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Circularity in territories: analyzing the dynamics of collective actions in food systems

Abstract

Renewed attention to the ecological limits of the planet has engendered a movement towards collective actions within the food system. This article questions ways to comprehend the nonlinear dynamics in a territory and to make the moving objects of the territory more intelligible through their circularities and interconnections. Using examples from two collective food actions studied in Brazil and France, we present an approach to circularity analysis. We identify seven circularities in the interactions among elements of the food systems studied. The socio-spatial organization of the collective action links and organizes these elements through a dialectical expression of anchorage, openness, innovation, and tradition. Taking account of circularities can improve our understanding of the complexity of territorial moving objects, such as collective actions, and help render that knowledge intelligible for local actors. This can increase the value of their activities, encourage new activities and improve their impact on the territory.

Keywords: Circularity, collective actions, food systems, socio-spatial organizations, intelligibility, complexity

Introduction

Numerous collective actions (CAs) have emerged in territorial food systems: producers' markets and stores, product labels, information workshops, supply platforms, consumer networks (Philipon *et al.*, 2017). From a territorial perspective, AC is situated in a gradient between diffuse and spontaneous movement which brings together several actors (Amblard *et al.*, 2018). It is both a process, but also the result which depends on the coordination of actors, the constitution of a collective and the convergence of actions (Iceri, 2019). The CAs studied are part of a profusion of initiatives in constant movement on different scales (farm, territory, etc.) and a diversity of actors (farmers, communities, associations, etc.).

The advent of a global health crisis has underscored the indisputably essential character of the food system for the survival of populations everywhere. Assuring access to food in sufficient quantity and quality is a question of production, distribution, and logistics. This system is also affected by political decision-making and the actions of numerous actors in the state, the market, and organized civil society (Wiskerke, 2010; Lamine *et al.*, 2012). For Malassis (1994) a food system is the way that humans organize the production, distribution and consumption of their food supply. This system is of increasing interest to the social sciences where it is seen as a continuous and interconnected process whose study requires a transversal and systemic approach. Viljoen and Wiskerke (2012) present a literature review on the subject, identifying issues with the food system that form around social questions (local consumption, public health, identity), environmental questions (resource toxicity, waste management, biodiversity), economic questions (food production, employment, resource management), and spatial questions (perception of open space, brownfield sites, areas of rural/urban interaction).

Food, along with its production and distribution, is obviously a vast and complex subject for analysis involving biophysical and social aspects. It encompasses the objectivity of nutrition and the subjectivity of emotions, the materiality and immateriality of the human relationship with food, along with the mobilization and production of resources. The complexity of food supply systems becomes increasingly evident at the interface between individual choices, local actions, and governmental interventions that involve socio-economic actors at all levels throughout the world (Esnouf *et al.*, 2011; Colonna *et al.*, 2011).

Scientific literature shows that the interactions at this interface, particularly between individual, collective, and territorial actions have not been fully explored (Lanciano *et al.*, 2016). Lamine *et al.* (2019) point to the importance of adopting a dynamic vision between levels of action and accounting for the evolution of interactions in a system, throughout its life and in diverse territories, particularly those that are far from cities. They maintain that transition processes are a result of the transformation, over time, of interdependencies between the different components and actors in the agro-food system. This attests to the importance of a systemic and dynamic perspective in approaches.

Viewed as a system, the process of providing food escapes the linear logic found at the heart of the ecological criticism of industrial capitalism (Arnsperger *et Bourg*, 2016). Beginning in

the 1960s, the criticism of linearity can be found in studies on development. It questions the asymmetries and the inability of linear logic to allow for the social and mental economic structures of groups that diverge from the modern occidental way of life (Partant, 1984; Rahnema, 2004). In light of environmental issues such as limited natural resources and excess waste products, more recent ideas attempt to reorient the linear processes of capitalism towards models of circular thought in order to emphasize sustainability and renewal, as in a circular economy (Arnsperger and Bourg, 2016; Barles, 2005).

In this context, the attention to the ecological limits of the planet have engendered a diffuse and spontaneous movement towards citizen-oriented, CAs within the food supply system (Community Supported Agriculture, cooperative markets, farmer's markets, waste initiatives, etc.) that operate locally or regionally and respond to issues in the system. With all its complexity, the link between food and territorial dynamics stands out as a subject that merits to be better understood and made intelligible. For this reason, we are confronting the question of the complexity and circularity in the dynamics of food systems.

In this article, the first part presents an approach to complexity as measured by circularity. This is the analytical framework that we have chosen to better understand that complexity. In the second part, we present our question of what makes moving objects, such as territorial food initiatives, intelligible and pose our two research hypotheses on the identification of circularities and the interconnections among them. Following a methodology presented in part three, we apply this analysis on two collective food actions that were studied in Brazil and France. The principal results are presented in part four and discussed in part five, in the light of the analytical framework of complexity.

1. Conceptual framework

We would like to go beyond the limit of linear dynamics and use circularities to represent complexity. In order to do this, we have constructed a conceptual framework adapted to the circularities in food systems.

1.1. Rethinking complexity with a measure of circularity

The notion of complexity as a theory took form in the 20th century, initially in physics, mathematics and biology, and subsequently in the humanities and social sciences, propagating among numerous scientific disciplines. It is often affirmed in interdisciplinary studies. In the 1950s, with the rise of neo-liberalism in a globalized form and the beginnings of an informational revolution, two major currents of thought, one relating to structures and another to dynamics, proliferated around a holistic world view focused on the globality of systems (Le Moigne, 1990).

Complexity evokes more or less the sense of "objects in motion" for which Guespin-Michel and Rippol (2005) found more than fifty definitions. The authors identified various associated theories in the literature addressing the analysis of this sense of movement, notably, the theory of dynamic non-linear systems and the theory of complexity. In order to help clarify these ideas, we have turned to the work of Morin (1982; 1986) for the methods and uses of complexity theory and that of Sève et al. (2005), who used dialectics to treat dynamic non-

linear systems. They introduced new ways of interpreting and thinking about the world that led towards a new paradigm for science.

In an effort to escape causality, complexity becomes circular (Guespin-Michel and Rippol, 2005). But circularity as an epistemological revolution is not the same as circularity in the economy. The approach of economic circularity differs from that of scientific philosophy because it leads to a more concrete understanding of the circularity of goods. This circularity proposed by the economic system functions in loops and seeks to create a system of regenerative economic practices (Arnsperger and Bourg, 2016). Thinking of circularity as reasoning that follows a loop in the economic system is not incompatible with the epistemological circularity of philosophy that leads to the critical study of science.

We see circularity as a mechanism of complex thought that links and re-links the elements in a system, where each one generates effects on the other. In this sense, the evolutions are continuous in time. This reasoning can be imagined as a spiral where successive iterations of elements produce not only stocks and flows but also feedback loops. But even if the idea of circularity is easy enough to imagine, how do we transpose this interpretation to a system in the territorial context? Mindful of this pragmatic necessity, we mobilize the concepts of complexity (Morin, 1982; Morin 1986; Morin and Le Moigne, 1990) to enhance the analysis of these circular dynamics.

1.2. A conceptual framework for analyzing circular territorial dynamics

Morin (1982) established certain conditions in order to address complexity. They were constructed on the basis of three theories: information theory, with simultaneous order and disorder (dialogic principle); cybernetic theory, concerning interactions that loop on themselves (recursion principles); and system theory, with the idea that whole is more than the sum of its parts (hologrammatic principle). With these theories, he arrived at the following conditions:

- Link the object to the subject and its environment
- Consider the object as a system and state the problems concerning its organization
- Respect the multidimensionality of things and beings (human and non-human)
- Create a dialogue with the uncertainty (multiple possibilities, unpredictability)
- Attempt to consider the full world of phenomena while avoiding dismembering them (the importance of examining the global interaction and not simply the individual parts)

Tableau 1 Understanding circularities by complex thought

<i>Inspirations theories</i>		<i>Principles</i>	<i>Idea principle</i>	<i>Conditions</i>
Morin, 1982;	Information;	Dialogic principle	Order and disorder	<ul style="list-style-type: none"> • Link objectify/subject/environnement • Analysis research object like a systems • Respect the multidimensionality of things and beings • To dialogue with the uncertainty • Examining the global interaction
	Cybernetic;	Recursion principle	Interactions that loop on themselves	
Morin 1986;	Systems	Hologrammatic principle	Whole is more than the sum of its parts	
Morin and Le Moigne,				

1990				
Sève et. al. 2005;		non-linearity (systems, dynamics and effects)	non-proportionality and non-additivity	<ul style="list-style-type: none"> • Link holism, reductionism and dialectic • Analysis contradictions not like antagonistic
Guespin-Michel, 2016)		dialectic	contemplating the unity of opposites	

Sève et al. (2005) offer a different perspective on complexity in dynamic non-linear systems which contribute to the understanding of complexity through their non-linear effects. They are defined by the effects' non-proportionality to the causes that they underlie and by the non-additivity of the causes on the effects. Another contribution from Sève et al. (2005, p.88) is the revival of the dialectic concept as a tool. Rather than simply banning contradictions, it attempts to resolve them while disallowing formal logic and contemplating the unity of opposites.

For Guespin-Michel (2016), the dialectic is a method that uses complexity to overcome the contrast between reductionism and holism. Through a series of a priori opposing attitudes (individual/collective, local/global, order/disorder, whole/part, continuous/discontinuous, finite/infinite, materialism/idealism), she demonstrates that the existing contradictions are not antagonistic. Moreover, with regard to trends relating to the static/dynamic relationship, Guespin-Michel (2016, p.62) emphasizes a methodological difference because, in her words (translated), *the complex doesn't really exist except in the dynamic, . . . but it most often requires a static step of description.*

The issue of circulating between the elements of the system and between these analytical steps joins the questions posed by Méda (20016, p.56): *Is it about looking at a new object with new glasses, the same object in a radically new way, or confronting different ways of observing and understanding them?*

We have used these theoretical frameworks as inspiration for identifying circularities relating to food supply systems, relying on philosophical insights on circularity to help make them comprehensible, and employing a spiral form of thinking (Morin et Le Moigne, 1999).

2. The issue of the comprehensibility of territorial moving objects, a perspective for territorial development

It is important for researchers from different disciplines to find ways to capture the dynamics, meaning capture the interactions, the internal movements in a territory, regardless of the stimulus (endogenic, exogenic, physical, immaterial, conceptual, cognitive, etc.). The numerous and varied nature of the interactions make this a challenge.

The issue of communication and the need for a wider perspective are fundamental to the task of making the complexity of such objects intelligible. The question that we ask in this article is: *how to make these moving territorial objects, such as CAs in the food system, more*

intelligible? We think it is necessary to combine several circularities and construct an entry that connects them.

Our first hypothesis concerns the importance of taking into consideration the numerous circularities which are based on the complex objects of the territory. It is necessary to recognize the numerous circularities in order to understand and support territorial dynamics (*H1= The diversity of interactions between the elements of a system make it possible to account for the circularities in that system*). In addition to an identification of the circularities of complex objects in the territory, we make a second hypothesis on the interconnection between them. Understanding this interconnection is a way of making the circularities intelligible and verifying the coherence between ongoing food-system projects and the resulting territorial dynamics. The hypothesis thus deals with the particular connective capacity between circularities that involves the dialogue established between opposing/complementary concepts (*H2 = Explaining interconnections between circularities through opposing concepts makes the circularities more intelligible*).

Examining circularities is a means to better understand the complexity of territorial moving objects, such as CAs, and to render that knowledge more intelligible for local actors, thus increasing the value of their activities, encouraging new activities and improving their impact on the territory. By addressing these issues, with participatory workshops for example, it is possible to construct a bridge between the analyses of researchers and the dynamics of the actors to achieve a higher level of awareness on the impacts of CAs in the territory. With the supporting actors, it is also possible to use the systemic complexity to their advantage and contribute to the accuracy of their interventions.

3. Methodology

We looked at the form of socio-spatial organization (SSO) in CAs in the food system that were led by French and Brazilian farmers (Iceri, 2019). We then retraced the construction process of these CAs in order to understand the SSO viewed as commonalities (Iceri and Lardon, 2018). The CAs initiated by the citizens are a combination of individual and collective logics that vary in space and time. They were seen as territorial moving objects, operating within the food systems.

Here, we analyze the circularities among the elements of the food supply system and the way in which they interact among themselves. First, we present the collection and analysis of the data from two food system initiatives in France and Brazil. We then describe the French terrain used in our demonstration. Finally, we describe the methodological itinerary of the formalized approach.

3.1. The Food CA analysis

The framework for analyzing the CAs is based on a combination of methods (process analysis by trajectories, common socio-spatial organization, and the dialectic between opposing concepts).

Beginning with data drawn primarily from semi-structured interviews with the producers, we were able to retrace the trajectories of the individuals at the heart of the CA. Beyond looking at the relationship between actors and the evolution of their project over time, we addressed

the question of socio-spatial links that are informed by material objects but have also revealed immaterial dimensions. This required the analysis of the socio-spatial configurations, beginning with the socio-spatial objects. Our analysis identified an SSO that was common among the actors' management of activities and coherent with their objectives, values, and future prospects. For this, we conducted an analysis of commons in the collective action from a geographical perspective (Iceri and Lardon, 2018). During the analysis of this particular type of organization between society and space, we identified a central place occupied by tradition and innovation, anchored to the territory but also with an openness to other territories, established by the actors. For this reason, we conducted a final analysis: the dialectic between opposing concepts, in order to identify the references to these concepts and understand their relationships.

We compared two contrasting situations, co-constructed with the actors from two CAs, one in France and one in Brazil (Iceri, 2019). The participative dimension was addressed during workshops for the restitution of results to the local actors. More than just the exhibition of the results, these workshops encouraged debate, provided additional information, and the opportunity for a practical self-analysis. In France, the producers collectively completed an analytical grid for their CA. In Brazil they used this opportunity to reflect on the dialectic in their community.

The international comparative analysis emerges from the desire to better understand the strategies of CA employed by the producers, and take into consideration the territorial dynamics. For each "discovery" involving a differentiated investigation or analysis on one site, we have carried out the same process for the other site, working analogously.

Here, in order to describe territorial circularities, we focus on the case study of a producers' store in France.

3.2. The producers' store "Le Local" in France, a food initiative

A producers' store unites a group of agricultural producers with the goal of selling their products locally and directly to consumers as well as promoting their farms and related activities, and the attributes and assets of their territory. One important condition that distinguishes this type of collective point of sales is the need for an on-site staff of at least one representative from the group of producers.

The store, known as *Le Local*, is a CA launched in the spring of 2015 in the center of Ambert, a small town in central France. It groups together a dozen producers and around twenty sellers of local food products. *Le Local* is the first collective point of sales organized by producers in the territory. These producers came together around the goal of full-time direct sales (outside of the weekly farmers' market already existing) in a framework adapted to both the consumers and the producers themselves.

The store offers local consumers a variety of products (meat, cheese, vegetables, bread, honey, fish, beverages, etc.) that come from various communities in the regional natural park Livradois-Forez (France). The products must also meet specifications aimed at promoting agricultural practices that are respectful of the environment and give preference to small local farms. These producers are primarily "neo-rural," some of whom arrived at the beginning of the 1980s, and others who have only been active for a few years.

3.3. The methodological itinerary of the approach through circularities

The methodological itinerary identifies seven circularities in the interactions among elements of the food supply system. The SSO of the CA links and organizes these elements through a dialectical expression of the concepts of Anchorage, Openness, Innovation, and Tradition. We have formalized the mobilized circularities for each of the results (Figure 1) from the trajectory, the common SSO, and the dialectic analysis between territorial anchorage, openness, innovation, and tradition (AOIT).

- Identifying the relationship between the elements of CA seen as a complex system. We are not trying to categorize the types of relationship; we qualify these interactions from empirical examples. How do these elements interact? What circulates? (According to the components: past, present, and future relationships, individual and collective, local and global – level 1).
- Verifying the reasoning by loops between each of the methods and results. How does this circulate? In what direction? What does it pass through? (According to the conceptual frameworks: material, immaterial, and organizational links (MIO); actors, activities, and spaces (AAS) – level 2).
- Placing the moving object in its process environment. How do the terrains compare? What are the interactions between the researchers and actors? (According to the chosen posture: comparative analysis and research/action – level 3).

We then position the circularities of the moving object according to the three identified levels: how does the SSO connect the components (level 1), the conceptual frameworks (level 2), and the environment (level 3) of the complex object studied?

- Bringing together the ensemble of circularities in the SSO with the dialectic AOIT and thus enable the analysis of its capacity to be used as a tool of synthesis and communication for the interactions of a moving, complex object.

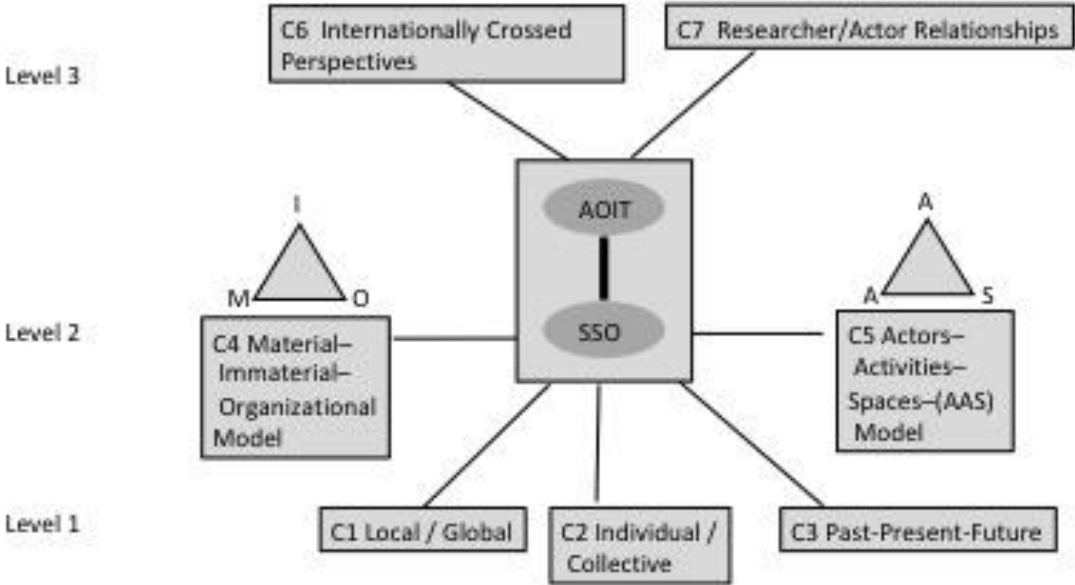


Figure 1: The 7 circularities and the 3 analytical levels of the socio-spatial organization (SSO)

4. Results

Starting with the described methodological itinerary, we present the circularities between the components of the analyzed CA. First, we address the details of the SSO elements and the way in which they interact among themselves. Then we organize them in a synthesis provided by the AOIT dialectic.

4.1 The identification of 7 circularities at 3 analytical levels

In the re-examination of the results on the producers' store, *Le Local*, we identify seven series of circularities among the elements of the food supply system and the SSO of the ongoing CA. These circularities are grouped on three analytical levels: (1) those distinguished between individual details and the ensemble, (2) those distinguished by the conceptual frameworks of the territory, and (3) those distinguished by the research mechanism (Figure 1).

4.1.1. *The circularities between individual details and the ensemble*

The trajectory of *Le Local* in Ambert (Figure 2) shows the principal steps (in blue) taken to launch the project, the sequence of events, the project's consequences for the territory and its prospects. This path also reveals the actors¹ that had a key role in the collective (in purple), the socio-spatial objects symbolic for certain stages of the evolution in the trajectory (in black), and the institutional actors at various scales of intervention (in green).

¹ The actors' names have been changed to ensure confidentiality.

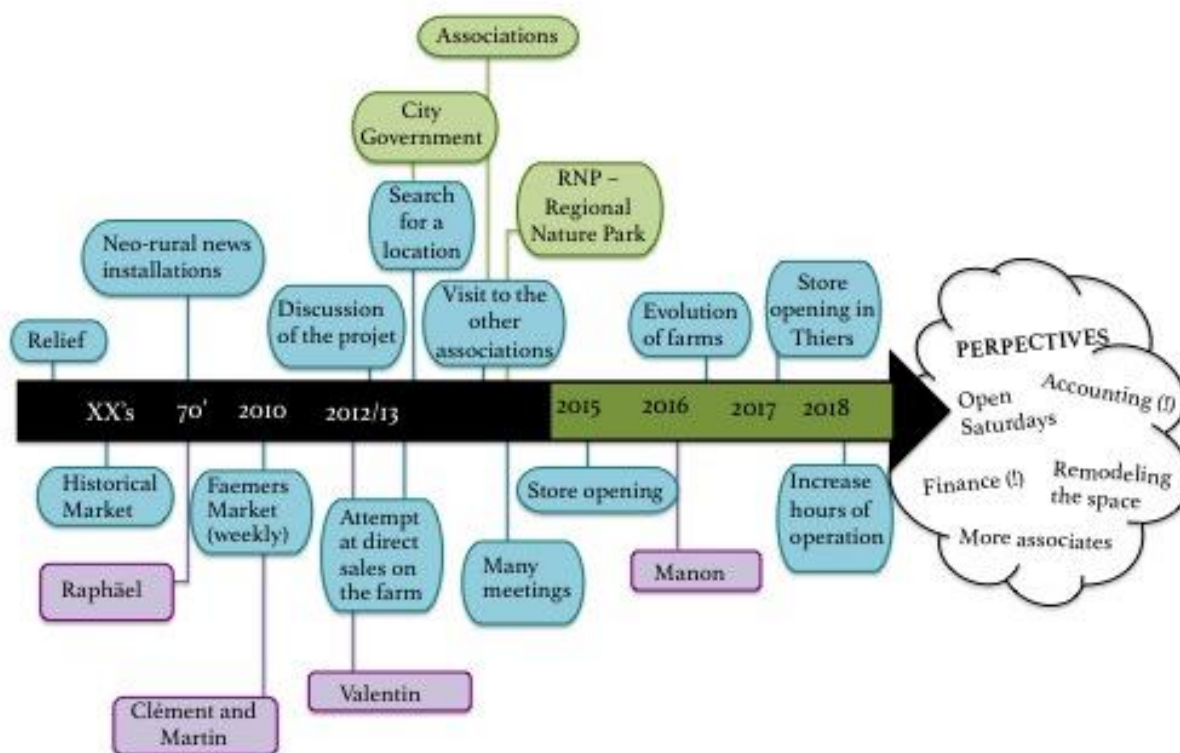


Figure 2. Trajectory of the collective action of the store, *Le Local* (Ambert, France)

Although the store is a relatively recent CA, the trajectory includes a long-term prospective because it is intrinsically linked to the history of the evolution of the territory. These connections are formed by biophysical processes (terrain, vegetation, climate) as much as they are by human dynamics (historical market traditions as inspiration for collective coordination, the availability of housing for the neo-rural arrivals, and the local networks of assistance). The collective trajectory makes it possible to see beyond that which is described. Generally, the history of a project begins when it comes into existence, without mentioning the basic events leading to its birth. The installation of a producers' store in Ambert shows, nevertheless, a dialog between the present and the past. Once begun, this CA evolved over time (the hiring of an employee, open more often) and it also enabled the farms and producers to evolve (opening a bakery, investing in agricultural buildings, acquiring new tools, diversifying activities such as teaching farms). Certain evolutions are still to come, like the idea of bringing in other individuals as associates, changing the legal status and initiating on-site food service.

Retracing the trajectory leaves open a large window to the future, a sign of collective thinking that is still dynamic and evolving. In this way, the past-present-future are intertwined in a trajectory of the CA that shows a circularity existing between time periods (Circularity 1).

Certain portions of the collective trajectory are marked by the intervention of actors who become key to the ongoing action (represented in purple in Figure 2). By way of their experiences, travels, training, or other advantages, these key actors make their particular knowledge, competences and resources available to the collective. The case study shows their

importance to the construction of the project in various ways, such as bringing together other producers, and identifying partners and financing. One example is the trajectory of a vegetable farmer, Clément. An engineer in agronomy by training, Clément previously worked in the field of territorial planning and development. As a result of his experience, he was proactive and essential in the construction and management of the producers' store project.

To be a key element, in our analysis, implies an important and continuing or periodic participation in the collective trajectory, not simply at its inception. This is the case of Raphaël (livestock farmer and cheese maker) who helped other producers install their products in the store, offering a training course, individual aid and even sharing materials. This type of contribution added to the solidarity of the group of actors. In another sense, some actors became key to the collective through their participation in its action. One example is seen in the trajectory of Manon (an employee of the store). Faced with the need to improve communication between producers and more efficient product logistics, Manon drew on her skills in store management, in contact with the public, and in communicating the value of the products, the farms and their diversity in the territory. These examples illustrate how individuals in the collective establish relationships of circularity with each other (Circularity 2).

The trajectories also reveal socio-spatial objects, namely, the mountain, the houses, the products, and the store (in black in Figure 2). By "socio-spatial objects" we mean concrete, localizable elements, which are produced both socially and spatially. Beginning with what is real and material, and observable by the actors is a way to understand the ensemble of themes that these objects enable. By searching among the subjects evoked by concrete objects, it is possible to establish the connection between the relevant themes and to locate them on the different spatial scales to which they refer (scale of the activity, the territory of the project, and other more global scales) (Circularity 3).

This allows us to see the circularity between scales and/or levels of organization that exist between the four socio-spatial objects relative to the discourse of the producers previously interviewed (see Figure 3):

- The "mountain" evokes questions relating to the installation criteria of producers in the territory. Neo-rural by majority, they consider the lower, mountainous area attractive for its quality of life and also for the availability of affordable land. The mountain also speaks to their perception of the territory and its lifestyle, particularly the difficulties of work in the winter, the predominance of small farms, and the need for a network of mutual support in their work.
- The "house" appears in parallel with the mountain, because it also involves a link with the installation of new inhabitants in the territory, notably in the issues of farm sales or transfers, the support and subsidies (bank loans, local, regional, national and European subsidies) available for the process. The house also relates to the territorial lifestyle (shared or collective housing, individual housing) and the possibility of finding an alternative lifestyle compatible with their ideas (time for oneself and reflection on modern society).
- The "product," as object, opens the discussion about ideological and affective questions, and opportunities relating to the choice of agricultural products. Once installed, each producer states his relationship with his specific chosen product. For some, producing cheese can also signify maintenance of the landscape, which leads to the acknowledgment of the multifunctionality of the agricultural exploitations. The

product can also be seen as a tool of communication with the world beyond the farm, either through exchanges with consumers, or through the visibility it sometimes lends to the territory (such as the territory of *la fourme d'Ambert*—a regional cheese).

- The "store", for many producers, relates to the mutualization of the work around a common tool. It reduces the number of trips and time dedicated to sales and marketing. In terms of values, the store is particularly appreciated by the members who defend the values represented by small territorial farms and producers that need marketing opportunities.

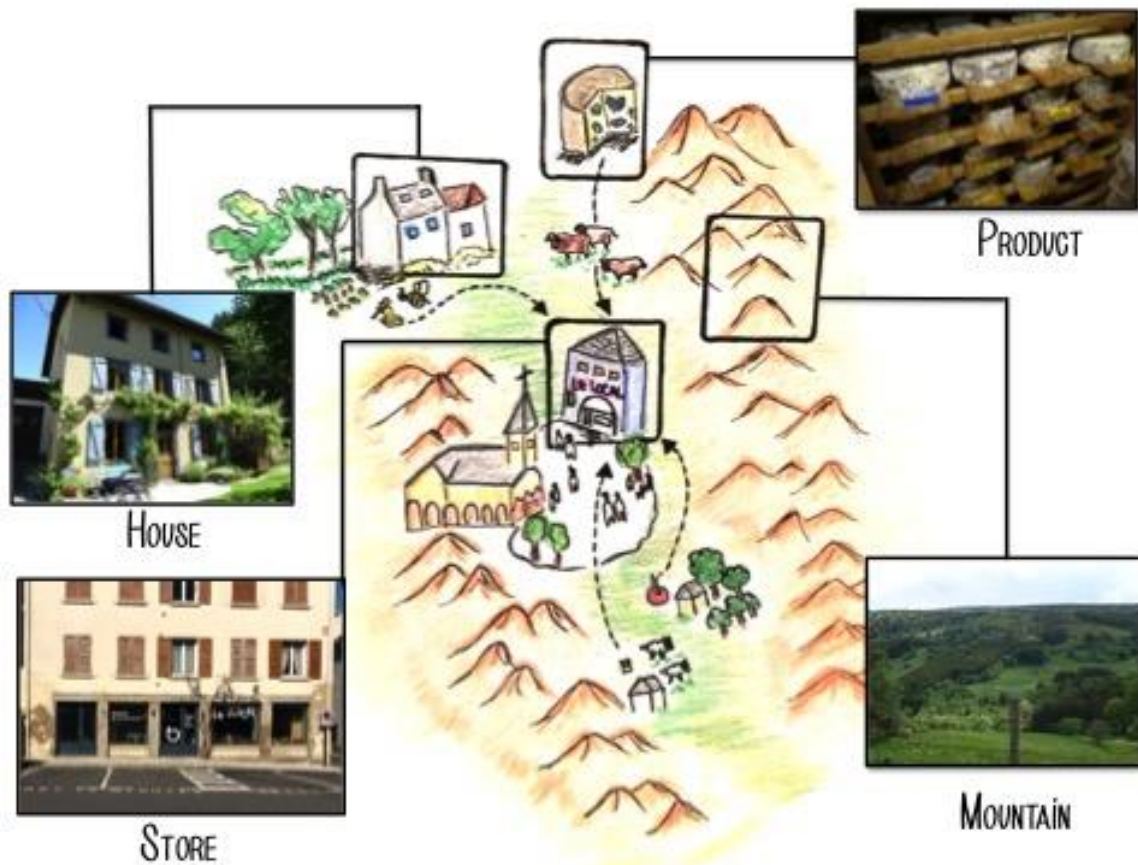


Figure 3. Socio-spatial organization of the store *Le Local*

These socio-spatial objects show the relationships between the dynamics at the farm scale and that at the territorial scale, and even at more expanded levels of organization (global issues, or relationships with external networks). For example, although a product like cheese production or the opening of a local store may specifically relate to a local action, they can also reveal values (mutual aid, maintenance of the landscape, promotion of rural territories) that go beyond local territorial issues, because these generic values are discussed in other territories or regions, or countries. Through the various subjects that they evoke, the socio-spatial objects reveal the circularities between local and global scales, between farms, and between their territory and other territories (level 3).

These first three circularities make moving objects intelligible, both individually and as a group, producing a constant interaction between the specific and the generic (level 1). These circularities reveal a process that separates the element of the collective action, making the elements of the system more understandable. Although we may understand the circularities

between individual elements (past-present-future, individual-collective, and local-global), how do we expose a circulation between these ensembles (level 2)?

4.1.2. Circularities between territorial dimensions: triangular models

The themes revealed by the socio-spatial objects do not remain isolated elements in a CA system, they are interconnected. In these analyses, we see that the CA is actually more than a store. It is more than the sum of the producers, the socio-spatial objects, and the themes that it reveals. The CA is both an accomplished work and an organizational process between actors and spaces. By this reasoning, if ever the producers' store should close, the coherence between the actors and their territory can remain, thanks to the organizational process that they have already mastered. This is how we have defined "SSO as a commonality" (Iceri and Lardon, 2018). The SSO is characterized by spatial forms drawn by the history, economy, culture and social practices of a group. This approach led to a graphic representation that locates the socio-spatial objects at the heart of the SSO (Figure 3). This makes it possible to characterize the spatial interfaces (division of zones, location of farms or activities, choice of location for CA, characterization of the space) and social interfaces (management, regulations, identities, beliefs). This characterization corresponds to the socio-spatial configuration of the CA analyses.

Therefore, we compare social and spatial by addressing the links between concrete, localizable objects and the social subjects they concern. This way of looking at space and society was supported by the dimensions of territory as defined by Di Méo (1998): material, ideal, and organizational. In analyzing the CA, this perspective made it possible for us to see the expression of complexity of objects beyond their materiality.

This SSO functions via mobilized resources, management rules, and a mode of governing with the goal of developing collective activities such as local sales. The actors refer to their territory from a material perspective that recalls concrete objects that they can see and touch (e.g., mountain, houses, product, store). In parallel, they describe the organizational dimension of the space, notably when they mention the division of the buildings or the sharing of collective tasks. Finally, the dimension of space as an ideal is revealed in an image built around rural and mountain life, in which solidarity is seen as a condition. This also includes the conception of their economic agricultural activity as a form of personal development or even the desire to make the collective store an attractive showcase for the territory.

Whether they reflect the affection for a particular landscape (the mountains), the reasoning and form of the installation (a house), the relationship to work (the products), or the contribution of their CA in the territory (the store), these objects address different examples of the interaction between material, ideal, and organizational (MIO) dimensions of the territory in a circular way within the common SSOs (Circularity 4).

In addition to those three dimensions, we also look at an aspect of complexity in the territory from another triangular model based on a system of interaction between three constitutive, territorial elements proposed by Benoît et al. (2006): the actors, the activities, and the spaces (AAS). This triad offers a framework for interpreting the interconnections between these components in the movement of territorial dynamics. We begin with the most symbolic socio-spatial objects in each dimension of the triad. The actor dimension corresponds to the store, expressing the convergence of the different producers that form a collective with the aid of

local institutional actors (the regional park, associations, local government). The dimension of space represented by the mountains and the house is linked to the formation of the collective of actors because the evolution within the territory (biophysical, economical, socio-cultural) provided a specific environment that offered the quality of life sought by the actors. The activity dimension represented by agricultural production and processing is carried out by these producers who respond to local demand for the food supply and management of the landscape. This also provides an example of the activity dimension's multifunctionality as expressed by the products. Independent of the analytical inputs chosen by the researchers, the interaction between actor-activity-space advances circularity between the three territorial dimensions so as to consider all its complexity (Circularity 5).

In the results of the socio-spatial objects we can see that CA is both the motor and the product of a constant interaction between individuals, the collective, and space. In other words, it is a new perspective of circularity, complementary to the interaction between detail and ensemble (level 1). This new level of circularity engenders the circulation of the territorial elements (actors-activities-spaces) and the material, ideal and organizational dimensions (level 2). Now we look at the application of this SSO in its environment (level 3).

4.1.3. Circularity of the research and its application in a wider environment

In our examination we have made comparisons between the two different terrains in the study even if we have chosen here to present the results by focusing on the site in France. This comparison functions analogically and is not a transposition of the operating manual of one case, but rather a correspondence to the applied method (Blanc and Chadoin, 2015). This entails assuming the particularities of each terrain and taking advantage of each one's different contributions to a new theoretical framework or a different type of analysis.

In making an analogy to the emergence of key actors, the study terrains seem to have alternated the key roles. Our exploratory fieldwork started at the site in France, then during work on a site in Brazil we began with a model of spatial structuring and governance used in traditional communities which led to the SSO and commonalities. Returning in France we conducted the same analysis with the French case study, followed by a restitution workshop where the results were presented to the actors. In the reverse sense, the Brazilian terrain was enriched by the investigations stemming from the obvious desire to anchor the study territorially for the agricultural production in France. In addition, this anchorage was combined with an openness to the world which the store's actors brought from their experience outside the territory. The enhancements from these crossed perspectives show a circularity that can be mobilized between different terrains of study (Circularity 6).

The results mentioned up to this point correspond to an analysis of research based on empirical contact and theoretical mobilizations. It is limited by the ability of the actors in the field to share the vision of their relationship with time, with socio-spatial objects and the complex relationship between society and space. For this reason, we conducted participative workshops with the actors (producers and the accompanying institutions) in the two countries. The workshops began with a presentation of the trajectory of the CA followed by complements brought by the actors. We then presented the elements about the other study site with which they were compared. The workshops finished with the actors performing an exercise of auto-analysis such as the application of the grid of the commonalities and the dialectic within the CAs. In this last step with the workshops, the actors were able to

participate in or share the roles of observation, and the analysis and discussion between empirical elements and theoretical frameworks. Although the workshops were conducted with a goal of scientific legitimacy in the recognition and validation of the results, we were also able to circulate a sense of esteem between the actors and the researchers (Circularity 7).

Among the abundance of reasoning in loops, we can recognize mechanisms of circularity coming from a CA, distributed on three levels. At this stage, we have deciphered the CA between different elements (past-present-future, collective and individual scales—level 1), between analytical models (material-ideal-organizational, actor-activity-space—level 2), and between approaches (participative, compared perspectives—level 3) in order to take account of its complexity and dynamics as organized into seven types of circularities.

4.2. The cluster of interconnections between circularities of the SSO by the dialectic AOIT

Using the dialectic as a method is one way to make the links between practice and theory, abstract and concrete, and subject and object legible without the need to think about the major interconnections in the unity of the world. We chose a particular way to render this totality intelligible: the antagonistic conceptual union, a priori, but which proves to be inseparable and essential to understand a system.

The antagonistic unions here are the concepts of territorial anchorage and territorial openness (A/O) as well as innovation and tradition (I/T). To anchor territorially is an action, the result of an encounter between circumstances (social, economic, geographic) and actions of human beings (living, working, moving, etc.) that establish the links between actors and spaces (like dropping the anchor from a boat) while leaving an autonomy of choice that makes it possible to maintain other links elsewhere (Debarbieux, 2014). This openness is indissociable from the territorial anchorage. In the domain of agriculture and the food system, this type of anchorage through practices, the investment in daily life, and the representations valorizing place (Imbert, 2005; Berroir *et al.*, 2017) is often found among the works that analyze the territorialization of the food system as the relocation of agriculture, or the valorization of territories through agriculture and the differentiation of products.

One form of valorization of agricultural activity linked to territories is to turn to local savoir faire and traditions in an effort to transform them into innovations. A tradition as a new strategy among actors is irreducible to that which existed beforehand, but at the same time, it is a bearer of indelible traces of the past that it revives (Laville, 2014: 71). So, tradition is neither the equivalent of the past, nor an opposition to innovations. To the contrary, tradition can be invented in order to assure the cohesion and identity of a group and to structure social and spatial relationships in a context of rapid, societal transformation (Hobsbawm, 1995). As a set, these concepts represent the dynamic engagement of different temporalities (past, present, future), between different spaces (of installation, of passage, the original territory) and between relationships established with these spaces (localize, mobilize, produce, nourish or change the space).

We have seen that some researchers have conceptualized the words anchorage, openness, innovation and tradition, but these terms are also often used by the actors on the terrains analyzed. This is the reason for the conceptual cluster between circularities. One of the most obvious interconnections concerns time. Producing a cheese typical of a particular territory, a cheese that was disappearing because of the predominance of industrial production, acts as both an anchorage in local culture and a dive into the history of a tradition which is open to

revival and innovation. The example of this cheese demonstrates the circularity involving a tradition from the past, the will of the present, the plans for a desired future, and a risk to be taken in a search territorial innovation (Circularity 1). The same example also evokes material (cheese), ideal (innovation), and organizational (reviving an activity) dimensions of the territory, as well as those of actor, activity, and space. In this way we understand that the re-examination of the previous results via AOIT is based on the analytical models mobilized (Circularity 4, Circularity 5) in order to take account of a common SSO.

The affirmation by the producers from the store, The Local, that some of their travels or other experiences could have contributed to their installation, the evolution of their production, or even their participation in the collective action signifies that an openness can anchor the actors and enhance the space of action to the benefit of collective action. Thus, the spatial openness of an actor can be capitalized by his collective. This shows that not only can we approach circularity between the individual and the collective (Circularity2) but also between scales, since a local anchorage can be related to a global scale, depending on the openness of the actors (Circularity 3).

In spite of the cultural differences and the different situations on the two study terrains, the perception of AOIT from one country seems to have made sense to the actors of the other country. This was observed during the workshop where we presented the analyses of the AOIT grid of the French site to the actors in Brazil who seemed to have no difficulty transposing the analysis from the other site. The circularity of the crossed perspective (Circularity 6) also seems to be relevant within AOIT.

AOIT seeks to favorize the intelligibility of circularities. In effect, these concepts correspond to the words most often used in the actors' discourse and therefore reflect what we can imagine with regards to SSO or "common good," even if the latter was more popular. Because these words seem to resonate more with their daily lives, we can say that they favorize the circularity between the researcher and the actors (Circularity 7).

We have seen that in reality, the complexity only exists in the dynamics, and that one way to show these dynamics is the dialectic that considers the unity of opposites. Inspired by this idea, we propose to reconstruct the elements that loop between them (the 7 circularities on 3 levels) in order to achieve a better understanding of the complexity of territorial moving objects, such as CA, and to render that understanding more intelligible.

5. Discussion

The results on circularities, their levels, and their interconnections can be discussed from the perspective of the theories of complexity and non-linear dynamics. Our approach to complexity seeks to avoid causality; therefore, we base our analysis on the circularities between the system and its components (AOIT).

Returning to Morin (1982), we have demonstrated that the linearity of the facts and objects that build a collective action stops being ordered and linear from the moment we identify socio-spatial objects and their themes. At this moment, the collective action becomes disorderly, exhibiting numerous circularities between interacting objects. Then with the dialectic that thinks the contrary (Sève *et al.*, 2005), and a cluster of interaction between anchorage, openness, innovation, and tradition, it is possible to re-establish an order in the

collective action. This order (linear trajectory of the CA) that becomes disorder (circularities between system components) and then reorganizes (antagonistic union of concepts, AOIT), corresponds to the dialogic principle of Morin (1982).

The second principle of the theory of complexity of Morin (1982) is the holographic. It is based on the idea that, in a certain fashion, the whole is included in the part that is included in the whole. The parts of the whole each have their own singularity, but they are not actually pure elements or fragments of the whole; they are at the same time, virtual micro-wholes (Morin, 1986, p.101). This principle of circularity between "whole" and "part" is identified, for example, in the results from the relationship between collective and individual action, but also between space and society, between ideal, material and organizational, between present, past, and future, or action on local and global scales. We have demonstrated that each of the socio-spatial objects have their own particularities for exposing the themes of the food supply system and territorial analysis (installation, actor networks, evolution in the actors' farms or activities, etc.).

We believe that the identification and analysis of circularities among the interacting elements of the CA in the food system of our study validate our first hypothesis (*H1*). The analysis of the circularities helps us to understand the complexity of the system and its relationship with the territory's circular dynamics.

In the continuity of this previous principle between the whole and the parts, there is the idea that there are loops of interactions where each effect acts on its cause (Morin, 1986). This is the principle of recursion that views the "products" of a system to be "producers" as well. In order to understand the territorial dynamics of the food supply system, we make the choice to analyze collective actions in the system, that are in fact, systems themselves. Even though we limited the observations to seven circularities, we can see that there are so many objects and interactions that there is no longer any proportionality between the effects and causes, nor additivity from causes and effects (Sève *et al.*, (2005). When observing the example of the producers' store *Le Local*, this principle is evident. One of the effects of the store's opening is that it enables new installations in the territory, and these new installations have enabled the success of the collective action. In this perspective of circularity through feedback loops, new qualities are produced. For example, the installation of new activities and their membership in the collective imply a change in its organization. In other words, although we know that the reintroduction of a traditional cheese from the past generates effects on the installations, the territorial vision and land management, and on the producers' store, we cannot know to what extent it causes transformations in the system (non-additivity), nor how these effects are distributed (non-proportionality). For this reason, Morin (1982) identifies dialoguing with uncertainty as a condition for working with the notion of complexity.

The inclusion of these dynamics involving different actions and different contexts enriches the discussion of the territorial development process. It is indeed a question of discussing the dialectic of the different and the similar, as posed by Blanc and Chadoin (2015). If we delve further into the details of the "conditions of complexity" (Morin, 1990) we have to link objects to the subjects that they evoke and to their environment. This condition of complexity is observable through socio-spatial objects, according to the circularities between scales, but also between territorial anchorage and openness. Another condition of complexity proposed by the author is to respect the multi-dimensionality of beings and objects. The dimensional perspectives of territories (material-ideal-organizations) and their components (actors-activities-space) are a reference to this condition.

Morin (1982) again makes the attempt to explain the whole as a condition to the consideration of complexity in the same way as Guespin-Michel (2016) approaches holism. We therefore considered our object of analysis, the collective action, as a system in order to consider the problems in the light of its SSO. The collective action is first an assemblage of its components, (actors, time, scales, models, methods) that interact in a circular fashion. To better understand these components and their interactions, we enriched the vision of the collective-action object through a more global perspective that includes its socio-spatial organization. We then used the dialectic of concepts to make this wider vision of the collective-action object more intelligible. The expression of opposing concepts and analysis of interconnections among circularities in the case study improved the understanding of those circularities, thus validating our second hypothesis (*H2*).

The steps in our analysis correspond to a triad of elements in the notion of complexity as proposed by Guespin-Michel (2016): reductionism (components), dialectic (interaction), and holism (globality). Discussing complexity, which implies allowing for different circularities, elements of a system, interactions, time, and methods of analysis, is a confrontation between different ways of observing and describing an object (Méda, 2016). With this approach through the diversity of circularities and their interactions as opposing pairs, the complexity of moving objects such as food initiatives becomes more comprehensible. Although our approach was only applied once, there are already other prospective applications in progress. In Brazil, a territorial development project is being organized by a collaboration between the Université Estadual de Maringá and local institutions who have already indicated an interest in this approach of circularities as a means of creating an appropriate vision for their territorial initiative. They hope to establish innovative mechanisms that will allow new forms of territorial governance to work in a transversal fashion that understands the territory and how to take advantage of its intrinsic dynamics. However, such an approach requires certain prerequisites for its application: experience with inductive methods, the ability to take risks, and a wider perspective. It also demands a spirit of openness and creativity. The changing world offers us a unique opportunity test these new approaches.

Conclusion

We examined the results of our case studies from the perspective of circularities, linking the details and the ensemble to expose the first level of circular movement. We then connected the territorial frames of analysis, taking account of three territorial dimensions and their constitutive elements at the second level of circularities. Finally, at the third level of circularities, we placed our analyses in a wider environment, making it possible to compare our results and discuss them with the actors.

Numerous interactions were revealed, and they can be still more numerous, as corroborated by the analysis of complexity. In this work we have analyzed some of them, characterizing their movement in loops and spirals in order to elucidate a small part of the complexity that surrounds man, society, objects, and territory. These interactions contribute to the evolution of the system's elements and the system itself. This evolution embodies the territorial dynamics that we have identified in this analysis. We have formalized different circularities and shown the need to describe them in order to make the process of territorial development more visible, particularly in local, collective actions. Thinking about territorial organization and development from the perspective of circularities and that of the complexity of local projects can inspire other approaches.

References

- Arnsperger, C., Bourg, D. (2016). Vers une économie authentiquement circulaire. *Revue de l'OFCE* N° 145, n° 1, p. 91-125.
- Amblard, L., Berthomé, K. Houdart, M., Lardon, S. (2015). L'action collective et le territoire : regards croisés. *9ème Journée de Recherches en Sciences Sociales*, INRA - SFER - CIRAD, Nancy, France.
- Barles, S. (2005). *L'invention des déchets urbains, France, 1790-1970*. Champ vallon, 2005.
- Benoît, M., Deffontaines, J.P., Lardon, S. (2006). *Acteurs et territoires locaux. Vers une géoagronomie de l'aménagement*, Paris, INRA (Savoir-faire).
- Berroi, S., M. Delage, A., Fleury, S., Fol, M., Guérois, J., Maulat, L., Raad, J., Vallée, E., Viana Cerqueira (2017). Petites villes périurbaines at ancrage local des habitants. Les cas de Méru et Senlis dans l'Oise. *Espaces et Sociétés*, Ces villes dont on ne parle pas, n° 1-2/2017 (2017): 69-87.
- Blanc, M., Chadoin, O. (2015). Éditorial, *Espaces et sociétés*, 4/2015 (n° 163), p. 7-23.
- Colonna, P., Fournier, S., Touzard, J-M (2011). Systèmes alimentaires. In *duALine - durabilité de l'alimentation face à de nouveaux enjeux. Questions à la recherche*, 60-85, 2011.
- Debarbieux, B. (2014). Enracinement - ancrage - amarrage ? Raviver les métaphores, *L'espace Géographique*, n°1, p.68–80.
- Di Méo, G. (1998) *Géographie sociale et territoires*, Paris, Nathan Université, 320 p.
- Esnouf, C., Russel, M., Bricas, N. (2011). Pour une alimentation durable. Reflexions stratégiques duALine. Quae. Paris.
- Guespin-Michel, J. (2016). La révolution du complexe : science, dialectique et rationalité. Retrieved from http://www.revolutionducomplexe.fr/images/downloads/revolutionducomplexe_guespin.pdf
- Guespin-Michel, J., Ripoll, C. (2005). Systèmes dynamiques non linéaires, une approche de la complexité et de l'émergence. In Sève L., Guespin-Michel J., Charlionet R., Gascuel P., Gaudin F., Gayoso J., Ripoll C. *Émergence, complexité et dialectique Sur les systèmes dynamiques non linéaires*. Odile Jacob.
- Hobsbawm, E. (1995). Inventer des traditions, *Enquête*, vol. 2 | 1995, 171-189.
- Iceri V. (2019). *Actions collectives alimentaires en territoires ruraux : un regard sur la diversité, une quête pour le développement territorial Regard croisé entre Brésil et France*. Thèse de doctorat en géographie, sous la direction de Sylvie Lardon. Université Clermont Auvergne, p. 231.

- Iceri, V., Lardon, S. (2018). L'organisation socio-spatiale, un commun pour le développement territorial. Le cas d'une communauté faxinal au Brésil ». *Espaces et sociétés* n° 175, n° 4 : 87-104.
- Imbert, C. (2005). *Les ancrages des habitants des villes nouvelles franciliennes : des bassins de vie en construction*. Géographie. Université Panthéon-Sorbonne - Paris I.
- Lamine, C., Renting, H., Rossi, A., Wiskerke, J.S.C., Brunori, G., (2012). Agri-Food systems and territorial development: innovations, new dynamics and changing governance mechanisms. In *Farming Systems Research into the 21st Century: The New Dynamic*, Springer.
- Lamine C., Garçon L., Brunori G. (2019). Territorial agrifood systems: A Franco-Italian contribution to the debates over alternative food networks in rural areas ». In: *Journal of Rural Studies*, v. 68, 2019, p. 159-170.
- Lanciano, E., Poisson, M., Saleilles, S. (2016). Comment articuler projets individuel, collectif et de territoire ? Le cas d'un collectif de transformation et commercialisation en circuits courts, *Gestion 2000*, N°2-3, 75-93.
- Laville, J.L. (2014). Innovation sociale, économie sociale et solidaire, entrepreneuriat social. In : Klein, J-L, éd., *L'innovation sociale*. Toulouse, ERES, « Sociologie économique », p. 45-80.
- Le Moigne, J-L (1990). *Systémique et Complexité*. Revue Internationale de Systémique, vol. 4, n° 2.
- Malassis, L. (1994). Nourrir les hommes. *Etudes rurales*, 133-134, p. 209-210
- Méda, D. (2016). Une réaction : L'urgence d'un changement de paradigme, *Revue interdisciplinaire d'études juridiques*, vol. 77, n°2, p. 55-72
- Morin E. (1982). *Science avec Conscience*. Fayard.
- Morin, E. (1986). *La méthode*. Seuil. Tome 3. Paris.
- Morin E., Le Moigne J-L. (1999). *L'intelligence de la complexité*. L'Harmattan.
- Philipon P., Chiffolleau Y, Wallet F. (2017). *Et si on mangeait local ? Ce que les circuits courts vont changer dans mon quotidien*. Éd. Quæ, p.168.
- Rahnema, M. (2004). *Quand la misère chasse la pauvreté*. Babel.
- Sève L., Guespin-Michel J., Charlionet R., Gascuel P., Gaudin F., Gayoso J., Ripoll C. (2005). *Émergence, complexité et dialectique : sur les systèmes dynamiques non linéaires*. Odile Jacob.
- Viljoen, A., Wiskerke, J.S.C (2012). *Sustainable food planning: evolving theory and practice*. Wageningen Academic Publishers.

Wiskerke, J.S.C. (2010). On places lost and places regained: Reflections on the alternative food geography and sustainable regional development. *International Planning Studies*, 14, 369–387.