors develop simultaneously, not only in different links of the sugar value chain but also in various value chain activities (of clusters and economic sectors) [48].

Succinctly, we understand from the above, the need to move from a stakeholder driven to a territorial-driven evaluation logic. We mean that the territory itself channels an essentially “meso-generating process” of a whole set of connections and interactions between actors that diffuse and amplify in complexity the innovative SSE initiatives, toward: (a) other SSE entities; (b) other entities that behave with the same principles and values or (c) other entities that only share certain world views and values; and (d) diffusion of routines or innovations by exaptation, this is to serve a different objective for which it was originally developed [49]. However, we should not underestimate “the capacity of appropriation and co-optation of any forms of innovation by corporate power in the dominant food system” (Rossi et al.) [2,50], and that could completely neutralize this transformative power of innovation by exaptation carried out by entities other than SSEs. All this makes it difficult to define a priori the stakeholders that ultimately benefit from the impact of the SSE.

The Characterization of the Generation Process of New Connections

Now, this creative process of generating new connections is a process with fewer features of indeterminacy than those contemplated in the general explanation of Metcalfe [20]. This is because in our framework, as in the reality that it is intended to represent, there is polarization and fragmentation (social, political, and economic) that causes the actors to only selectively engage with certain actors. The shared values then are those that define the top priority when selecting the actors with whom they will be preferentially linked.

This process of expansion of innovations in the territory, only partially indeterminate, allows us to see the meaning of the macro-order in a new light. Indeed, we have highlighted above that the deployment of meso-rules by meso-trajectories generates tensions, but also evolutionary opportunities [44], in other meso-rules and meso-trajectories and can destabilize the macro-order that links the different meso-rules [16]. We have also seen the importance of a series of institutions that operate at a high level of abstraction (meta-institutions) to regulate the macro-order, thanks to the establishment of certain limits to meso changes so that they do not destabilize the macro-order [16]. “The [macro] order produces a pattern” [7,25], in such a way that there must be a certain structural fit between the meso-rules so that a minimum coherence is generated, which is often very complex. This is where the question of intermediary actors that can generate a space of confluence between different development paths arises [28], that in regions and clusters of developing regions are often the reflection of different meso-rules and meso-trajectories. This is also a crucial aspect from the perspective of shaping spaces for overcoming socio-economic fragmentation, capable of leading to the shaping of more integrated and less polarized realities, and therefore more coherent from a structural perspective.

This space capable of expanding to the macro-order, understood in a structural sense, opens a new field of research for the assessment of the impact of the SSE. For example, given the predominance of extractive behaviors [24], and little concern for efficiency in the clusters of Latin America [32], the attitudes that seek better use of resources through the industrial ecology could generate a broad cross-sectorial space. This process could stimulate a movement shared by various actors (such as companies, technicians, researchers, and public officials) at the system’s margin, those who are uncomfortable with the status quo and are willing to change it [14]. This movement could contribute to the territorial extension of some of the new routines and innovations driven by the SSE values and defended by SSE entities and other leading actors of the network, and the progressive shaping of discourse in favor of a transformative frame [51], more extensive, with more options to sustainably transform the cluster. Nonetheless, the synchronous coexistence of different discourses or even of different socio-technical micro-systems is highly probable.

2.2. Methodology and Information Sources

The empirical objective of this article is to explain the transformation process of the Veracruz sugarcane cluster and identify the actors, competencies, and relationships that drive this process. The central hypothesis to be shown is that the scope of the SSE goes far beyond the importance and presence of the entities with a formal legal structure of SSE. Consequently, a reality in which the dominant (public and private) actors capture some lawful entities of the SSE, defines an exceptional case to contrast this hypothesis. The research is based on a qualitative methodology with field visits and 110 in-depth personal interviews conducted between 2017 and 2021. A closed questionnaire was used for 43 key informants (23 experts, 8 local politicians, and 12 researchers) and an open questionnaire for 67 stakeholders (28 farmers, 4 farmer associations, 9 sugar mills, 16 piloncillo makers and 10 entrepreneurs). A pilot study was conducted to check the relevance of the questions by interviewing five reliable actors. In general, it was sought to delve into the origin of the business, their markets, the internal and external relations, and the nature of their networks and innovations.

The sample intentionally includes all the sugarcane players. However, considering the objective of this research, the sample gives special importance to the actors that belong to the SSE (Union of Piloncilleros de Veracruz—UPV- and Asociación de Cañeros Independientes—ACI-) and to the emerging business initiatives that belong to the ESS, or that are organized following the principles of the ESS. The group of experts, based on their reliability and leadership, are businessmen, professionals, public servants, researchers, and university professors.

The sample was made using the networking or snowball technique that increased with the contacts of the interviewees until the saturation of the information was achieved.

The interviews were audio-recorded and transcribed to obtain the results by making a systematic language analysis. It was sought to clarify: who are the actors that lead the generation and diffusion of innovations (social, environmental); the type of link (direct or indirect) that they have with the SSE, and their involvement in the innovation processes in the territory. Special attention was also paid to the processes of generation of organized proximity and shared identities between actors, in so far as they can constitute the basis for the creation of networks of diverse nature and scope between them. The main blocks of questions directed towards the different actors in the value chain were the following. Origin, motivation, and form of organization of the entrepreneurial initiative. Main products and markets. Leading innovations developed in recent years and actors participating in them. Main forms of cooperation, main networks with other companies and institutions, main principles and values that guide business activity, and main elements that help bring them closer to or distance them from other actors in the territory. Role of insertion in markets and external value chains as a mechanism for consolidating and/or changing existing routines in the sugarcane cluster.

3. Results

3.1. SSE as a Driver of Structural Change in the Sugarcane Cluster in Veracruz (Mexico)

3.1.1. Historic Roots

Historically, the high mountain region in Veracruz, Mexico, has stood out since colonial times for its economic importance since the sugarcane plantation was favored, which is a sector that has been the economic and social engine of this territory. The VC (value chain) of sugarcane extends to consumers in the countries that make up the United States–Mexico–Canada Agreement (USMCA), but sugar production in this region is sold as a commodity, without adding more value to the GVC (global value chain). Currently, it has a crowded rural-urban territory with 65 urban centers, abundant water, and biodiversity [13,52].

The purpose of the USMCA, the extension of the North American Free Trade Agreement (NAFTA), is to give the region advantages to compete with the Asian giants, incorporating some axes of the Circular Economy and the Sustainable Development Goals (ODS).

There is also the challenge of stopping corruption. The relevance of the economic actors in this territory to face these challenges is set out below.

3.1.2. Internal and External Cluster Organization: The Formation of Two Polar Networks

The (external) insertion of the cluster as a whole in USMCA has contributed both to the consolidation of a *conservative* network and to the emergence of a transformative network [13]. Now, we can better understand these networks if we take into account that they diverge both in their organization within the Veracruz cluster and in the organization of their relations with the outside world.

External Dependency and Internal Hierarchical Organization: The Conservative Network

The integration of the Mexican sugar sector into NAFTA in 1990 has simultaneously defined two radically different socio-economic realities. On the one hand, the vertical integration to the GVCs, driven by powerful multinational actors, “has had a strong negative impact on agricultural products, on the quality of employment and on the environment” [53], accelerating migration and fragmenting knowledge that drives innovations. These large multinational groups operate in many other activities, including the food and beverage industry, and have taken important positions in the traditional sugarcane production mills (with an increase in control over agricultural production) and maintain close ties with the public powers. They also have solid connections with universities and national research centers linked to sugarcane cultivation, forming a *conservative network*. This network focuses its innovations on the field of agricultural production and, within it, on scientific–technological aspects. In this way, local knowledge based on experience is largely neglected, marginalizing the actors who possess it, and making it difficult for these local actors to have access to new scientific–technological knowledge [13].

On the other hand, aided by globalization, different Mexican SMEs have appeared, benefiting from the territory’s competitive advantage to compete on the international market with more specialized products and services. This way, a *transformative network* will be formed around this local resource that is opposed to the status quo represented by the conservative network. As a consequence of the greater circulation of local resources, the value chain expands within the territory [13]. From 1990, the Mexican sugar sector was “cartelized”, guarantee prices for sugar cane and exchange quotas for sweeteners (cane sugar and corn syrup) were set between countries [54]. Government actions (laws and policies) are shaped by the interests of different networks and levels of power. The conservative network is made up of the large corporate groups highly integrated into globalization (Cornbelt, sugar industry, and US oil refineries). National business groups and organized groups with great social and political power are also incorporated into this network, such as farmers’ associations (Confederación Nacional Campesina—CNC- and Confederación Nacional de Propietarios Rurales—CNPR-), sometimes infiltrated by drug trafficking. This power dynamic in the conservative network shows little commitment to health (healthy food) and fair trade, key dimensions for socio-technical change. By being isolated from these objectives (socio-technical and environmental), and by ignoring the inclusion of new actors and knowledge, the opportunity of insertion into the territory and in other economic sectors of the sugar cane cultivation and the sugar mills is reduced [13]. In the last two years, the CNC has managed to free itself from its traditional ties to the PRI (Partido Revolucionario Institucional) and now acts with notable autonomy and independence from the political parties.

The opportunities to promote inclusion through cooperative initiatives (especially agricultural ones), and other forms of SSE are captured since their formation by some actors of this conservative network, to divert public money and for electoral purposes: “federal deputies ask us for 10% or up to 50% of the money destined to the formation of agricultural cooperatives” (interviews with the cane, coffee, and papaya producers 2016–2020).

In terms of Industrial Ecology initiatives within this conservative network, they are based on inter-industrial relationships, such as the use of biomass to produce electricity for

self-consumption and the usage of some by-products as inputs in other establishments to produce feed and fertilizers [55]. However, these inter-industrial relationships occur within the same company [13]. This together with the vertical integration of the VC favors the concentration of public spending on R + D + i in a national scientific–technological–political system, which restricts its scope of research to a very limited field. The network of actors that make up this system, includes the actors aforementioned and the national public research centers, public universities, main political parties, and government officials. So, as the sugarcane crop is basically destined for sweetener production, research in this only line is carried out, but its creation potential of other products is not recognized (biodegradable containers, paper, building, fabrics, medicines, solvents, etc.) that may include opportunities for specialization and entrepreneurship supported by the resources (human and natural) within the territory. This limits the inter-enterprise exchanges that stimulate socio-organizational innovations, restricts the opportunities to the now marginalized actors, and the scope of environmental protection [13,36] (see Table 1).

Table 1. Business behavior according to subsectors of the value chain in the conservative and transformative networks (results expressed in %).

| Different Areas of Business Behavior | | Total Firms in Absolute Values 54 | Group of Conservative Actors AV 32 | | | | Group of Innovative and Intermediate Actors AV 22 | | | |
|---|--|-----------------------------------|------------------------------------|---------------------------------|------------------|---------------------------|---|---------------------|------------------|----------------------------|
| | | | Agricultural Suppliers AV: 1 | Small Farmers Ejidatarios AV 21 | Sugar Mills AV 6 | Sugar Mills Services AV 4 | Sugar Services & Trade AV 2 | Medium Farmers AV 8 | Sugar Mills AV 2 | Piloncillo Producers AV 10 |
| Kind of products and services | Generic | 77.8 | 100.0 | 100.0 | 100.0 | 100.0 | 0.0 | 100.0 | 100 | 0.0 |
| | Specialised | 40.7 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 100 | 100.0 |
| Origin of companies | Local | 81.5 | 0.0 | 100.0 | 0.0 | 25.0 | 100.0 | 100.0 | 100 | 100.0 |
| | National | 14.8 | 100.0 | 0.0 | 66.6 | 75.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | International | 3.7 | 0.0 | 0.0 | 33.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sales markets for products and services | National | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 0.0 | 100.0 | 100.0 | 100.0 |
| | NAFTA | 50.0 | 0.0 | 0.0 | 100.0 | 0.0 | 50.0 | 100.0 | 100.0 | 100.0 |
| | Resto of the world | 13.0 | 0.0 | 0.0 | 100.0 | 0.0 | 50.0 | 0.0 | 0 | 0.0 |
| Types of innovation | On process or product | 50.0 | 0.0 | 0.0 | 15.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | On Market | 37.03 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 100.0 |
| | Ecological of technological kind | 90.9 | 100.0 | 100.0 | 100.0 | 0.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | Ecological of social and organizational kind | 25.9 | 0.0 | 0.0 | 15.0 | 0.0 | 100.0 | 0.0 | 100.0 | 100.0 |

Source: Own made, based on interviews with enterprises (2017–2020) and Gallego and Tapia 2021.

The Spur to Change from a Transformative Network by the Actors That Drive the SSE Values

Actors and Values

Dissimilar to the conservative network dynamics by the large and powerful political and business groups, a territorial transformative network emerges [13,14] The diffusion effect of this transformative net is vital because, unlike the powerful lobbies of the conservative network, they do not depend so much on political–economic negotiation power, as on their ability to recruit new actors and locally rooted knowledge, and from their relationships with each other. The actors that form this transformative network are small

and medium farmers, local associations, and local SMEs (suppliers of sugarcane, biomass, raw material and packaging, biofuel, healthy and/or traditional foods, export services, administration, recycling, IT, and logistics for resident companies), as well as regional universities that favor the integration of local knowledge, preparing professions ingrained in territorial needs, with a more technical profile. This group of actors spearheads specialized services and products as well as innovation activities ecological of social and organizational type (see Table 1). Although many of these SMEs are not formally entities of the SSE; in fact, they follow the principles of internal work organization of the SSE (see Table 2). These ventures assume horizontal and non-hierarchical forms in their structure, so then stimulate the internal participation of all members (transparency and cooperation), placing them sociologically very close to the SSE (SMEs Interviews 2017–2020).

Table 2. Different democratic and SSE values appreciation.

| | Cooperation | Trust | Capacities Acknowl- edgement | Transparency | Influence Re- lationships |
|--|-------------|-------|------------------------------------|--------------|------------------------------|
| Actors total on absolute values (AV): 45 | 15.6 | 17.8 | 17.8 | 55.6 | 24.4 |
| (A) Government actors AV: 4 | | | | | |
| CONADESUCA CIDCA SEP City officials | 25.0 | 0.0 | 25.0 | 0.0 | 0.0 |
| (B) Group of conservative actors AV: 34 | | | | | |
| Agricultural supplier producers and services AV 28 | 0.0 | 14.2 | 7.1 | 35.7 | 21.42 |
| Sugar mills AV: 6 | 0.0 | 0.0 | 0.0 | 33.3 | 50.0 |
| (C) Group of Innovative actors AV: 7 | | | | | |
| Services, trade & piloncillo makers | 85.7 | 57.1 | 71.4 | 71.4 | 28.6 |

Source: Own made, based on interviews with actors (2017–2020).

The relationships between the sugar cane cluster's stakeholders make up two different networks: the dominant conservative network includes transnational and national sugar groups that are in charge of lobbying political actors and main associations (CNIAA, ejidatarios and Confederación Nacional de Propietarios Rurales—CNPR-), and promoting agricultural research with R&D national system (see Table 3).

The actors in the transformative network are cross-linked with other economic sectors, by affinity mainly with groups more committed to egalitarian values (cooperation, trust, acknowledgement of capacities and transparency). They are the Asociación de Cañeros Independientes (ACI), Unión de Piloncilleros de Veracruz (UPV), local SMEs, medium farmers, some practice and epistemic communities, and local researchers. In this second network, the proximity (geographic, social, organizational, and ethical) generates inclusive innovations, with actors and knowledge rooted in the territory and mechanisms of agglutination around environment protection [13].

A group of intermediate actors work with both networks, they are the independent sugar mills, SMEs, universities, and researchers, all locally rooted (see Figure 1).

Table 3. Relations of R&D system with the conservative, intermediate and innovative network actors.

| Actors in the Scientific and Technological System | Group of Conservative Actors | | | | Group of Innovative and Intermediate Actors | | | |
|---|--|---|---|---|--|---|---|---|
| | Agricultural Suppliers | Small Farmers Ejidatarios | National Sugar Mills and CNIAA | Sugar Mills Services | Sugar Services and Trade | Medium Farmers | Local Sugar Mills | Piloncillo Producers |
| | Farmers associations CNC Y CNPR | | | | | | | |
| |  no relationships | | | |  with relationships | | | |
| NATIONAL GOVERNMENTAL SCIENTIFIC AND TECHNOLOGICAL INSTITUTIONS | | | | | | | | |
| CONADESUCA (*) |  |  |  |  |  |  |  |  |
| CIDCA (*) |  |  |  |  |  |  |  |  |
| INIFAP (*) |  |  |  |  |  |  |  |  |
| COLPOS (*) |  |  |  |  |  |  |  |  |
| UNIVERSITIES AND COLLEGES (REGIONAL) | | | | | | | | |
| VERACRUZ UNIVERSITY Agricultural Sciences college |  |  |  |  |  |  |  |  |
| VERACRUZ UNIVERSITY Chemical sciences college |  |  |  |  |  |  |  |  |
| ITESM (*) |  |  |  |  |  |  |  |  |
| UTCV (*) |  |  |  |  |  |  |  |  |
| * CNIAA | Cámara Nacional de las Industrias Azucarera y Alcohólica National Chamber of the Sugar and Alcohol Industries | | | | | | | |
| * CONADESUCA | Cámara Nacional de las Industrias Azucarera y Alcohólica National Chamber of the Sugar and Alcohol Industries | | | | | | | |
| * CIDCA | Centro de Investigación y Desarrollo de la Caña de Azúcar Sugarcane Research and Development Center | | | | | | | |
| * INIFAP | Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias National Institute of Forestry, Agricultural and Livestock Research | | | | | | | |
| * COLPOS | Colegio de Postgraduados en ciencias agrícolas Postgraduate College of Agricultural Sciences | | | | | | | |
| * ITESM | Instituto Tecnológico de Estudios Superiores de Monterrey Technological Institute of Higher Studies of Monterrey | | | | | | | |
| * UTCV | Universidad Tecnológica del Centro de Veracruz Technological University of the Center of Veracruz | | | | | | | |

Source: Own made, based on interviews with actors (2017–2020). * refers to the name of the institution.

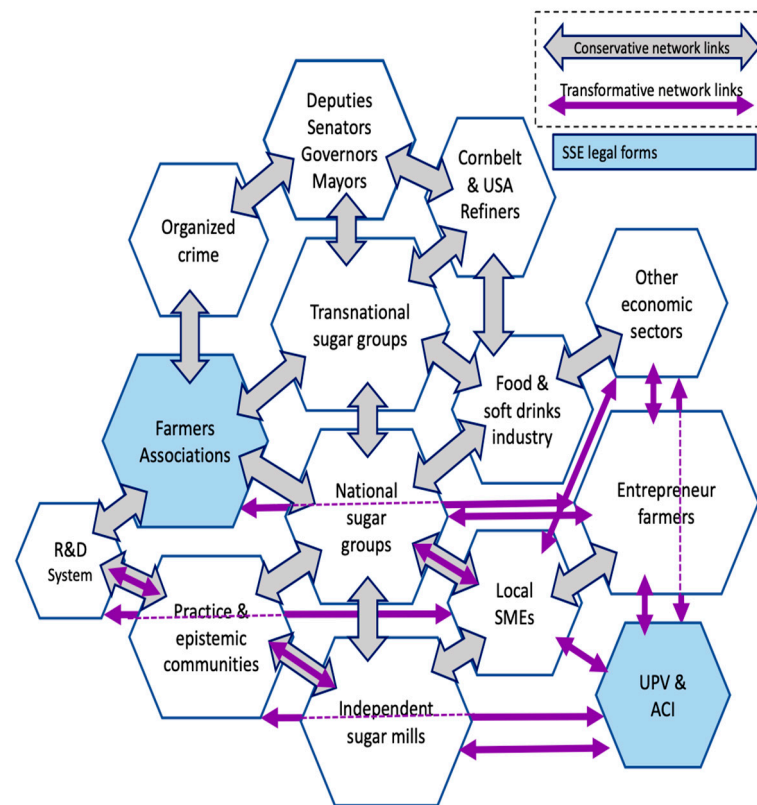


Figure 1. The limited scope of SSE legal form in the conservative and transformative networks.

Figure 2 shows the same network map, with the links of meso rules diffusion through the different mechanisms (values and organizational principles) of the SSE. It also shows the differences between the two groups of SSE entities (one made up with farmers associations belonging to the conservative network, and the other with UPV and ACI belonging to the transformative network) (see Figure 2).

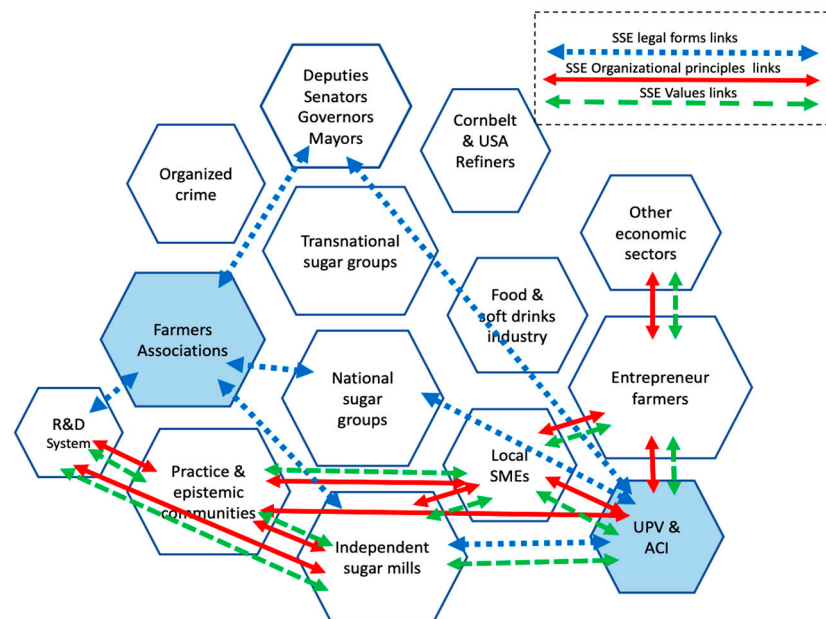


Figure 2. Links of meso rules diffusion through the different mechanisms: the expanded scope of the SEE entities. Source: Own made.

The Emergence of the Shorter Supply Chain

Linked by this vision on proximity and trust, members of SSE local associations, (such as the Unión de Piloncilleros de Veracruz (UPV) and the Asociación de Cañeros Independientes (ACI) and other actors who are not part of the SSE, but who share some of its principles and values, are connected. The actors meet, organize, and offer their goods and services among themselves, creating a shorter supply chain and a more circular sustainable (socially, environmentally, and economically) development process within the territory.

The UPV was created in 2005 with approximately 200 medium-sized cane producers/owners from the municipalities of Huatusco and Zentla Veracruz. They are artisan manufacturers of piloncillo (artisan sweet) that saw the need to rely on a quality standard/certification for their manufacture. This standard/certification requires that 100% pure cane juice is used to obtain a culturally recognized product of high nutritional quality, using renewable energy, thereby creating a cycle that protects the ecosystem. “To leave a better planet for our children” (interview with a piloncillo maker, 2018). This statement shows the commitment with the territory as a key to the cultural and institutional proximity among local actors. The associates are professionals and entrepreneurs who grow sugar cane and, unlike the small owners (ejidatarios), obtain better yields in their crops, and hire harvest groups (workers who organize informally). In this way, they not only disseminate the demands for improvement and the obligation to comply with a series of norms and standards (meso-rules) for all members of the association following the operating model of agricultural cooperatives, but they also push to improve the groups of workers who run as wage earners for a significant number of farmers (inclusiveness). As we will see below, the piloncillo makers also operate and improve other areas of the production, marketing, and the sugar cane value chain and its derivatives. Jointly they diversify their yields with other crops, livestock, and trees to serve specialized markets that demand quality and natural products (environmental innovation). This association enabled them to take advantage of their personal relationships (neighbors, relatives, and colleagues) and cultural identity (most are descendants of Italian migrants or their neighbors), coordinating their knowledge and vision of development to solve the problems they are faced with (intermediaries, health, environment, transparency, employment, security, etc.). The partners strengthen the density of their relationships by including some small farmers (ejidatarios) who share this vision, and expand into a series of activities (commerce, transportation, leisure, and services) that broaden the value chain within the territory. At the same time, through the USMCA, they are engaged with markets, practice and epistemic communities in the USA and the rest of the world, updating their formal and empirical know-how. Driven by the same values (trust, cooperation, and transparency) and vision that brings together actors of the transforming network, and based on proximity (geographical, social, organizational, and ethical), small and medium-sized sugarcane producers, tired of the corruption and the few benefits that they obtain from being forced to depend on one of the main producer associations (Comisión Nacional Campesina—CNC- y CNPR, which belongs to the Institutional Revolutionary Party (PRI)), join independent associations [13].

For example, in the municipalities of Omealca Veracruz and its surroundings, the ACI was created with the support of another political party. The purpose of this association was to provide greater transparency over the management of the resources that are used to improve the harvest yields (reduction in the waiting time of the trucks that transport the cane from the fields to the batey to unload them, detection of pests, the price of implements and products for till and harvest, shared load transport, etc.) [13]. The ACI also coordinates health campaigns, scholarships for students, sports tournaments, and participates in the local religious festivals.

It must also be taken into account that Mexico’s insertion into NAFTA and later into the USMCA, makes the actors from the other two more developed countries of the agreement (especially the USA) monitor the behaviors of the Mexican actors with whom they cooperate. Thus, recently the car manufacturers of the USA filed a complaint against

the non-transparent practices of Mexican unions in this sector, which has led to a radical change in union representation in this sector. Everything points in the direction that a similar process could be taking place in the sugarcane cluster. They are, therefore, facing an external exercise of the *voice* in the presence of the behaviors considered inappropriate by the Mexican partners belonging to the same network. By forcing a change in the routines of some actors (associations) of the conservative network of the cluster, they can also change the framework of the relationships within the transforming network as well as the relationships between both networks. In effect, on the one hand, they represent support for the change in routines already initiated by some actors within the transforming network. We are thinking, for example, of the emergence of the ACI, which, as we have seen, came about due to the dissatisfaction of many producers concerning the other traditional associations integrated into the conservative network. On the other hand, it can turn these newly emerged associations into references of their peers in the conservative network. Thus, this process can bring about, unintentionally, external actors as vectors of change and external intermediaries that contribute to the creation of new meeting space (transparent and trustworthy) between different networks and, consequently, to the expansion of a structural coherent space meso–macro.

The ambivalent role of the insertion into the GVC and, in particular, into NAFTA and USMCA, based on the dynamics of change in the sugarcane cluster derived from all of the above. The insertion into groups with interests in other sectors (fuel, food, beverages, etc.) and the encouragement of vertical integration around the mills generates inertia, because it minimizes the interaction with other actors and with local forms of knowledge and reinforces the actors and dominant routines of the conservative network. However, as some of these routines of its Mexican partners go against their economic interests, the external actors react by becoming determined agents of change and with a reach that can transcend the conservative network itself.

The Role of Intermediate Actors

The transformative net integration includes actors that can be considered intermediaries between the two polar networks (local independent mills—San José de Abajo and Motzorongo-, R&D system, and SMEs from other regions and other sectors). The double actors that make up this intermediate network are organized crosswise and horizontally, they create relationships with other communities of practice and epistemic communities and markets that sometimes coincide, but often are different from the relationships that the other two networks have. By including local knowledge, they carry out their research, with local universities, with their suppliers, other professionals, and with other sectors and countries. The processes of these actors are also more transparent and specialized, using and developing local resources (human and material), which include a greater diversity of activities and, as a result, the products are more specialized and comply with international quality standards (SMEs interviews 2018). Although the innovations that are produced here have an impact on the territory, very slowly they can reach diffusion/transmission (meso) in the context of violence and corruption that prevails in the territory. That is why, these actors strengthen their relationships in safe spaces, such as in local events (sports, religious, and cultural), school, or family, “where the attendees are well known and for a long time” (interview with a manager of independent sugar mill, 2018). Along with this intermediation work that some actors can often carry out on an individual basis, it is also important to highlight the special capacity to take on this role of intermediaries between polar networks played by some actors integrated into collective entities.

In this sense, along with the leading piloncillo makers who play a key role in the dissemination of norms and standards among other piloncillo makers, but who are much more advanced than the vast majority of small owners (ejidatarios), there are other piloncillo makers who are more followers than leaders who can also play an important role. In effect, this condition of followers makes them suitable references for some restless ejidatarios who would like to modernize their productive and commercial practices but in a non-disruptive way. This discussion shows that in this case, the conditions are optimal

for a perfect combination to be made between the degree of homophily (similarity) and heterophily (difference) among actors. This is key so that the actors involved are similar enough to be able to imitate one another but are also sufficiently different so that information and new routines can flow between them [56]. Some non-leading piloncillo makers would be imitated by some proactive ejidatarios, which would actually provide positive feedback on an important kind of actor in the conservative network. Now, in addition to this combination of similarity/difference between the actors, which encourages the dissemination of innovations of the two networks, there is another element that is vital in the ability of the actors to bridge between both network groups especially linked to agricultural production. It is that agricultural production best represents the structural bases of the productive system, where the key aspects of inequality, discrimination, and environmental problems will be defined, as well as the terrain where to most effectively attack all these imbalances.

4. Discussion and Conclusions

This article is part of recent works that have defended the SSE's capacity to transform the economic model [2] and the institutions of socio-economic regulation [17] as a starting point and nucleus of assessment of the importance of the SSE. In this case, our article presents itself as a novelty, in that it adopts an evolutionary and territorial perspective. This allows us to see in a new light this transformation capacity of the SSE and, consequently, the way to value and measure it. Thus, it is a question of deepening the research line opened by the works that have emphasized the importance of assessing the SSE's incidence beyond the direct weight that their entities have [4], the analyses that highlight the importance of the transition from the micro to the meso [4,5,24], or even the key role of its institutionalization [23].

This discussion section and conclusions will focus on this transformation capacity of the SSE territory, highlighting three dimensions of the process: (a) the territorial-driven approach; (b) the role of meso dynamic; and (c) the economic policy perspective.

Regarding the first aspect, what differentiates our article from those works is that it defends and provides evidence in favor of the hypothesis that the SSE transformation capacity goes beyond the importance of its entities, but its path cannot be limited a priori to stakeholders (interest groups), this being the "stakeholder-driven approach" [5]. In effect, we advocate a "territorial-driven approach" because we consider (as was theoretically and empirically evidenced) that the SSE effective field of influence (and, consequently, the stakeholders) cannot be defined a priori but are the result of a creative and open process of interaction of ideas, innovations, and connections [25] driven by the territory itself. However, because it is guided by the territory, it is not an indeterminate process, as Metcalfe [25] argues, but only partially indeterminate. Indeed, it is shown that the SSE values are what allow it to expand its sphere of action, through a "transformative network" creation, which encompasses many more actors than the formal SSE entities, but it is selective. In other words, the cumulative sequences of innovations and connections are essentially limited to actors who share worldviews and values, although these too are transformed by the process. This transformative network demonstrates the capacity of local actors to challenge the capture of SSE entities by the established political-economic network [10,32,36,57]. This process is possible because SSE's entities and other entities that do not have the legal SSE form, but follow their routines and principles of organization, are capable of generating creative processes around themselves. This includes not only innovations generation but also their diffusion among a wide spectrum of actors in the territory. These actors are progressively enrolled in the new transformative network [13]. This enrollment occurs through a set of communities of practice, epistemic, and political, which are based on (and contribute to extend) shared expectations, worldview, and values. In addition, this process supports the embedding of the SSE in the production system. This means that inclusive and environmental innovations (for example, industrial ecology) have a greater scope than has been considered so far in the literature. Indeed, as the Veracruz sugarcane

case shows, inclusive innovation allows actors to emerge and enroll in the transformative network, whose resources, knowledge, and relationships have been marginalized from the productive system until now. A transformation that goes far beyond redistributive processes in the form of helping disadvantaged actors [24]. This transformative network that was formed in Veracruz also promotes the adoption of industrial ecology innovations through inter-sectoral cooperation between actors based on organized proximity [13]. Ultimately, it is the endogenous linkage of the SSE that gives it this enormous, and at the same time, open potential for territorial transformation. However, the development of a micro–meso–macro approach allows us to advance our understanding of the (dynamic) forces that guide this process.

In fact, and as a second highlight of the article, the micro–meso–macro approach that we have followed, and whose development we are trying to contribute in this article, has argued that changes occur in the meso domain; that is, while a new rule (routine or innovation) is diffused among the entities of the same nature that make up a population [15,16]. Now, based on our article, it is possible to defend the idea that the population of entities cannot be defined a priori, but rather is defined with the process of generation and diffusion of innovation (meso-rule). Hence, the need for a territorial-driven approach to understanding the ultimate reach of the SSE, and also, the possibility of building a typology of mechanisms for the diffusion of innovation from the SSE that could expand the number of actors (population) who adopt the innovations even beyond the area of reach of the SSE entities. In this sense, it has been possible to demonstrate the strategic role of several agricultural associations and other entities that follow the principles of organization of the SSE in the dissemination of new routines, and the formation of a broad transformative network that houses a large number of actors that end up being in the orbit of the ESS. Therefore, we can conclude that as the meso-rule that originated in the SSE spreads to increasingly different actors, the greater, is also the structural (macro), scope of the diffusion and institutionalization of the meso-rule and, therefore, its impact is also more comprehensive. Following this reasoning, we expose an inclusion effect associated with: (1) the promotion of activities based on new organizational principles; (2) the mobilization of knowledge, which by itself, is marginalized by the dominant network; (3) the use of proximity relationships between actors; and (4) a key aspect that has not been very prominent until now, and that causes our work to the surface, is that through the simultaneous affiliation of the same entrepreneurs to several very different communities of practice, can generate a cross-sectional diffusion of some meso-rules. While this process could destabilize the macro-order [16], and generate opportunities in other areas [44], it could also broaden the scope of the transformative process and extend along with it the macro-order from a structural perspective. Indeed, through the dissemination of the meso-rule, new spaces of structural coherence are opened between productive activities that are part of the same value chain or different value chains that intersect at some points.

In the following Table 4, we present some basic aspects of this theoretical framework, connecting the specific features and actors of sugarcane with a typology of mechanisms of diffusion, proximity, and transmission of the meso rules from the entities of the SSE. Explaining the possible transformative scope in the specific case of the Veracruz sugarcane cluster.

The article offers some clues to advance future work with more accurate measurements of the transforming scope of the ESS. This constitutes a contribution to the development of a micro–meso–macro approach. The most important issue is that the article allows us to derive from a double conceptual and empirical perspective, a series of guiding criteria for the selection and definition of a system of indicators. At the micro level, it is about putting the focus on the diversity and heterogeneity of the actors (new and already established) as key factors in generating innovations. The SSE stand out in this regard for their innovative social and environmental dynamism, their commitment to the territory and their link to the productive system. At the meso level, the indicator selection criteria must capture the various mechanisms for the diffusion of micro innovations. The organizational advantages

of some entities of the SSE, the predicament of its principles and values outside its own legal field, especially in contexts of violence, inequality, and fragmentation of knowledge, as well as the role of the practice and epistemic communities in the diffusion of innovations among the entities of the same population, can be essential. Third, at the level of macro indicators of structural coherence, two key criteria emerge from our article. It is about, on the one hand, the detection of intermediary actors with the capacity to pave the way for the formation of new broad-based evolutionary trajectories by “merging” various networks of actors that until then would follow differentiated paths. On the other hand, associated with the propensity of the innovative actors of the territory to develop activities in different sectors, very significant possibilities of macro (structural) change are generated following the possibilities of interrelation between different practice and epistemic communities and, the possibility of generating intersectoral innovations that these local innovators convey. Finally, and in a general way for the three micro, meso, and macro levels, it follows from the article that this system of indicators should not focus only, or fundamentally, on the innovations generated by the SSE, but rather on the amplifying effect on territorial innovations that exercises the entry into the action of the entities of the SSE.

Table 4. Meso-rules diffusion mechanisms by SSE.

| Proximity Sources (Shared Elements) | Operational Mechanisms (Instruments) | The Transformative Reach of the Territory | Examples in Veracruz Sugar Cane Cluster |
|--|---|--|---|
| Type A: -Legal form -Organizational principles -Values | -1st- and 2nd-degree cooperatives, -Associations -Other SSE collective forms | Medium | Dissemination of new regulations and commercial-production practices in UPV (Unión de Piloncilleros de Veracruz), and ACI (Asociación de Cañeros Independientes) |
| Type B: -Organizational principles -Values | -Communities and business networks -USMCA -SDG-UN -Communities and political networks | High | Interaction between piloncillo makers and SMEs that are organized according to the principles and values of the SSE |
| Type C: -Values | -Practice communities, -Epistemic communities, -Communities and business networks -Communities and political networks -Social movements -Activists | Very high | Intersectoral interactions of piloncillo makers and SMEs, with small owners (ejidatarios), traders, transporters, professionals, including universities and local/regional research centers |
| Type D: -Adoption of the meso rules by exaptation. -Without there being any affinity | -Communities of practice, -Epistemic communities, -Communities and business networks -Communities and political networks | Very high | In this case, these have not been detected. |

Source: Own made.

This last result is complementary to those obtained recently by some other research focused on the study of certain alternative structures of agrarian organizations, such as *Community Supported Agriculture* [58]. Some of these studies conclude that the attractiveness of these alternative structures increases when these structures establish relationships of trust with external actors [58].

From an economic policy perspective, the article has important implications. First, it has shown the important self-organizing capacity of SSE actors, especially in cooperation

with actors who share their organizational principles and values. However, even if these transformation processes have largely taken place outside the public authorities, their role should not be underestimated. Indeed, the actors in the transforming network sometimes rely on public actors occupying peripheral positions, generating a symbiotic relationship based on mutual respect and recognition, which is very useful for the performance of the specific functions of both. Secondly, these processes are an example of the transformative capacity associated with individual and collective actors (e.g., associations) that are acting as entities that have a great deal of autonomy from the public authorities, especially the mainstream political parties. This contrasts with the traditional strong linkage of individual and collective actors in the conservative network with the public authorities, and in particular the political parties. Third, and connected with the contrast we have just seen, the possible demonstration effect of some minority actors of the transforming network on some majority actors of the conservative network should not be underestimated. Consequently, the transforming network's status as a lever of territorial change should make it the focus of any public policy to stimulate democracy, the fight against corruption and the commitment to an endogenous development model fully inserted in the international economy. In this sense, after we conducted the bulk of the interviews that served as the basis for this research, there has been a process of growing autonomy or independence by one of the large associations of sugarcane producers with respect to the major political parties. Trying to deepen the connections that may exist between the latter process and the development and consolidation of a transformative network appears as an interesting field of research for the future that can help to understand the complex dynamic interrelationship between the formal entities of the SSE (agricultural associations and cooperatives, etc.) and other entities that share its organizational principles and values.

Even though we believe that the article opens up some interesting lines of research, to make them effective, it is necessary to address some of the limitations of the article. Firstly, the article has focused on the study of the Veracruz sugarcane cluster (Mexico). No doubt studying the cases of other regions (developing and developed) and comparing them with each other would help to refine the theoretical framework and to fine-tune the proposed system of indicators. Secondly, the methodology used in the empirical analysis is essentially qualitative. Now, it would be necessary to develop some quantitative tools to try to measure the different defining categories of proximity between actors and the diffusion of the meso-rules identified in the article. This could make an important contribution to the development of an operational methodology for the measurement of the SSE that integrates the various methods that revolve strictly around the entities of the SSE and the qualitative method developed here to capture the ability of the SSE to drive a process of broader (territorial) transformation.

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