Journal of Rural Studies 47 (2016) 165–171

Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

Towards an agroecology of knowledges: Recognition, cognitive justice and farmers' autonomy in France

Brendan Coolsaet

Centre for Philosophy of Law, Collège Thomas More, Place Montesquieu 2, bte L2.07.01, B-1348 Louvain-la-Neuve, Belgium

ARTICLE INFO

Article history:
Received 22 December 2015
Received in revised form
15 June 2016
Accepted 7 July 2016

Keywords:
Recognition
Cognitive justice
Agroecology of knowledges
Autonomy
Participatory breeding

ABSTRACT

Most collective agroecological initiatives in Europe today are built around a plurality of knowledge systems. Going beyond the well-documented instrumental goals of this knowledge-plurality, this paper highlights another, perhaps less obvious objective: the pursuit of recognition and cognitive justice.

The subordination of alternative farming practices, such as agroecology, to industrial high-input farming leads to the misrecognition of peasant communities. Challenging industrial agriculture hence requires both equality between different forms of doing farming and an active engagement with different ways of knowing farming. Cognitive justice, a concept originating in decolonial thought, encompasses not only the right of different practices to co-exist, but entails an active engagement across their knowledge-systems.

Using an example of participatory maize breeding in France, the paper illustrates how peasant movements in Europe organize an 'agroecology of knowledges', a counter-hegemonic engagement with modern agronomic science, through the recovery and co-production of situational, environment-specific knowledge, and the reskilling of farmers. It aims not only at improving agricultural science, but also at rebuilding collective identities and reclaiming autonomy.

He who has two hectares, three goats and two sheep is not a farmer

— Xavier Beulin, president of the French National Federation of Agricultural Holders' Unions (FNSEA), in *Le Monde*, 7 April 2014.

1. Introduction

Agroecology is said to be a knowledge-intensive—as opposed to input-intensive—agricultural practice (Altieri and Nicholls, 2012; De Schutter, 2010). Agroecological methods are built around a plurality of knowledge systems. At farm-level, this translates into the re-skilling of farmers, who not only combine modern science and local knowledge, but (re)generate new, situated knowledge. At group level, knowledge plurality emerges through specific governance arrangements which allow for collective learning processes and co-creation of knowledge. Examples such as Participatory Breeding (PB), Participatory Varietal Selection (PVS), or Participatory Guarantee Systems (PGS) rely on negotiated, environment-specific knowledge, and peer-based quality checks. They develop a new agriculture fuelled by reflexive input of both formal and non-formal agricultural, ecological and social knowledge.

While the practical goal of this knowledge-intensity is rather straightforward – *i.e.* replacing exogenous inputs with better understanding of agriculture as a sustainable ecosystem, including socio-economic variables (Gliessman, 2007) – this paper highlights another, perhaps less obvious underlying objective: the pursuit of recognition and cognitive justice.

The re-emergence of peasant farming in Europe (van der Ploeg, 2008) can be understood as a double struggle for recognition. The first one is a struggle against the institutionalized subordination of alternative practices, such as agroecology, to industrial agriculture. Remedying this requires a form of status recognition in which different farming practices can co-exist.

Status equality, however, may be insufficient to challenge industrial agriculture, a sector characterized by the dominance of modern science. The second struggle for recognition, hence, is one for cognitive justice. Cognitive justice is a notion originating in decolonial thought. It encompasses not only the right of different practices to co-exist, but entails an active engagement across their knowledge-systems (Visvanathan, 2005; Santos, 2007). This paper argues that the pursuit of cognitive justice, through its inherently counter-hegemonic nature, serves an objective of 're-

E-mail address: brendan.coolsaet@uclouvain.be.

http://dx.doi.org/10.1016/j.jrurstud.2016.07.012
0743-0167/

peasantization' (van der Ploeg, 2008): a constant struggle for autonomy based on a combination of the 'endogenous potential of agriculture' (Guzmán and Martinez-Alier, 2006: 472) and the resistance against the neoliberalization of the agri-food system (Stock et al., 2014).

The paper begins by introducing the reader to the concepts of (justice as) recognition and cognitive justice, drawing on critical theory and decolonial thought. It then considers the relevance of these concepts for the European context, showing how European peasants are culturally and cognitively misrecognized. Through an example of a collective agrobiodiversity governance initiative in France, the paper proposes a new concept, termed the agroecology of knowledges,[1] to further theorize and understand the role of knowledge in the recognition of peasant farmers and communities. The importance of this approach for a more sustainable agriculture is discussed in light of existing theoretical and empirical approaches in the concluding section.

2. Recognition and cognitive justice

While not necessarily wrapped in an explicit justice discourse, the reliance on knowledge plurality in peasant farming can be understood as a struggle for recognition. For Nancy Fraser, misrecognition occurs through a hierarchization of cultural values, in law or in practice (Fraser and Honneth, 2003). This hierarchization makes some people and/or communities 'inferior, excluded, wholly other, or simply invisible' (Fraser, 2000: 113), keeping them from participating in social interaction on equal footing with others. It thus takes the form of an institutionalized social subordination, which can only be challenged through 'affirmative recognition of difference' (Fraser, 2000: 116).

Institutionalized misrecognition goes hand in hand with two other forms of injustice: economic maldistribution and political misrepresentation (Fraser, 1995, 2005). Injustices hence arise out of a combination of economic exploitation, cultural subordination, and political inequality (Fraser and Honneth, 2003; Olson, 2008). These three factors combined prevent the existence of 'participation-parity', *i.e.* 'social arrangements that permit all to participate as peers in social life' (Fraser, 2005, 2009: 60).

Recognition, hence, would provide a space for cultural diversity to gain societal acceptance. However, while contemporary political claim-making increasingly focuses on the misrecognition of identity, gender, race, religion and/or culture (Fraser and Honneth, 2003), it rarely includes knowledge-based misrecognition. Modern science often remains the only form of knowledge to be seen as valid and exact (Santos, 2014). Moreover, status equality may not be enough in a socio-economic sector (*i.e.* agriculture) characterized by the dominance of modern agronomic science. Beyond the existence of alternative discourses and practices, there is a need for 'an alternative thinking of alternatives' (Santos, 2014: 42).

Fraser herself acknowledges that struggles for recognition are exacerbated in today's 'knowledge society' (Fraser, 2001), but does not clearly address the issue of dominant conceptions of knowledge. If cultural subordination is largely influenced by the knowledge one possesses and/or uses, what is required is 'equality between different ways of *knowing* the world' (Martin et al., 2013: 123; my emphasis). Like cultural misrecognition, cognitive injustice is an 'institutionalized relation of social subordination' (Fraser, 2000: 113). Unlike cultural misrecognition, however, it is not characterized only by the devaluation of group-specific identity or socio-cultural status, but by the marginalization of one's relation to the world in the name of rigor, rationality, effectiveness or efficiency. Decolonial theorists see cognitive injustice as the consequence of what Santos et al. (2007) call the 'coloniality of knowledge': the hegemonic conception of modern science. It implies that access to scientific knowledge is unequally distributed in society and thus serves the interests of dominant actors (Santos, 2014).

Cognitive justice encompasses not only the right of different practices to co-exist (which is a necessary condition nevertheless), but entails an active engagement across their knowledge-systems (Visvanathan, 2005, 2009). In practice, cognitive justice is given shape through an 'ecology of knowledges': an active dialogue between different forms of knowledges and practices, both scientific and nonscientific (Santos, 2014). It involves rethinking the way in which knowledge emerges in modern science, where one side produces and the other passively consumes. It challenges the 'monocultures of the mind' (Shiva, 1993) and calls out the external limits of modern science, *i.e.* dimensions rendered invisible by reductionist epistemologies (Santos, 2007, 2014).

Following Santos (2014), an ecology of knowledges emerges out of a combination of two factors, both of which are present in the context of European agriculture: the presence of significant political resistance to capitalism, and the confrontation between radically different world views, 'so much that they cannot be brought together under the umbrella of a single totalizing alternative' (Santos, 2014: 192).

3. Cognitive justice and European agriculture

Peasant farmers in Europe face a double form of misrecognition. First, today's agriculture is characterized by the subordination of the alternative practices they use to industrial high-input farming. The 'alternative' and 'industrial' models are simplified ideal types, and many agricultural practices are likely to lie somewhere in between or combine elements from both models. Yet one can observe that characteristics of the industrial model – high external-input, biotechnology, labor specialization and output maximization – continue to gain prominence at the expense of emerging alternative practices, such as agroecology.

Emerging in the 1930s, the meaning of agroecology has evolved over time, and has been defined as a scientific discipline, a social movement and an agricultural practice (Wezel et al., 2009). Agroecology "provides the basic ecological principles for how to study, design and manage agroecosystems that are both productive and natural resource conserving, and that are also culturally sensitive, socially just and economically viable" (Altieri, 2002: 7). In the 1990s, the concept expanded to include social movements fighting for the transformation of the whole food system (Wezel et al., 2009) and has been popularized by global farming movements such as *La Via Campesina*.

Proponents of agroecology note that, despite a growing evidence-base on its effectiveness, it is still considered a *marginal* form of agriculture, and thus replaced by conventional solutions (Altieri and Nicholls, 2012). This may be explained by the perceived yield potential of industrial farming (Tilman et al., 2002), by lock-in mechanisms (Vanloqueren and Baret, 2009; Stassart and Jamar 2008) or by path dependency (Stassart and Jamar 2008). Looking at agriculture through a justice-as-recognition lens offers another complementary explanation. The sustained importance of high-input agriculture may also be explained by the fact that the industry, the world vision it represents, and the knowledge it uses have gradually been imposed as the dominant Western agricultural narrative (Thompson and Scoones, 2009). Contemporary European agriculture is the result of historical constructions of cultural discourse, ideas and ideology formed by dominant actors (Potter

[1] This term freely paraphrases Boaventura de Sousa Santos' concept of "ecology of knowledges", discussed further below.

and Tilzey, 2005).

This misrecognition is made possible by a series of laws and policies leaving little leeway for the emergence of alternatives. Examples include:

- seed laws that exclude everything but commercial seed protected by intellectual property rights (Bocci and Chable, 2009), precluding dissemination and re-use of seed varieties developed through farmer selection;
- the framing of 'bio-economy' policy frameworks neglecting farmers' contributions in terms of social innovation and the production of public goods (Schmidt et al., 2012);
- direct payments and green subsidies under the Common Agricultural Policy, based on production amounts and farm size, thereby promoting large farms or non-producing actors (Hennis, 2005);
- weak or inadequate regulatory oversight for open-air GMO field testing, which results in the contamination of organic and/or non-GM crops (Clapp, 2008; Roff, 2007), compromising farmers' autonomy with regard to the presence of unwanted GM traits in their seed and planting stock; and
- research policy generating unbalanced funding opportunities between agricultural models (Vanloqueren and Baret, 2009). Over the last 20 years, the share of biotechnologies in the agricultural research budgets of the European Framework Programs has increased almost fourfold, amounting to 75% of the total budget in 2013. The share for research on alternative practices agriculture has been much lower (e.g. organic agriculture: 7% of the total budget in 2013) and stagnant (Baret et al., 2015).

The alleged universality of industrial agriculture thus rests on a form of cultural and legal domination that denies the emergence of collective identities and the adoption of different practices. Not only does it create injustice by misrecognizing peasant farmers, it also creates dependence upon an industrial farming model by weakening the emergence of alternatives.

Second, peasant farmers and communities are also cognitively misrecognized. Over the course of the twentieth century, farmer and community-driven agricultural knowledge has been sacrificed in the name of progress and modernity (Sumberg et al., 2012). Through a highly centralized knowledge system, it appears that science-based industrial agriculture has gradually made impossible the confrontation and interaction with alternative knowledges and worldviews (Morgan and Murdoch, 2000; Kaltoft, 1999).

The division of agricultural labor and the increasing power of non-producing actors have stopped the decentralization of farmer-driven knowledge, through a double process of altering the ways in which knowledge was traditionally preserved and shared, and of radical de-skilling of farmers (Timmermann and Félix, 2015; van der Ploeg, 1993). Industrialized agriculture has generalized a top-down approach to the production and sharing of scientific knowledge (*i.e.* from the scientist to the farmer) (Scoones and Thompson, 1994), thereby excluding other approaches based on participation, reciprocity and inter-generational sharing.

It has also popularized a reductionist conception of agricultural biodiversity, where plant and animal genetics can be fixed in time, where environmental conditions can be homogenized and controlled by external inputs, and where the best way to conserve and improve agricultural biodiversity is through *ex situ* conditions. The use of traditional knowledge and techniques is not excluded *per se*. But it leads to problems with their appropriation under property rights (Correa, 2001) or to 'muzeumization'[2] (Visvanathan, 2006), thereby depriving farmers from their cognitive or natural resources and/or devaluing their knowledges and practices.

The environmental impact of industrial agriculture is a well-documented issue (Burney et al., 2010; Tilman et al., 2002; Altieri, 1998; Carson, 1962). But beyond climate, soil quality, groundwater and biodiversity, what is threatened by industrial agriculture is the whole body of knowledge associated to their preservation. Creating and sustaining local and situational farming knowledge can only be the product of a long history of observation and reflexive management of ecological complexities and interactions. Unlike in the Global South, where many traditional and local agricultural practices and knowledges have survived increasing industrialization (Altieri, 2002), much of that knowledge has disappeared in Europe. One of the challenges of peasant movements in Europe hence is the regeneration of situational knowledge, and the creation of supportive governance processes.

4. Research framework

The paper introduces a new theoretical position (cognitive justice) and concept (agroecology of knowledges) to the study of knowledge plurality in European peasant farming. Decolonial thought and cognitive justice are largely under-addressed when studying (European) farming systems. The paper therefore is structured as a heuristic case study 'used to stimulate the imagination toward discerning important general problems and possible theoretical solutions' (Eckstein, 1992: 143). Heuristic case study is a theory-building approach seeking to generate new theories in an inductive manner (George and Bennett, 2005). New theories can then lead to new hypotheses and be tested on other cases.

For research to serve a heuristic function, certain kinds of cases may be regarded as more instructive than others (Eckstein, 1992). The case presented below was identified as the most useful case for theory-building, among a larger set of 8 alternative, producer-led farming initiatives in Western Europe (in Belgium, France, Germany and the Netherlands) which were studied as part of a another, larger study on justice and agrobiodiversity conservation.

In the following section I analyze how AgroBio Perigord (ABP), an association for the development of organic farming in France, built an agroecology of knowledges via the creation of a pioneering participatory breeding program. Among other things, ABP hosts a community seed network in Périgeux, a small city in southwestern France. ABP is known nation-wide for its *in situ* conservation of local and regional plant landraces threatened by genetic erosion. It is a key member of the national French Peasant Seed Network ('*Réseau Semences Paysanne*').

To analyze the role of knowledge in the activities of the association, four semi-directed face-to-face interviews were conducted with the association's coordinator and with one of the founding farmers (in 2013 and 2015). These interviews were conducted on site, which allowed establishing rapport with the community and its environment. A two day participatory observation mission was conducted in September 2015 during one of the association's breeding workshop. The workshop was organized as a dialogue between different perspectives on varietal selection and on the collective management of agricultural biodiversity. Beyond ABP farmers, it included facilitators, partner scientists and South American peasant representatives from Chile, Colombia, Brazil and Mexico. Findings from the interviews and the participatory

[2] For Visvanathan (2006: 166) 'the museumization of knowledge, rather than being a humanistic attempt to save knowledge, disembeds and fossilizes it'. The concept of the museum, 'as the annex of the laboratory', is based on a linear understanding of scientific progress, departing from what is seen as obsolete or primitive knowledge.

observation have been combined with the information contained in the internal and external publications of the association.

5. Building an agroecology of knowledges in France

An agroecology of knowledges is the *counter-hegemonic engagement with modern agronomic science, through the recovery and co-production of situational, environment-specific knowledges, and the reskilling of farmers. It aims not only at improving agricultural science, but also at rebuilding collective identities and reclaiming autonomy*. In essence, an agroecology of knowledges is a struggle for recognition through which cognitive justice is achieved in peasant farming.

Grasping the emergence of an agroecology of knowledges requires looking at the context in which it was able to develop. The activities of ABP were triggered in the early 2000s by growing dissatisfaction with the functioning of the seed industry:

> *We started in 2000, following a message from the local sanitary authorities of an 'accidental' GMO contamination of organic seed lots. It created distrust towards our seed suppliers, and I better understood the need for more seed diversity and autonomy for the farmers for the preservation of organic agriculture. Up to [the year] 2000, I was growing organic hybrid corn bought from conventional commercial seed producers* (ABP participating farmer, interview 2013; author's translation).

A small group of farmers decided to start gathering and experimenting with traditional and/or local plant landraces. It led to the creation of a decentralized *in situ* seed network for both professional farmers and home gardeners. While the network is called 'Seed House' ('*Maison de la Semence*'), its functioning is different from *ex situ* seedbanks:

> *[The] 'Seed Houses' really are a concept [...]. Everyone multiplies, creates, sustains a number of species or varieties. Everyone stores his own seeds or plants. The seed stock becomes collective through the exchange system* (ABP participating farmer, cited in Bio d'Aquitaine, 2011: 17; author's translation).

The first trials were disappointing, especially in terms of yields. The lack of knowledge and know-how appeared to be a crucial factor for an effective utilization of these landraces:

> *Owning local seeds is not enough [...] One also needs to re-acquire lost knowledge for breeding and for their adaptation to the environment. [...] Enclosing agricultural knowledge [also] forms a danger for future generations. Addressing the need of future generation inevitably leads to a form of decentralized knowledge production*. (participating farmer, interview 2013; author's translation)

To understand this double phenomenon, one has to look at the characteristics of French agriculture and its evolution during the second-half of the 20th century. Following the Second World War, and until the late 1970s, agronomic science in France was largely steered by the State, which launched an ambitious 'modernization' program. Science and technology were used to develop a highly productivistic and specialistic agriculture to meet demands for the reconstruction of the war-torn economy and to ensure food security.

This modernization process left little room for alternative knowledges and world views on agriculture. Seeds, inputs, knowledges, norms and practices were standardized (Bonneuil et al., 2006). As a consequence, post-war agriculture in France was characterized by a high level of muzeumization: 'obsolete' traditional varieties and local landraces were gradually stored in *ex situ* seedbanks and replaced by 'high-performance' breeds which are suitable for mass production:

> *The use of high-input hybrid varieties over two generations of farmers has had a double consequence: the disappearance of local landraces but also of their associated knowledge […]* (ABP participating farmer, interview 2013; author's translation).

From the 1980s onwards, with the advent of the neoliberal project, the vacuum left by the decline of public sector support for agriculture was filled by market players. Agricultural practice and science in France went from a technical discipline, controlled and organized by the State, to a market-only endeavor, tailored for powerful non-producing actors and characterized by the growing capacity of multinational firms to control agricultural production and agronomic research (Bonneuil and Thomas, 2009). A contemporary example of this is the introduction in 2001 in France of a generalized royalty scheme for bread wheat farmers. The scheme, called 'mandatory voluntary contributions' ('*Contribution Volontaire Obligatoire*') is to be paid by all bread wheat farmers, regardless of the seed they use. Part of this royalty is reimbursed to small-scaled farmers who buy commercial seed the next year. The scheme hence strongly discourages the conservation of locally adapted peasant varieties and favors a corporate seed market.

Since the turn of the century, this dominance has been actively opposed by emerging social movements, both in France (Bonneuil and Thomas, 2009), such as ABP, and elsewhere (Sumberg et al., 2014; Rosset and Martinez-Torres, 2013).

5.1. The recovery and co-production of situational, environment-specific knowledge, and the reskilling of farmers

ABP runs an ambitious participatory plant breeding program to foster the conservation of local plant landraces—which the association calls 'peasant varieties'—and reacquire their associated knowledge. It ambitions to replace the dominant linear model of varietal selection and innovation (from ex situ collection, to external breeders, to farmers) with a decentralized farmer-centered approach (Fig. 1).

Developing a new crop at ABP starts with an explicit demand from one of the members. Based on the expressed needs, the farmer's environmental conditions (soil, climate) and preferred outputs, candidate-crops are identified in the organization's network. These crops then are tested either on the organization's experimentation platform or on a testing-parcel made available by the farmer. In order to reacquire know-how and breeding techniques, participating farmers commit to multiply and return two-thirds of the initial amount of seed to the network. This return not only allows keeping of a 'safety-copy', it also ensures a necessary turn-over to prevent genetic degradation. The rest of the seed is resown, multiplied and selected by the farmer during the following seasons, thereby gradually creating a new locally-adapted variety (Combette et al., 2015; ABP staff, interview 2013).

During the whole breeding process, a constant dialogue between different knowledge systems is organized. Farmers initiate the breeding process, based on their own experience, knowledge, context and needs. The process is organized by a joint experimentation agreement and a specific breeding protocol. These protocols combine past experiences and continuous updates by ABP's team of agricultural facilitators, who provide training and assist farmers when introducing local landraces and developing new varieties. Through peer-based 'farm-talks', farmers then visit their

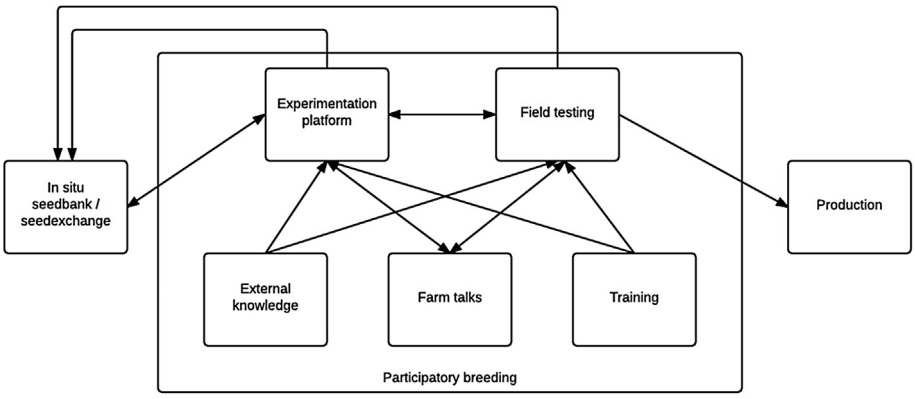

Fig. 1. Decentralized farmer-centered breeding process at AgroBio Perigord

respective farms and discuss their breeding protocols, techniques and outputs. The participatory breeding program hence takes the form of a social learning platform in which farmer-driven knowledge is discussed, improved and shared through the active participation of other local farmers. A yearly technical report allows for follow-up and sharing of the results from new varieties, protocols and production outputs.

The importance given to local and participatory knowledges and techniques, however, does not equate to the rejection of valuable external input, whether originating from the scientific community or from other parts of the world.

Since 2007, ABP works with partner scientists, in particular researchers from the French National Institute for Agricultural Research (INRA), to improve and experiment with specific issues and crops. The association values and exploits the scientific input, but does so in dialogue with its own knowledges, within its own co-production model and without hierarchies between the different forms of knowledge:

> *We can co-exist with the current system and enrich each other. Our knowledges are based on another approach to living organisms: they are different and complementary, but not inferior.* (Chable and Berthellot, 2006: 129–130; author's translation)

Finally, external knowledge also comprises 'learning from the South'. From an empirical point of view, ABP organizes co-production gatherings between Southern farmers and their own members. The organization is particularly interested in the input of Latin-American farmers, especially Brazilian, who are much more advanced in both experimental farmer-led breeding protocols, as well as the necessary supportive governance processes (e.g. Canci et al., 2013). From a more theoretical point of view, learning from the South also means rejecting the hierarchization of knowledges, 'because there isn't one knowledge to be imposed on others' (Martínez-Torres and Rosset, 2014: 980).

5.2. Rebuilding collective identities and reclaiming autonomy

ABP's fight for new ways of knowing, doing and validating science also aims for social and political change. Reusing traditional seeds and producing knowledge should thus also be understood as an attempt of ABP farmers to break loose from the dominance of ill-suited policies and laws, on the one hand, and of non-producing commercial actors on the other:

> *It is the lack of knowledge that creates dependence towards private breeders and their hybrid varieties […]. The division of agricultural labor kills the decentralization of knowledge.* (ABP participating farmer, interview 2013; author's translation).

It could be described as a process of re-peasantisation, described by van der Ploeg (2008) as a 'struggle for autonomy that takes place in a context characterized by dependency relations, marginalization and deprivation. It aims at and materializes as the creation and development of a self-controlled and self-managed resource base [...]'. This desire for self-determination is echoed in the association's discourse. Reintroducing local landraces and creating new varieties is seen as an act of resistance to the use of so-called 'elite' varieties (commercial pure lines or F1 hybrids):

> *In Europe, these elite varieties are the only ones permitted to be commercialized, due to the mandatory variety registration. Accordingly, peasant varieties are marginalized and, since the 1960, their seeds are banned from the market and it is prohibited to exchange them* (Bio d'Aquitaine, 2011: 14; author's translation)

ABP considers these elite varieties, protected by intellectual property rights and owned by private seed companies, as a barrier to the autonomization of farmers:

> *The purpose of my conversion to organic agriculture was to break with all agricultural suppliers, hence stopping the chemistry, but also no longer dependent on seed companies. The same goes for fertilization, I only work with my manure, I don't buy organic fertilizers.* (participating farmer, cited in Bio d'Aquitaine, 2011: 39; author's translation)

But the process goes beyond material autonomy. What is aimed through the redefinition and re-appropriation of agronomic science is a larger rural development project in which the peasants' agricultural vision is to be redefined:

> *In the case of [ABP], the program's success shows above all that farmers were able to defend and develop a vision and conception of plant and seed that is consistent with an agricultural project and more broadly with a social project.* (participating researcher, cited in Bio d'Aquitaine, 2011: 29; author's translation)

A political community is (re)created under the banner of peasant, local and/or organic agriculture, the reintroduction of traditional varieties, the creation of new varieties using farm-based knowledge, and participatory farming practices. By rebuilding this collective identity (Demeulenaere and Bonneuil, 2011), ABP

reconnects individual farmers with a larger collective rural movement, empowering participants as agents of change (Coolsaet, 2015). The 'affirmation of identity' thus becomes an additional resource for demanding recognition (Santos et al., 2007: xxvii).

6. Discussion and conclusion

The current scientific paradigm and the way in which it is used in agriculture has created a gap between those of '*know*' agriculture and those who *do* agriculture. Making agriculture more sustainable requires closer interaction between scientists and farmers (Tilman et al., 2002), an observation convincingly put forward by the farmer-first literature since the mid-80's (Scoones and Thompson, 1994).

Yet, despite extensive case-study research on participatory approaches in the Global South, there's been surprisingly little engagement with decolonial thought, let alone when studying European agriculture. This paper tried to attend to this gap. The emergence of environment-specific and inclusive solutions within the industrial model seems to have been insufficient to meet the aspirations of some of Europe's peasant communities. This paper has argued that this can be explained by the misrecognition of peasants and their ways of *knowing* agriculture.

Remedying this requires a process of cultural recognition, understood as both status equality and cognitive justice. On the one hand, through a proactive recognition of the plurality of agricultural systems, status equality allows for alternative forms of agriculture to become equally valid solutions. On the other, cognitive justice offers not only equal terms, but a critical engagement with modern agronomic science. The latter can take the form of an agroecology of knowledges: a farmer-centered counter-hegemonic dialogue between different agricultural knowledge systems. It provides farmers' with tools to rebuild collective identities and reclaim political and material autonomy.

The agroecology of knowledges differs from existing knowledge-based innovation approaches in terms of scope, drivers and intended outcomes. It triggers a farmer-centered process that goes beyond classic models of innovation such as the demand-pull (innovation is triggered by a market demand) or supply-push models (innovation is triggered by scientific insight) (see Ceccarelli and Grando, 2006). Both models assume centralized knowledge-production, with more or less farmer input or involvement. By focusing on co-production, reskilling and autonomy, an agroecology of knowledges explicitly addresses the power dimensions underlying agricultural knowledge production.

While encompassing an instrumental goal of improving agricultural science, it also challenges the 'scientization of public debate' (Kinchy, 2012) and the 'technologisation' of varietal creation (Chable and Berthellot, 2006), where agricultural and broader rural policy is defined on the basis of a reductionist plant or animal science, disconnected from social and ethical contexts. What is sought for with an agroecology of knowledges is a genuine transformative process brought about by participatory governance arrangements and democratic practice (Pimbert, 2011).

In so doing, the agroecology of knowledges concept further highlights the knowledge dimensions of the main alternative narratives to industrial agriculture: the agroecological and participatory movements (see Thompson and Scoones, 2009). In particular, it draws upon several elements in the food sovereignty literature. For instance, it links up closely with what Martínez-Torres and Rosset (2014) have called a '*diálogo de saberes*': an active dialogue between different ways of knowing agriculture, which through a 'dialectic of conceptual diversity' (Kendrick, 2003) generates 'new collective understandings, meanings and knowledges' (Rosset and Martinez-Torres, 2013: 4). Its procedural aspects also bear significant resemblance with the South-American *campesino-a-campesino* methodologies (Holt-Gimenez, 2006).

Finally, it echoes a recent focus on such ideas as knowledge sovereignty (International Commission on the Future of Food and Agriculture, 2009) and technological sovereignty (Altieri and Nicholls, 2012). Both dimensions are two of the many unequal power relations the food sovereignty movement is seeking to address (Patel, 2009). But they are prerequisites for the re-invention of a European agri-food system which has long favored a band-aid approach of green subsidies and technology transfers.

Acknowledgement

I am grateful to the three anonymous reviewers for their excellent comments during the peer-review process. I owe thanks to the people at AgroBio Périgord for their time, as well as to Adrian Martin (UEA) and Iokiñe Rodriguez (UEA) for their suggestions and early ideas. A previous version of this paper was presented at the 6th Critical Agrarian Studies Colloquium at the International Institute of Social Studies, The Hague, in February 2016. I acknowledge funding from the European Commission, under the FP7 project GENCOMMONS (European Research Council, grant agreement 284).

References

Altieri, M.A., 1998. Ecological impacts of industrial agriculture and the possibilities for truly sustainable farming. Mon. Rev. 50 (1), 60–71.
Altieri, M.A., 2002. Agroecology: the science of natural resource management for poor farmers in marginal environments. Agric. Ecosyst. Environ. 93 (1–3), 1–24.
Altieri, M., Nicholls, C.I., 2012. Agroecology scaling up for food sovereignty and resiliency. In: Lichtfouse, E. (Ed.), Sustain. Agric. Rev., vol. 11. Springer, Netherlands, pp. 1–29.
Baret, P., Marcq, P., Mayer, C., Padel, S., 2015. Research for Transition: Research and Organic Farming in Europe. Université catholique de Louvain and Organic Research Centre commissioned by the Greens/EFA in the European Parliament.
Bio d'Aquitaine, 2011. L'Aquitaine cultive la Biodiversité 2001–2011. 10 ans d'expériences et d'expérimentation sur les variétés paysannes de maïs et de tournesol. Bilan Résultats Perspect. Available online: http://www.bio-aquitaine.com/wp-content/uploads/2014/01/rapport10ans-semences.pdf (accessed 7.11.15.).
Bocci, R., Chable, V., 2009. Peasant seeds in Europe: stakes and prospects. J. Agric. Environ. Int. Dev. 103 (1/2), 81–93.
Bonneuil, C., Thomas, F., 2009. Gènes, pouvoirs et profits. Recherche publique et régimes de production des savoirs de Mendel aux OGM. Versailles, France; Lausanne, Switzerland. Éditions Quæ; Fondation pour le progrès de l'Homme.
Bonneuil, C., Demeulenaere, E., Thomas, F., Joly, P.-B., Allaire, G., Goldringer, I., 2006. Innover autrement;? La recherche face à l'avènement d'un nouveau régime de production et de régulation des savoirs en génétique végétale. In: Gasselin, P., Clément, O. (Eds.), Quelles variétés et semences pour des agricultures paysannes durables?, pp. 29–51. Dossiers de l'environnement de l'INRA 30.
Burney, J.A., Davis, S.J., Lobell, D.B., 2010. Greenhouse gas mitigation by agricultural intensification. Proc. Natl. Acad. Sci. 107 (26), 12052–12057.
Canci, A., Guadagnin, C.A., Henke, J.P., Lazzari, L., 2013. The diversity kit. Restoring farmers' sovereignty over food, seed and genetic resources in Guaraciaba, Brazil. In: de Boef, W.S., Subedi, A., Peroni, N., Thijssen, M., O'Keeffe, E. (Eds.), Community Biodiversity Management. Promoting Resilience and the Conservation of Plant Genetic Resources. Earthscan, London; New York.
Carson, R., 1962. Silent Spring. Houghton Mifflin, Boston, MA.
Ceccarelli, S., Grando, S., 2006. Decentralized-participatory plant breeding: an example of demand driven research. Euphytica 155 (3), 349–360.
Chable, V., Berthellot, J.-F., 2006. La sélection participative en France: présentation des expériences en cours pour les agricultures biologiques et paysannes. In: Gasselin, P., Clément, O. (Eds.), Quelles variétés et semences pour des agricultures paysannes durables?, pp. 129–138. Dossiers de l'environnement de l'INRA 30.
Clapp, J., 2008. Illegal GMO releases and corporate responsibility: questioning the effectiveness of voluntary measures. Ecol. Econ. 66 (2–3), 348–358.
Combette, P., Couix, N., Debin, J., de Kochko, P., Duteil, A., Gras, E., Gressier, E., Haristoy, M., Hazard, L., Joly, B., Kastler, G., Kendall, J., Lacombe, C., Latour, F., Lassaigne, B., Lebrun, R., Le Chanony, C., Mignot, L., Reversat, L., Rey, F., Souriau, C., Terrat, M., Zanetto, A., 2015. Gérer collectivement la biodiversité cultivée. Etudes d'initiatives locales, Educagri éditions.
Coolsaet, B., 2015. Transformative participation in agrobiodiversity governance: making the case for an environmental justice approach. J. Agric. Environ. Ethics 28 (6), 1089–1104.
Correa, C.M., 2001. Traditional Knowledge and Intellectual Property: Issues and

Options Surrounding the Protection of Traditional Knowledge. The Quaker United Nations Office, Geneva, Switzerland.
Demeulenaere, E., Bonneuil, C., 2011. Des semences en partage. Construction sociale et identitaire d'un collectif "paysan" autour des pratiques semencières alternatives. Tech. Cult. 57, 202–221.
Eckstein, H., 1992. Regarding Politics: Essays on Political Theory, Stability, and Change. University of California Press.
Fraser, N., 1995. From redistribution to recognition? Dilemmas of justice in a 'Post-Socialist' age. New Left Rev. I/212.
Fraser, N., 2000. Rethinking recognition. New Left Rev. 3.
Fraser, N., 2001. Social Justice in the Knowledge Society: Redistribution, Recognition, and Participation. Presented at the Knowledge Society. Heinrich Böll Stiftung, Berlin.
Fraser, N., 2005. Reframing justice in a globalizing world. New Left Rev. 36.
Fraser, N., Honneth, A., 2003. Redistribution or Recognition? a Political-philosophical Exchange. Verso, London/New York.
Fraser, N., 2009. Scales of Justice: Reimagining Political Space in a Globalizing World. Columbia University Press.
George, A.L., Bennett, A., 2005. Case Studies and Theory Development in the Social Sciences. MIT Press.
Gliessman, S., 2007. Agroecology: the Ecology of Sustainable Food Systems. CRC Press, Boca Raton.
Guzmán, E., Martinez-Alier, J., 2006. New rural social movements and agroecology. In: Cloke, P., Marsden, T., Mooney, P. (Eds.), The Handbook of Rural Studies. SAGE Publications Ltd, London, pp. 472–484.
Hennis, M., 2005. Globalization and European Integration: the Changing Role of Farmers in the Common Agricultural Policy. Rowman & Littlefield.
Holt-Gimenez, E., 2006. Campesino a campesino: Voices from Latin America's Farmer to Farmer Movement for Sustainable Agriculture. Food First Books, Oakland, CA, USA.
International Commission on the Future of Food and Agriculture, 2009. Manifesto on the Future Knowledge Systems (Knowledge Sovereignty for a Healthy Planet, Arsia – Regione Toscana).
Kaltoft, P., 1999. Values about nature in organic farming "practice and knowledge". Sociol. Rural. 39 (1), 39–53.
Kendrick, A., 2003. Caribou co-management in northern Canada: fostering multiple ways of knowing. In: Berkes, F., Colding, J., Folke, C. (Eds.), Navigating Social-ecological Systems, Building Resilience for Complexity and Change. Cambridge University Press, Cambridge, pp. 241–267.
Kinchy, A.J., 2012. Seeds, Science, and Struggle: the Global Politics of Transgenic Crops. The MIT Press, Cambridge, MA.
Martin, A., McGuire, S., Sullivan, S., 2013. Global environmental justice and biodiversity conservation. Geogr. J. 179 (2), 122–131.
Martínez-Torres, M.E., Rosset, P.M., 2014. Diálogo de saberes in La Vía Campesina: food sovereignty and agroecology. J. Peasant Stud. 41 (6), 979–997.
Morgan, K., Murdoch, J., 2000. Organic vs. conventional agriculture: knowledge, power and innovation in the food chain. Geoforum 31 (2), 159–173.
Olson, K., 2008. Adding Insult to Injury. Nancy Fraser Debates Here Critics. Verso, London/New York.
Patel, R., 2009. Food sovereignty. J. Peasant Stud. 36 (3), 663–706.
Pimbert, M., 2011. Participatory Research and On-farm Management of Agricultural Biodiversity in Europe. IIED, London.
van der Ploeg, J.D., 1993. Potatoes and knowledge. In: Hobart, Mark (Ed.), An Anthropological Critique of Development: the Growth of Ignorance. Routledge, London/New York.
van der Ploeg, J.D., 2008. The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalization. Earthscan, London and Sterling, VA, 356 pp.
Potter, C., Tilzey, M., 2005. Agricultural policy discourses in the European post-Fordist transition: neoliberalism, neomercantilism and multifunctionality. Prog. Hum. Geogr. 29 (5), 581–600.
Roff, R.J., 2007. Shopping for change? Neoliberalizing activism and the limits to eating Non-GMO. Agric. Hum. Values 24 (4), 511–522.
Rosset, P.M., Martinez-Torres, M.E., 2013. Rural social movements and Diálogo de Saberes: territories, food sovereignty, and agroecology. In: Conference Paper. Food Sovereignty: a Critical Dialogue. International Conference, Yale University, September 14-15, 2013.
Santos, B. de Sousa, 2007. Beyond abyssal thinking: from global lines to ecologies of knowledges. Review XXX (1), 45–89.
Santos, B. de Sousa, 2014. Epistemologies of the South: Justice against Epistemicide. Paradigm Publishers.
Santos, B. de Sousa, Nunes, J.A., Meneses, M.P., 2007. Opening up the canon of knowledge and recognition of difference. In: Another Knowledge Is Possible: beyond Northern Epistemologies. Verso.
Schmidt, O., Padel, S., Levidow, L., 2012. The bio-economy concept and knowledge base in a public goods and farmer perspective. Bio-Based Appl. Econ. 1 (1), 47–63.
De Schutter, O., 2010. Report Submitted by the Special Rapporteur on the Right to Food to the Human Rights Council at the Sixteenth Session of the UN General Assembly, 20 December 2010. United Nations, New York.
Scoones, I., Thompson, J. (Eds.), 1994. Beyond Farmer First: Rural People's Knowledge. Agricultural Research and Extension Practice. Intermediate Technology.
Shiva, V., 1993. Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology. Zed Books.
Stassart, P.M., Jamar, D., 2008. Steak up to the horns! the conventionalization of organic stock farming: knowledge lock-in in the agrifood chain. GeoJournal 73 (1), 31–44.
Stock, P.V., Forney, J., Emery, S.B., Wittman, H., 2014. Neoliberal natures on the farm: farmer autonomy and cooperation in comparative perspective. J. Rural Stud. 36, 411–422.
Sumberg, J., Thompson, J., Woodhouse, P., 2012. Contested agronomy: agricultural research in a changing world. In: Sumberg, J., Thompson, J. (Eds.), Contested Agronomy: Agricultural Research in a Changing World. Taylor & Francis, pp. 1–21.
Sumberg, J., Thompson, J., Woodhouse, P., 2014. Political agronomy. In: Thompson, P.B., Kaplan, D.M. (Eds.), Encyclopedia of Food and Agricultural Ethics. Springer, Netherlands, pp. 1–8.
Thompson, J., Scoones, I., 2009. Addressing the dynamics of agri-food systems: an emerging agenda for social science research. Environ. Sci. Policy 12 (4), 386–397.
Tilman, D., Cassman, K.G., Matson, P.A., Naylor, R., Polasky, S., 2002. Agricultural sustainability and intensive production practices. Nature 418 (6898), 671–677.
Timmermann, C., Félix, G., 2015. Agroecology as a vehicle for contributive justice. Agric. Hum. Values 1–16.
Vanloqueren, G., Baret, P., 2009. How agricultural research systems shape a technological regime that develops genetic engineering but locks out agroecological innovations. Res. Policy 38 (6), 971–983.
Visvanathan, S., 2005. Knowledge, justice and democracy. In: Leach, M., Scoones, I., Wynne, B. (Eds.), Science and Citizens: Globalization and the Challenge of Engagement. Zed Books, London; New York (p. viii, 295 p.).
Visvanathan, S., 2006. Alternative science. Theory, Cult. Soc. 23 (2–3), 164–169.
Visvanathan, S., 2009. The Search for Cognitive Justice (Retrieved from).
Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., David, C., 2009. Agroecology as a science, a movement and a practice. A review. Agron. Sustain. Dev. 29 (4), 503–515.