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Clarifying the Socio-Economic Dimensions of Agroecology: Between Principles and Practices

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Abstract: The concept of agroecology is being mobilized increasingly. However, its socio-economic dimensions receive little attention from academia. This study helps to clarify the socio-economic principles of agroecology by first identifying a list of principles in popular and scientific literature and, as a second step, by putting the principles to the test of a qualitative study of two Belgian organizations. *Agribio* is a grain cooperative, and *Les Grosses Légumes* is a network of consumers, farmers, and the members of an association set up to organize the production and distribution of vegetable boxes. Semi-directed interviews of the various actors linked to these organizations were conducted and then analyzed through an approach inspired by the convention theory in order to reveal the principles that the stakeholders have adopted. The main findings are then made explicit by analysis of four strong agreements (which concern the two organizations' marketing schemes, a Participatory Guarantee System set up by *Les Grosses Légumes* and *Agribio*'s flour mill). The two case studies show the gap that exists between the principles that describe the horizon of agroecology and the principles that are actually put into practice by the parties in the field through various transition pathways.

Keywords: agroecology, convention theory, short food channels, market independence, Participatory Guarantee System

Introduction

The most influential thinkers on agroecology, such as Miguel Altieri and Eduardo Sevilla Guzmán, originally defined agroecology as confined strictly to an ecosystems approach, while situating it as part of a political criticism of the productivist system (Stassart et al. 2012; Tripp 2008). Even today, Altieri's 1995 definition continues to be one of the mostly commonly used. It consists of five principles that fall in line perfectly with this restrictive approach (Altieri 1995). The literature also contains a panoply of definitions, indicators, thresholds, and principles for

determining what an agroecological system is, but none of them reflects the socio-economic dimensions with the same degree of clarity as for the agricultural and ecological dimensions. The aim of this article is to help clarify the social and economic dimensions of agroecology. Making these dimensions more concrete and visible in the scientific literature seems to be crucial. Fundamental aspects of agroecology, such as its collective capacity-building and emancipating goals, integration of local and scientific knowledge, territorial dimension, mobilization by multi-actor networks, and links with food sovereignty, might otherwise be neglected (Gonzalez de Molina 2013; Holt-Giménez and Altieri 2012; Stassart et al. 2012). In Europe, agroecology is starting to appear on the political agenda: this is the case, for instance, of the French Minister of Agriculture, who wants to make his country an agroecological frontrunner (Le Foll 2013). Moreover, transition theory (Geels and Schot 2007) suggests, in our view, the importance of linking the various innovations that claim to come under agroecology. Identifying the principles involved can help to foster such linkages.

More specifically, this study tries to achieve two goals. First of all, it is designed to start filling a gap in the literature, that of the lack of socio-economic principles of agroecology. The second goal aims at understanding the distinction between the theoretical principles and their practical applications in order to contribute to the global discussions on principles.

To address our first goal, a first list of principles is suggested. We chose not to conduct our review of the literature solely on the materials and publications of actors who identify themselves explicitly with the agroecology movement. As for the second goal, we were inspired by the convention theory as developed by Boltanski and Thévenot (1991). This approach was used to analyze the distinction between the theoretical principles presented in the literature and the principles that are put into practice. In order to achieve this, we focused on individual's behavior,

regardless of her/his social category and level of power, and investigated the situated people's relationships with other people and things when they try to justify their behavior.

The selected case studies concern two Belgian organizations that have had an agroecological dimension from the outset, namely, *Agribio* and *Les Grosses Légumes*. Both of them attempt to find ways to reclaim the ownership of the entire food system. *Agribio* is a cooperative of organic grain farmers that runs all the steps in the chain from production to marketing. *Les Grosses Légumes* is a network of farmers, consumers, and the members of a non-profit association involved in the production of organic vegetables.

1. Drawing up principles: why and how?

A. Defining the principles of agroecology: what are the stakes?

Principles, definitions, indicators, and thresholds for defining agroecology are proposed in the literature (Koochafkan, Altieri, and Holt Giménez 2011). For defining its socio-economic dimensions, we chose to rely on principles for two reasons. First, principles allow for more flexibility, especially since they can be studied with or without context, unlike indicators and thresholds, which require considerable contextualization, since they are more precise and restrictive. Second, we felt it was important to build on Altieri's definition, which consists of five principles and continues to be the most widely used definition of agroecology. This would enable us to contribute to a comprehensive definition of agroecology that would not omit its socio-economic dimensions.

The French National Agricultural Research Institute's Department of "Science for Action and Development" (INRA-SAD) and, later on, the Interdisciplinary Agroecology Research Group

(GIRAF) of Belgium's FNRS¹ recently contributed to updating these historical principles. SAD added four principles. One of them completes Altieri's set of principles by asking for the agrobiodiversity of production systems to be promoted as an entry point for ensuring food sovereignty and farmers' freedom of action. The other three principles concern research methodology and management. They stress the importance of including multiple criteria and the spatial and temporal variability of the resources in research, as well as the need to explore situations that are remote from the local optima (Tichit et al. 2010). GIRAF added four principles: a methodological principle that makes the importance of designing participatory research set-ups explicit and three socio-economic principles. The latter support the need to create collective knowledge and coping ability, to foster farmers' independence from the market, and to recognize the value of a diversity of knowledge and know-how. These principles were developed from the agroecological literature. However, in its publication, GIRAF underscores the need to refine the three socio-economic principles by comparing them with field experience (Stassart et al. 2012).

B. Socio-economic principles linked to agroecology

To have a better grasp of what the socio-economic principles of agroecology might encompass, we chose not to conduct our review of the literature solely on the materials and publications of actors who identify themselves explicitly with the agroecology movement. We also wanted to look at those of agricultural movements that are alternatives to conventional agriculture, fair trade, the cooperative movement, and the social and solidarity economy movement, *i.e.*, four currents that we considered to be close to agroecology.

¹ Belgian National Fund for Scientific Research.

The main “themes” of the socio-economic principles were identified in the literature (TABLE 1). The principles elaborated by the organizations themselves were often more detailed, restrictive, and linked to different local contexts. They were consequently grouped by topics.

[TABLE 1 Main themes of the socio-economic principles in the literature]

Fair trade was chosen because it is a current that typically includes all four dimensions, *i.e.*, social, economic, environmental, and political. In addition, this movement challenges the negative impacts of the productivist model of agriculture. The cooperative and social and solidarity economy movements defend a broader notion of utility than that set by the utilitarian tradition. What is more, these movements support new models of entrepreneurship with civic and social purposes, just as the agroecological movement does.

When it comes to the fair trade (FT) movement, both the historical North-South initiatives and the more recent North-North initiatives were considered. We referred to the World Fair Trade Organization (World Fair Trade Organization 2009), Ethiquable (Ethiquable 2011), and Bio Solidaire (Bio Partenaire 2011). For alternative agricultural models (AA) we referred to the following movements: organic agriculture via the principles developed by the International Federation of Organic Agriculture Movements, IFOAM (IFOAM 2009), and by Nature & Progrès Belgium (Nature & Progrès Belgique 2013); and peasant agriculture via the Fédération des associations pour le développement de l’emploi agricole et rural, FADEAR (FADEAR 2012). For the cooperative movement (CO) we referred to the principles developed by the International Cooperative Alliance (ICA). Finally, for the social and solidarity economy (SSE) we took the principles developed by the international research network on the social economy EMES (EMES 2011, 20–25) and those of the Walloon Council for the Social Economy (Centre

d'Economie Sociale Université de Liège 2010), given the local context, while we chose Laville (Laville 2006) as the main scientific reference for the solidarity economy.

Six themes covered in Table 1 are addressed in the agroecological literature. They usually are examined in a normative way as an horizon that the agroecological movement should follow. For this part of the review of the literature we mobilized articles which explicitly refer to agroecology and to food sovereignty. The latter is considered as the political framework which could allow peasants to put into practice agroecology (La Via Campesina 2015; Holt-Giménez and Altieri 2012). We shall briefly present how each theme is covered in this literature.

With a relatively strong evidence, the *environmental equity* theme is seen as arising from agroecological principles defined by Altieri as well as from the little use of agro-chemical inputs in any agroecological farm (Nicholls and Altieri 2012; Gliessman 2007; Altieri 2003). Moreover, according to La Via Campesina, the human being is considered as part of nature and the cosmos. Commodification of any form of life is rejected (2015).

The extreme reduction of external inputs in agroecological practices is considered as important for the environment as for promoting *financial independence* of farmers with respect to agro-industries (La Via Campesina 2015; Nicholls and Altieri 2012; van der Ploeg 2012; Koochafkan, Altieri, and Holt Giménez 2011; Gliessman 2007; Altieri 2003).

The theme of *market access and autonomy* is addressed by La Via Campesina which promotes transparent trade and autonomy to face global markets and to favor self-governance (2015).

Other sources stress the importance of diversification of agroecological farms in order to allow autonomy from the market (Nicholls and Altieri 2012; van der Ploeg 2012; Altieri 2003).

Diversification is also seen as improving the *sustainability and adaptability* of the system facing socio-economical shocks and climate change (Nicholls and Altieri 2012; Koochafkan, Altieri, and

Holt Giménez 2011; Altieri 2003). For Nicholls and Altieri (2012), these three themes – *financial independence, market access and autonomy, sustainability and adaptability* – consist in a fundamental distinction between agroecology and other models of alternative agriculture, such as organic agriculture.

Diversity and exchange of knowledge appears in different ways in the literature. The most influential thinkers on agroecology promote the enhancement of local knowledge (Nicholls and Altieri 2012; Gliessman 2007; Altieri 2003). La Via Campesina insists, in addition, on the importance of allowing an horizontal exchange of knowledge, from farmer to farmer (2015), as well as between generations (La Via Campesina 2015; Méndez, Christopher, and Cohen 2013). Other authors stress more on the importance of mobilizing traditional and modern knowledge (Stassart et al. 2012; Koohafkan, Altieri, and Holt Giménez 2011).

In the recent literature, *social equity* is mentioned through concepts of quality of life and livelihoods especially in rural areas; health of producers and consumers; and equity in the control of land, the economic power and the share of benefits (Timmermann and Félix 2015; Méndez, Christopher, and Cohen 2013; Koohafkan, Altieri, and Holt Giménez 2011; Gliessman 2007). Timmerman, Félix and Gliessman also stress on the importance of work quality. They assume that because agroecology implies a higher degree of knowledge and skill, allows access to a viable income and to more power, and facilitates self-determination, it leads to a better livelihood and work quality than in conventional agriculture (Timmermann and Félix 2015; Gliessman 2007). This analysis is called into question by other authors which found through empirical studies that agroecology does not always match with social justice in the current socio-economical context (Galt 2013; [Getz, Brown, and Shreck 2008; Guthman 2004] in Tomich et al. 2011).

Historically the importance of the theme of social equity was different in the three aspects of agroecology proposed by Wezel and al. (2009) – agroecology as a scientific discipline, as a practice or as a social movement. Agroecology as a practice emphasizes the benefits that agroecology brings to smallholders to implement “their indigenous farming practices as an alternative to a high input, chemical-intensive agriculture promoted by international corporations” ([Altieri 1989; Altieri 1995; Gliessman 2007] in Wezel et al. 2009, 506). Similarly, agroecology as a movement stresses “resource-poor small farmers”, considered “as target group for agroecological transition” (Wezel et al. 2009, 506). In that way, social equity is central in agroecological practices and movement. The scientific discipline component of agroecology insists less on social equity, with the exception of the food system approach introduced by Gliessman (2007).

Sevilla Guzmán and Woodgate (2013) suggest not to separate the three aspects of agroecology. Because of the importance of social equity in the movement and practices, this request implies to keep the human at the core of agroecology, even in the discipline (Sevilla Guzmán and Woodgate 2013). We chose to follow this option in our article.

The theme of *partnership between producers and consumers* is central in the food systems approach of agroecology. La Via Campesina insists on the importance of developing transparent relations between these two stakeholders of the food system (2015). For Gliessman (2007), it is mainly the reconnection between farmers and consumers in alternative food systems which will allow the development of other principles mentioned in Table 1 such as social and environmental equity, preservation of the rural fabric and geographic proximity.

Geographical proximity between the various stakeholders from production to consumption as well as *rural development and preservation of the rural fabric* are also two themes particularly

highlighted in the food system and in the food sovereignty approaches. Gliessman (2007) insists on local food systems with a connection between producers and consumers for the maintenance of communities and social cohesion. Rural development – with the two themes of social equity and autonomy – are at the core of food sovereignty which “aim has been to strengthen peasants and their smallholder agriculture in order to enhance (...) their autonomy, and to contribute towards rural development, poverty eradication and food security” (Beuchelt and Virchow 2012, 260).

The theme of *joint implementation of the various principles in actual practice* is also important in the literature. Food sovereignty is a concept “which is supposed to be holistic” and “requires the full implementation of all its elements” (Beuchelt and Virchow 2012, 262); while the most influential thinkers on agroecology ask for including all principles defined by Altieri to have an agroecological system (Stassart et al. 2012).

Three themes are very less addressed in the agroecological literature. The theme of *shared organization* between farmers and/or actors of the processing steps, as well as the theme of *limited profit distribution* are not discussed in an explicit way. *Democratic governance* is only approached by Gliessman (2007) who speaks about the importance of a democratic exchange of information between consumers and farmers. La Via Campesina and several authors in the literature on food sovereignty insist on democratic governance but in a political way – a dimension that we did not cover in the present article. They ask to have the right to participate to political decisions at a macro level (Wittman 2011).

C. Methodology

Two Belgian initiatives were studied in the Walloon Region. We chose to conduct interviews of fourteen actors. The semi-directed, comprehensive interviews were transcribed in full. The 193-page corpus was then analyzed with a methodology inspired by convention theory (Boltanski and Thévenot 1991; Eymard-Duvernay 2006). This theory looks at each individual's behavior, regardless of her/his social category and level of power, and investigates the situated people's relationships with other people and things when they try to justify their behavior. It belongs to the currents of heterodox economics and goes by the name of theory of conventions, of justification, of policies, or even of the economy of worth, depending on the approach. Within this framework, we studied socio-economic dilemmas defined as situations where organization's members shall choose between different options relative to socio-economic dimensions of the organization, options that defend values which all make sense for actors which refers to it. We focused on reached agreements between members which allowed them to get over these dilemmas and on justifications and implementations of these agreements. Such agreements either consist in simple arrangements that can be easily overturned or they are formalized and put into practices in a more sustainable way. The latter may be materialized in objects, giving them a certain degree of irreversibility.

We always first met with the founding members (1), the farmers (2) and the workers (3) of both organizations. Secondly, we met with external members of each organization implied in certain socio-economic dilemmas mentioned during the first interviews: others farmers (4) and private and public organization's members (5). Our approach was based on the sociological approach of food systems that is commonly used in agroecological research (Vanloqueren and Baret 2009; Warner 2007; Gliessman 2007; Francis et al. 2003). The five groups of actors were initially chosen as *strategic clusters*², that is a group of people which developed the same behavior when facing a specific situation. These groups were established so as to respect the principle of *complex triangulation*³. *Triangulation* imposes to cross data collected during the interviews. *Complex triangulation* suggests to vary informers depending of their relation to the issue which the interviewer is dealing with in order to include the heterogeneity of opinions as an element of the analysis (Olivier de Sardan 2008, 80).

The interviews were structured with a guide. The guide consists in a first introductive question followed by a list of themes to broach, according to the requirements of Blanchet and Gotman (2007). Regarding the organization's members, the introductive question concerned the history of individuals and the organization. Particular attention was paid to the understanding of actors' motivations to become part of the organization. Then, we developed the following themes:

² *Strategic clusters* is a translation of the French concept of '*groupes stratégiques*', introduced by Olivier de Sardan (2008, 81). The word 'strategic' does not refer to the power of actors. *Strategic cluster* is an empirical notion. Clusters have to be modified along with the field survey in order to stay relevant with the evolution of the problematic studied.

³ *Complexe triangulation* is a translation of the French concept '*triangulation complexe*', concept introduced by Olivier de Sardan (2008, 80).

modalities of production, of commercialization, of the decision making process, of financing, of collaboration and partnership and, finally, of access to knowledge.

Regarding the external members, the introductive question concerned one of the socio-economic dilemmas faced by one of the studied organization. We then specifically developed the themes questioned by the dilemma.

All along the interviews, the interviewer made sure that the interviewees illustrated their ideas and opinions with concrete examples and that they shared their motivations regarding the different choices they made.

2. The agreements built by the actors in the two Belgian agroecological food systems initiatives

Two Belgian organizations were studied, namely, *Agribio* and *Les Grosses Légumes*. These case studies were chosen for their diversity, complementarity, and their agroecological dimensions from the agricultural and social standpoints. Both of them attempt to find ways to reclaim the ownership of the entire food system.

We shall put forward four strong agreements in accordance with the approach clarified in the *section 1.C*. We shall analyze more intensively two of them. We first settled on a Participatory Guarantee System set up by *Les Grosses Légumes*. This agreement is more complex than the others and may be understood only through the dilemmas that it had to overcome. So, on the following pages we shall dwell more on the tests to which this agreement was put. In contrast, the *Agribio* agreement concerning the building of a flourmill was not subjected to tough tests. On the other hand, it was strongly materialized. This explains our decision to study the objects of this agreement in greater depth. Finally, we decided to give more rapid overviews of two

agreements concerning the marketing systems adopted by *Les Grosses Légumes* and *Agribio*.

These two agreements are necessary to compare and discuss our findings, but they must not be considered to be representative of the entire analytical process that was followed.

This section is organized as follows: we start by briefly presenting the organization in each case study, after which we tackle the analysis of the reached agreements (*Subsections A and B*).

Finally, we elaborate on the principles underlying the different agreements studied and we compare them with the recurrent “themes” (see *Section 1.B*) found in the literature (*Subsection C*).

A. Les Grosses Légumes

Les Grosses Légumes is a network of thirteen farmers, 300 households, and the members of the non-profit association *Solidairement*. The latter consists of just a few people, but is the entity that gave rise to the network, which was created in 2009. *Solidairement* and the network get large subsidies from the Walloon Region. Meix-devant-Virton, a village in the south of Belgium that is marked by a very high unemployment rate, is the hub of *Les Grosses Légumes*. In addition to the thirteen farmers of the network, ten farmers who do not have contracts with *Les Grosses Légumes* also supply the network from time to time, as needed. *Solidairement* was created to raise awareness about various subjects linked to consumption. To achieve this, *Solidairement* set up a socially-oriented cooperative, among other things. This cooperative took over the sole grocery store in the village in order to supply families in the region with locally-produced organic vegetables. Meix-devant-Virton and, more generally, Luxembourg Province and the southeastern part of Belgium form a region that is devoted practically exclusively to raising cattle. Ensuring a sufficient supply of fresh vegetables there was thus very difficult. This is the context in which *Solidairement* set up the *Les Grosses*

Légumes network⁴ in order to try to get regional farmers to grow vegetable, diversify their production systems, and get in touch with consumers.

The farmers who participate in the scheme sign a charter drawn up by *Solidairement*. This charter implicitly defends an agroecological approach (valuing and making use of agrobiodiversity, minimizing the losses of water and soil resources, etc.).⁵ The farmers commit to growing a certain amount of vegetables. In exchange, each consumer household takes a box of these vegetables every week for a year. They also pay for the boxes in advance. The entire scheme, including the pricing, is close to that used by the associations to support smallholder agriculture, *Associations pour le Maintien de l'Agriculture Paysanne* (AMAP), in France (Lamine 2008).

The first agreement we shall develop concerns a Participatory Guarantee System (PGS) designed by the network itself in order to ensure a good translation of the charter's words in deeds. The second agreement concerns the network's marketing scheme.

(i) A Western Participatory Guarantee System

PGS are certification systems that stand as alternatives to the conventional certification known as Independent Third-Party (ITP) certification. They came out of a movement supported by historical actors of organic agriculture in the seventies. They advocated a peer review process to control production conditions as well as to disseminate knowledge, known as the first party certification (González and Nigh 2005). In the nineties, the third party certification was imposed in the name of independence and transparency, and was in line with the strong growth and

⁴ *Les Grosses Légumes* does not have an official legal status. Still, its members are currently busy setting up a cooperative under the same name.

⁵ The charter may be consulted, in French, on the following site: *Les Grosses Légumes, La charte des Grosses Légumes*, <http://grosses.legumes.over-blog.com/page-2581566.html>, April 2014.

institutionalization of organic agriculture (Muttersbaugh 2005). This shift towards a new model of certification encountered resistance from some historical actors, such as *Nature et Progrès* (France – Belgium). They mainly criticize the loss of power in the decision process for producers which have to accept the delegation of control to a third party. This brought them to develop a new joint evaluation system with producers and consumers (Van Den Akker 2009), which led to PGS. Today, PGS is spread across every continent with the support of NGO and agroecological movements. A classical PGS comprises two main types of activity: field checks and mixed certification and inspection committees. In the first case, inspectors visit each farmer in the organization. Farmers other than the one inspected are present, along with consumers and sometimes a technical advisor. Inspired by *Nature et Progrès* model, *Les Grosses Légumes* built their own PGS. At least two farmers, two consumers, and two *Solidairement* members must be present in the case of *Les Grosses Légumes*. A report on what was said, seen, and discussed during the visit is then drafted. Based on this report, a steering committee composed of farmers, consumers, and *Solidairement* members discusses the sensitive issues raised in the report, such as noncompliance with a point in the charter (Hélène De Ketelaere, Nature et Progrès Belgique, personal communication, 2013). The committee meetings may culminate in technical information to share with the farmer, but also a penalty on, or even the exclusion of, a farmer. The PGS forces the farmers to be involved in a collective action. Solidarity among the farmers is crucial to maintain the network's reputation and its very existence. In fact, two farmers in the network were effectively excluded, showing the importance of the solidarity between *Les Grosses Légumes*'s members. The first exclusion concerned a farmer who, at the time of the visit, had not yet planted the 500 lettuce plants that he had agreed to deliver to *Les Grosses Légumes*. He explained that he would have had to hire someone to plant them, which would have

cost him as much as he stood to gain from the lettuce. Although his justification was interesting, he had accepted a contract that he was unable to honor and had not taken the trouble of informing *Les Grosses Légumes* of this problem. In the second case of exclusion, the farmer provided spoiled vegetables while providing other consumers with his own boxes in parallel. He preferred to keep his most beautiful vegetables for his own boxes and give the others to *Les Grosses Légumes*. Both farmers showed a lack of solidarity without complying with the commitments that everyone was supposed to meet in the name of respect for the collective.

“But it seems to me that the guy from whom we ordered 500 heads of lettuce and who had not even sown the seeds yet when he was supposed to show them [to the group] does not at all share our mentality. He is thinking about himself and nothing else” (member of *Solidairement*).

The PGS facilitates substantial and important exchanges of knowledge among the system’s members, especially during the inspections that materialize the PGS procedure. A large number of farmers usually take part in the visits, many more than the two farmers required. Besides these visits, the farmers also exchange knowledge over the phone, during informal rendezvous, and so on. Even better, they organize training sessions during which one of them shares her/his knowledge with the others. The network is currently looking for a technical advisor to take part in the field checks and enrich the exchanges, which for the most part are informal and always interpersonal, even more.

“It’s a great exchange, along the lines of “Wow! Your celeriac is gorgeous!

How’d you do that? But I did it like this...” “Yeah, but did you remember to cut the leaves?” “Oh? You have to cut the leaves? I didn’t know that!” It’s really a

nuts-and-bolts exchange, a grass-roots exchange that helps them a lot!” (member of *Solidairement*).

The exchanges are indispensable for the farmers, who were previously cattle farmers only and knew practically nothing about organic truck gardening. The members of *Les Grosses Légumes* consider these exchanges to be highly effective, thanks to the fact that they take place in a very hands-on manner, out in the field, during the visits. The following excerpt from one farmer’s interview shows the importance that the exchanges of knowledge have for him:

“In official certification (...) they come visit your place, they ask just a few questions to see if you used chemical fertilizers or herbicide on your land, they ask you for your seed invoices. And it’s roughly limited to that (...) you pay the inspector and he gives you a receipt to say it’s ok...And you haven’t learned anything! Here, we’re judged by our colleagues. If someone cheats, well, he’ll be found out right away, the professionals see it (...). Meeting and giving a diagnosis, it’s a bit as if you had some doctors making house calls, veggie doctors. With them, you get a solution” (*Les Grosses Légumes* farmer).

The PGS is a flexible guarantee system compared with independent third-party certification. Indeed, although *Les Grosses Légumes* requires compliance with a more demanding charter than the European regulations that are enforced by official inspection bodies, the steering committee takes the farmers’ situations and the possibilities that they have to enforce the charter into account. For example, if a farmer does not raise livestock in parallel with his truck-gardening activities, the network’s members will try to organize an exchange of manure with another farmer. However, if that is not possible, the network will accept his being supplied by less local sources, even though the latter is an important principle of the charter.

“We tried to get that guy to agree to bring her two or three dumpsters [of manure] (...). I think he did it a few times, and then he no longer wanted to do it. (...) it took up his whole day. OK, it’s difficult. And so now she takes horse manure, but of course it’s not from a ruminant, it isn’t the same thing. Still, she’s doing what she can; we’re not going to demand the impossible. There are some who also take lyophilized compost! (...) The people are so very different or have such different agricultural backgrounds. There are those who come from large-scale farming... There is one guy who was the head of cultivation on a truck-gardening farm in Champagne where he had I don’t know how many acres or how many workers to oversee. You can’t ask him to think like someone who tends a quarter of an acre (...). But everything is accepted!” (member of *Solidairement*).

However, the room for maneuvering granted to the farmers sometimes creates dilemmas. For example, some producers feel that all the farmers should use manure from the region and a better organization between the two activities should be instated.

“What I also would have liked to bring to our truck gardeners is the smallholder dimension (...). The family farm that wants to be autonomous and thus produces its own organic matter, its humus, itself (...). When you have isolated truck gardeners (...) they enrich their land with the compost that they buy, and so on and so forth, but then they once again depend on companies” (*Les Grosses Légumes* farmer).

The freedom that the farmers enjoy would not be possible without trust among them. The PGS built by *Les Grosses Légumes*, as other PGS (Sylvander 1997), accepts complex situations and

criticizes the principle of complying with industrial uniform criteria that tend to increase standardization at the expense of a definition of quality in a network of interpersonal relations. Still, as the following point shows, *Les Grosses Légumes* accepts certain rules of the industrial world (in the sense of Boltanski and Thévenot (1991)) to the point of upholding their legitimacy when they are called into question. One controversy concerning a farmer's failure to comply with the charter illustrates this point. This time, the farmer had planted a row of corn for his conventional livestock operation between rows of beans. *Les Grosses Légumes* had asked him to separate very clearly the crops for his livestock from his vegetables for the network's boxes because of the risk of contamination with pesticides. Following this problem, the steering committee decided to analyze the soil and beans for pesticides and to punish the farmer by not accepting his beans and not taking any of the vegetables that would be planted in the strip where the corn was for the next three years. The laboratory that analyzed the soil and beans did not find any traces of pesticide in them. Despite that, the punishment was not rescinded. In the beginning, the farmer was dismayed, for he hadn't done anything amiss! He nevertheless accepted the "sentence" to maintain the trust and solidarity that reigned among the farmers as well as with the consumers. As we can once again see, the PGS is indeed a system based on the trust that stems from interpersonal relations. What is more, relations between individuals are more horizontal and sanctions may be meted out locally only. We also can observe that if mistakes are made, the individuals are not immediately excluded from the network if they show solidarity with the network. The PGS gauges the "good solidarity" of the individuals involved. But *Les Grosses Légumes* chose also to conduct a technical test. The ability of *Les Grosses Légumes* to check that the charter is being enforced correctly is regularly the subject of controversy triggered by a few farmers outside the network. The latter are usually controlled by official inspection agencies and

do not agree to being made to compete with farmers who do not pay for these official inspections. In such a context, the test carried out by *Les Grosses Légumes* appears to be important to maintain the network's legitimacy.

It is also important to underscore the role of the PGS to prevent all competition between farmers, as a farmer related:

“We exchange information, that's to say that we aren't rivals. (...) There are no occupational secrets here, we all want to grow together, we want to create a direct sales, we'd like to live decently from our work but we can't achieve that all alone. (...) Close to seventy or eighty different vegetables are produced by the group as a whole (...) you can't do everything (...)” (*Les Grosses Légumes* farmer).

Moreover, the PGS would not be able to function if the farmers felt that they were competing with each other directly. Because they complement each other, cooperation prevails over competition. As a result, it is in their interest to exchange knowledge and know-how.

Finally, we can analyze the objects in the PGS agreement. The agreement seems to be only weakly materialized through the charter and the steering committee's reports. Some of the dilemmas encountered by the network – dilemmas concerning the room to manoeuvre that the farmers enjoy and the PGS's ability to inspect the farmers effectively – show the agreement's vulnerability, especially to outside criticism. Nevertheless, the aforementioned cases of exclusion and punishment show its ability to solve the dilemmas that it encounters and, through this ability, the system's resilience.

(ii) A pricing and prepayment scheme

The farmers commit at the end of each growing season to producing a certain amount of vegetables. They are paid in advance quarterly, rather than annually, in order to avoid creating

large debts if they are unable to honor their commitments. All the farmers are paid the same unit price for each specific type of vegetable. For the first year of the scheme's operation, the prices were aligned with the wholesalers' prices. Thereafter, *Les Grosses Légumes* decided to let the farmers discuss the price of each vegetable as a group. They set the prices as a function of the working conditions each year at the end of the growing season. The prices are regularly raised or lowered. The consumers pay for their veggie boxes in advance and subscribe to *Les Grosses Légumes* for a year. They may choose to pay one of three prices for the boxes, in line with their incomes and expenses. This scheme was set up after *Solidairement* conducted a subscriber survey.

The prepayment option gives the farmers and consumers considerable financial freedom compared with common markets. As a result, the farmers' work rises in the public's esteem compared with other professions. In addition, the way that the prices are set was deliberately chosen so that all the farmers would be paid the same.

“(…) with the principle that if carrots are grown and they are grown by three farmers, these farmers will be paid the same price” (member of *Solidairement*).

We also observe that this sales scheme could not work without interpersonal trust among the consumers, farmers, and *Solidairement* members. The price adjustments are made according to the individuals' needs and means. For the farmers, they depend on how hard the work is. In so doing, *Les Grosses Légumes* enables farmers who were solely cattle farmers and, for the most part, subscribed to conventional methods, to diversify their production system, shift to organic farming, and little by little, create an agroecological system.

“(…) the vegetable's price is discussed collectively (…). So, [as] we have no idea what will happen in terms of the harvest; we simply gauge the work, which

enables us to have a baseline price for the vegetable, a price that may be changed the following years if we realize that there are more difficulties, fewer difficulties, if they are picked by hand or using a small machine...” (member of *Solidairement*).

B. Agribio

Agribio is a grain cooperative that processes its harvests itself to make bread, pasta, muesli, and pastries. The whole operation has organic agriculture certification. The cooperative was created in 2000 to enhance its members’ sales and production autonomy. Today, Agribio runs all of the steps itself, from growing the grain to selling its products. It is still a small cooperative composed of six members: four farmers, a marketing advisor, and an accountant. It employs four people: two bakers, one miller, and a helper to distribute its products. Close to twenty farmers provide the cooperative with grain.

Always with a view to increasing their autonomy, Agribio’s members have built their own flour mill. First, we shall develop agreements reached by the members about the flour mill. After that, we shall analyze more briefly choices concerning part of Agribio’s marketing system.

(i) Agribio’s flour mill: an agreement that is difficult to reverse

Thanks to subsidies from the Walloon Region, the cooperative was able to buy five *Astrié* mills. These mills have all been placed at one of the farmers’ premises and may be visited by outsiders at all times. The *Astrié* mill is modern but built like a traditional mill, that is to say, with a natural (not reconstituted) stone millstone and without a cylinder. According to the people we interviewed, there is a major difference in the quality of flour produced by industrial mills with air cylinders and the quality of flour that comes from traditional mills with natural (not

reconstituted) stone millstones. The arguments put forward could usually be confirmed in the literature. They concern the mineral content, fibers, and importance of keeping the germ intact. For identical degrees of bolting, milled flour contains higher mineral and fiber contents (Taupier-Létage et al. 2007). Milling on a natural, non-reconstituted, stone millstone does not allow subsequent extraction of the germ, which is the operation most often conducted in industrial processes (Pierre Barré, farmer in Walloon Region, personal communication, 2012). Now, in the case of wheat, for example, the germ is the tissue with the highest protein and lipid contents (Feillet 2000)). Agribio also chose this mill because it is built in the south of France. The cooperative thus chose the model for quality and ecological reasons. This was a bold choice, for the *Astrié* mill has a granite, rather than flint, millstone, such as could be found before World War II. Granite being more fragile than flint, it requires more maintenance and gives an extremely low yield (Pierre Barré, farmer in Walloon Region, personal communication, 2012). As a result, Agribio had to increase the number of its mills. Today, it has five mills and Agribio's members do not think that having more mills would be profitable. Thus, their choice for *Astrié* mill limits their profit.

Agribio chose to equip itself with a flour mill to be independent from agrifood processing companies and chose the *Astrié* mill for nutritional and ecological reasons. What is more, it recently reorganized its flour mill for greater profitability: it automated the grain feed lines for its mills and the bagging and bag stitching operations, which were previously done by hand. These various steps in the production chain were thus the subjects of rationalization and mechanization, whereas the type of mill chosen and use of the farmers' own seeds (of local origin and chosen for their excellent bread-making qualities) guarantee the level of quality desired.

“The same mills always turn out the same quality flour. So, for example, we didn’t choose the grain because of its yield, but because of the quality of the flour, its bread-making quality. That’s what counts! [Feeding the mill] with a worm screw, a pneumatic cylinder, or by hand is not going to change anything” (Agribio farmer).

The purchase of the five mills that make up the flour milling business is a major investment for the cooperative members. Those five objects materialize their agreement and its underlying principles (developed in *Subsection C*) in a way that make it more robust and less reversible.

(ii) Multiple marketing pathways

Agribio’s members decided to sell their products through several channels: neighborhood stores (the bulk of their outlets), collective buying groups known as “GACs” in French, direct sales on the farm, restaurants, community kitchens, and, very marginally, to a supermarket. This multiplicity guarantees their independence from their customers. Nevertheless, having that many different customers increases the trips that must be made and complicates logistics. Moreover, the bulk of their output is sold by neighborhood stores and very little through collective buying groups, which they find highly restrictive on an organizational level.

With this agreement regarding their marketing scheme, they favor local outlets but, at the same time, they try to avoid channels that too much complicate logistics.

“[In speaking about the collective buying groups:] And then, it’s extremely complicated because Mariane is the one who does the bills and Josephine the one who sends them (...) and nothing is ever balanced! And we always forget their order, because it’s three loaves! (...) The principle is that it’s something to get rolling, to organize properly” (Agribio farmer).

“(…) for Agribio, the link with the consumer is, the consumer is close, but not necessarily local. So, we don’t consider ourselves to be a short chain, but rather a “proximity chain”. We sell to organic stores, to people who don’t know us or barely know us. We sell to supermarkets. We sell our flour in a few supermarkets and it seems to us that the organic label is the best suited to show our values in such cases (...). So, we are certified organic, of course, and we have two labels, the Biogarantie [Organic guarantee] and Nature & Progrès labels, which show our two faces well. We work with both customers who do not necessarily know the sector, who know just organic food, and so Biogarantie shows clearly...that it is a local organic [product], and then [we work with] Nature & Progrès. With them, we work more with buying groups, we are closer to very short chains, selling almost directly to the consumer, if you will” (Agribio farmer).

C. Actual implementation of the principles in the organizations studied

If we look at the two case studies, twelve of the thirteen principles found in the literature (see *Section 1.B*) could be identified in the four agreements studied. Just as a reminder, these were the two agreements reached by *Les Grosses Légumes* regarding the Participatory Guarantee System (PGS) and choice of a prepayment and pricing scheme (Price) and the two agreements reached by Agribio’s members regarding its milling business (Milling) and choice of sales channels (Marketing). Four principles were tackled in all four agreements under study (TABLE 2).

[TABLE 2 Principles identified in all four agreements]

Two principles were identified in three of the agreements (TABLE 3).

[TABLE 3 Principles identified in three agreements]

Finally, six principles were identified in two or only one agreement, most of the time in those of *Les Grosses Légumes* only (TABLE 4).

[TABLE 4 Principles identified in two or a single agreement]

One principle was not observed in our study of the four agreements reached by *Les Grosses Légumes* and Agribio. The missing principle is that of *limited profit distribution*, which was not seen because the two organizations that we studied have so far made a profit.

3. Discussion

When one conducts field studies, the principles defended by the people are usually easy to discern. However, we were more interested in their actual practices and achievements. The approach that we developed – inspired by the theory of Boltanski and Thévenot which calls for the analysis of individuals in real situations, when they are faced with socio-economic dilemmas and must justify their positions in order to try to reach agreements – enables us to analyze them. Their theory also encourages the study of objects which materialize as the agreements reached by individuals to get over encountered dilemmas, such as the five flour mills. The study of these dilemmas, agreements, and objects is what enabled us to go beyond the study of “high-flown speeches” and analyze the principles at work in daily acts and the actors’ abilities to put these principles into practice when the principles are put to the test.

This analysis of just two case studies and four agreements already sheds light on the sometimes big differences between the very general principles identified in the literature and their implementation on two levels. Firstly, such differences are seen between two agreements reached by the actors of a same organization. For example, the two agreements reached by Agribio on marketing options and on the production system express the will to be *independent from the*

markets. But, in the agreement reached with regard to the milling business, autonomy is acquired by taking over all of the grain production and processing steps, whereas, it is achieved by the presence of many different marketing channels in the agreement concerning Agribio's sales network. Secondly, the analysis shows that the same principle can be implemented differently within two organizations. We can also illustrate this point with the principle of *independence from the market*. Whereas Agribio acquires its independence by multiplying the number of sales circuits used, with conventional markets being one of them, in the case of *Les Grosses Légumes*, this independence is achieved by creating a new market that circumvents the conventional markets.

The study of the objects that materialize agreements (Agribio's *Astrié* mills; *Les Grosses Légumes*' charter and steering committee reports), for its part, enables us to stress the analysis of the principles' long-lastingness. Here it seems to us that these objects ensure the permanence of the principles that are mobilized. For example, the independence that Agribio acquired by taking over the various grain processing steps is materialized by the purchase of *Astrié* mills. This purchase is a major investment. Consequently, it will be difficult to challenge the principle of independence for years to come.

Finally, our analysis shows that *Les Grosses Légumes* produced sturdier agreements than *Agribio* in that they were thought out to include a large number of principles and to do so explicitly, on the one hand, and to ensure solidarity between members on the other hand. The case study illustrates the importance of establishing processes that force producers and consumers to act with solidarity towards each other.

4. Conclusions

Our study of the literature shows that the principles stemming from fair trade, the cooperative movement, the social and solidarity economy, alternative agricultural models, and the agroecological literature can yield a finer grasp of the socio-economic dimensions of agroecology. The methodology we developed, inspired by the convention theory, helps to account for the complexity of these principles, principles that cannot be reduced to simple norms if we examine their implementation:

- the same general principle corresponding to a theme identified in the literature can take on various, sometimes radically different, forms within the same organization or between different organizations;
- these diverse forms are of variable robustness, depending on the degrees of investment in them and their materialization;
- the implementation of a same principle is justified differently by each organization.

As a result, this study rekindles the debate about the usual tension between the constructions of broad or narrow principles. Broad principles foster the diversity of the trajectories, *i.e.*, the paths that lead to agroecological systems, whereas restrictive principles, being less flexible, are easier to use and mobilize in selecting projects that are labeled agroecological, for example. Rather than examining each principle separately and in a non-contextualized way, our analysis prompts us to look at how a set of principles is implemented together, *i.e.*, to look at the coherence of a system, to analyze its trajectory and to evaluate the self-fixed horizon.

Finally, as Goodman, Dupuis, and Goodman (2011) and Thompson (1996) have shown, a consensus on the definition of a current such as agroecology cannot be reached until the justifications and types of knowledge subtending the principles and definitions of the current are

clearly visible. Our analysis inspired by the theory of conventions makes plain the players' justifications. This theory thus appears to be a possible avenue for getting closer to a consensus on the socio-economic principles of agroecology.

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TABLE 1 Main themes of the socio-economic principles in the literature

Theme	Brief presentation
1.. Environmental equity ^{AE, FT, AA}	Environmental equity enhanced by taking the negative environmental externalities in each economic choice into account
2. Financial independence ^{AE, AA, CO, SSE}	Farmers and agricultural organizations are in control of the economic and technical decisions that they take, even if that means limiting the amounts of inputs used. This theme does not concern independence from the customers of the agricultural organization in question, which is considered a separate theme (<i>4. Market access and independence</i>)
3. Market access and autonomy ^{AE, FT, AA, CO}	Access to and independence from markets for farmers and all collective production or processing structures
4. Sustainability and adaptability ^{AE, FT*, CO}	Sustainability and adaptability of agricultural organizations stemming mainly from their inclusion in a network of farmers, consumers, technical advisors, and scientists
5. Diversity and exchange of knowledge ^{AE*, AA, CO*}	Traditional, empirical, and scientific knowledge is exchanged among the members of an organization
6. Social equity ^{AE, FT, AA, SSE}	Social equity among all the stakeholders on all levels of the food system
7. Partnership between producers and consumers ^{AE, AA, SSE*}	Partnership marked by the existence, whether formal or not, of a social contract between producers and consumers
8. Geographic proximity ^{AE, FT, AA, SSE}	Geographic proximity of the stakeholders in the various production, processing, and consumption phases
9. Rural development and preservation of the rural fabric ^{AE, FT, AA, CO, SSE}	A food system's projects participate in rural development and preserving the social fabric
10. Shared organization ^{FT, AA, CO, SSE}	Organization by the farmers and/or actors of the processing steps in common
11. Limited profit distribution ^{CO, SSE}	The profits are used to reach a social goal and not just to maximize the return on the capital invested
12. Democratic governance ^{FT, AA, CO, SSE}	The power of an organization's members is not based on their capital; decisions are made democratically
13. Joint implementation of the various principles in actual practice ^{AE, AA, SSE}	The principles that an organization defends must be implemented together rather than separately

*AE = Agroecology; FT = fair trade; AA = alternative (to conventional) agricultural models; CO = cooperative movement; SSE = social and solidarity economy.

TABLE 2 Principles identified in all four agreements

Organization and agreement	Principle
1. Partnership between producers and consumers	
<i>Les Grosses Légumes</i> PGS	Relationship of trust between farmers and consumers, direct contact between the two stakeholders during the field checks
Price	Consumers trust the farmers to set the prices for their vegetables that they consider to be fair
<i>Agribio</i> Milling Marketing	Transparency of all the production and processing steps Direct contact between consumers and Agribio members in several of the marketing pathways: collective buying groups and on-the-farm direct sales
2. Geographical proximity	
<i>Les Grosses Légumes</i> PGS; Price	Network, production steps, and marketing spread over an area 100 by 80 km
<i>Agribio</i> Marketing; Milling	Marketing and production and processing steps done at the local scale
3. Environmental equity	
<i>Les Grosses Légumes</i> PGS	The charter's proper implementation is checked by the farmers and multiple exchanges of knowledge take place to ensure organic farming
Price	Prices set to cover the production costs of organic farming, regardless of the farmer's competitiveness
<i>Agribio</i> Marketing Milling	Local sales to cut the environmental costs of transport Produce processed by the cooperative itself; no imports of inputs; work under organic agriculture rules
4. Joint implementation of the various principles in actual practice	
<i>Les Grosses Légumes & Agribio</i> PGS; Price; Marketing; Milling	Both <i>Les Grosses Légumes</i> and Agribio implemented a series of principles in combination. This was particularly clear in the case of Agribio's milling business, where the purchase of <i>Astrié</i> mills and construction of the flour mill – which represent important investments – imposed on Agribio the need to heed a series of principles (described in this <i>Section C</i>)

TABLE 3 Principles identified in three agreements

Organization and agreement	Principle
1. Shared organization	
<i>Les Grosses Légumes</i>	
PGS	Principle implemented in a very narrow manner thanks to the organization established by the farmers to check each other, ensure the network's good reputation, and share knowledge about organic truck-gardening
Price	The producers set the price of each vegetable together
<i>Agribio</i>	
Milling	Farmers organize jointly all the steps required to process their grain into flour in the same flour mill
2. Market access and independence	
<i>Les Grosses Légumes</i>	
Price	No ties with conventional markets (except for the vegetable prices set the first year on the basis of wholesale prices)
<i>Agribio</i>	
Marketing	Multiple marketing channels to ensure independence from customers
Milling	Autonomy safeguarded in all the grain-to-flour production and processing steps

TABLE 4 Principles identified in two or a single agreement

Organization and agreement	Principle
1. Financial independence	
<i>Les Grosses Légumes</i> Price	A fair price allowing the farmers to work profitably without having to collect third-party certification bonuses. Still, the principle is only partially implemented, since <i>Les Grosses Légumes</i> gets a number of subsidies.
<i>Agribio</i> Milling	Produce processed by the cooperative itself to avoid depending on agrifood companies
2. Democratic governance	
<i>Les Grosses Légumes</i> PGS	Decisions taken by the entire group of stakeholders through an informal (non-voting) process. In addition, <i>Les Grosses Légumes</i> 's way of ensuring compliance with the charter itself exhibits a desire for self-governance.
Price	Prices set by all the farmers as a group. <i>Les Grosses Légumes</i> likewise shows a desire for self-governance by creating its own pricing in order to avoid the conventional markets
3. Social equity	
<i>Les Grosses Légumes</i> PGS	More room to manoeuvre and freedom given to the farmers in the PGS than in a conventional TPI certification system
Price	Vegetable prices that allow for the work's "hardship factor"
4. Rural development and preservation of the rural fabric	
<i>Les Grosses Légumes</i> PGS	Creating ties among and uniting many people in the region: 300 families, farmers, and <i>Solidairement</i> 's members
Price	Fair prices that support the farmers and, in so doing, help to safeguard their jobs
5. Sustainability and adaptability	
<i>Les Grosses Légumes</i> PGS	Easier for farmers to adapt to new environmental requirements thanks to the exchanges of knowledge promoted by the PGS
6. Diversity of knowledge and ability to transfer it	
<i>Les Grosses Légumes</i> PGS	Large information flows among the consumers, farmers, and members of the non-profit association <i>Solidairement</i> , especially during the field checks, but also on more informal occasions