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Towards an Agroecology of Knowledges: Recognition, Cognitive Justice and Farmers' autonomy in France

Brendan Coolsaet

International Institute of Social Studies (ISS)
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Towards an Agroecology of Knowledges: Recognition, Cognitive Justice and Farmers' Autonomy in France

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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 cognitive justice as a form of cultural recognition.

The subordination of alternative farming to conventional agriculture leads to the misrecognition of peasant communities, which is exacerbated in today's 'knowledge society'. Challenging conventional agriculture hence requires both status equality between different forms of doing farming and an active engagement with different ways of knowing farming. Cognitive justice, a concept originating from postcolonial and inter-cultural theory, encompasses not only the right of different knowledge forms to co-exist, but entails an active counter-hegemonic engagement across them.

Using an example of participatory maize breeding in France, the paper illustrates how peasant movements in Europe organize what could be called an 'agroecology of knowledges' to reclaim autonomy from both market and state.

Keywords: Recognition, cognitive justice, agroecology of knowledges, autonomy, participatory breeding

Highlights

- European peasant communities are culturally, scientifically and legally misrecognized.
- Knowledge plurality in agroecological farming can be understood as a struggle for recognition and cognitive justice.
- An agroecology of knowledges aims at the recovery of farm-based knowledge and the reskilling of farmers.
- Through an agroecology of knowledges, farmers rebuild collective identities and regain autonomy.

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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

Most agroecological initiatives in Europe today are built around a plurality of knowledge systems. At farm-level, this translates into a process of re-skilling of farmers, who not only combine modern science and local knowledge, but (re)generate new, situated knowledge. At collective 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 for the development of a new agriculture, fueled by a reflexive input of both formal and non-formal agricultural, ecological and social knowledge.

This knowledge plurality can be explained by the fact the agroecology is said to be a knowledge-intensive, as opposed to input-intensive, agricultural practice (Altieri and Nicholls, 2012; De Schutter, 2010). While the practical goal of this knowledge-intensity is rather straightforward - *i.e.* replacing exogenous inputs with a more thorough understanding of agriculture as a sustainable ecosystem, including socio-economic variables (Gliessmann, 2007) - this paper highlights another, perhaps less obvious underlying objective: the pursuit of cognitive justice as a form of cultural recognition.

This paper shows how collective agroecology in Europe today can be understood as a double struggle for recognition. First, through a brief overview of the concept of justice-as-recognition and its relevance in the context of European agriculture, it shows how peasant communities are culturally, scientifically and legally misrecognized. Remediating this would require a form of status recognition in which different farming practices can co-exist.

Status equality, however, may be insufficient to challenge conventional agriculture. It is argued in this paper that the notion of cognitive justice can serve as an extra layer to understand the role knowledge plurality plays in the recognition of alternative farmers and communities. Cognitive justice, a notion originating in post-colonial and inter-cultural theory, encompasses not only the right of different knowledge forms to co-exist, but entails an active engagement across them (Visvanathan, 2005; Santos, 2007). Through its inherently counter-hegemonic nature, it serves as a vehicle for what Van der Ploeg (2008) defines as ‘re-peasantization’: a constant struggle for autonomy based on the recognition of the ‘endogenous potential of agriculture’ (Guzmán and Martínez-Alier, 2006).

While often studied in a Global South context, this paper illustrates how peasant movements in Europe are ‘learning from the South’, both from a theoretical (Santos, 2007; 2014) and empirical (Stringer et al., 2008) point of view. Through an example of collective agrobiodiversity governance in France, it is shown how peasants organize what can be called an ‘agroecology of knowledges’¹ to rebuild collective identities and reclaim autonomy. Aiming to be both fair and effective in terms of food production, and environmental and social impact, the agroecology of knowledges may hold the keys for a more sustainable agriculture.

2 Recognition and Cognitive Justice

While not necessarily wrapped in an explicit justice discourse, the reliance on knowledge plurality in collective agroecology can be understood as a struggle for cultural recognition. For Nancy Fraser, recognition is rooted in the status order of society (Fraser and Honneth, 2003). Misrecognition, she claims, occurs through a hierarchization of cultural values, in law or in practice, where some people and/or communities are seen as ‘inferior, excluded, wholly other, or simply invisible’ and therefore

¹ This term freely paraphrases Boaventura de Sousa Santos’ concept of “ecology of knowledges”, discussed further below.

cannot participate in social interaction on an equal footing with others (Fraser, 2000). It thus takes the form of an institutionalized social subordination, which can only be challenged through ‘affirmative recognition of difference’ (*ibid.*).

This 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). Together, these aspects compose her three-dimensional theory of ‘post-Westphalian democratic justice’, according to which justice is the ideal of participation-parity, requiring ‘social arrangements that permit all to participate as peers in social life’ (Fraser, 2005; 2009).

Status recognition, hence, would provide a space for cultural differences to grow their status and become viable, culturally accepted alternatives. However, while contemporary political claim-making increasingly focuses on the misrecognition of identity, gender, race, religion and/or culture (Fraser and Honneth, 2003), they rarely include knowledge-based misrecognition (Santos, 2014). Moreover, status equality may not be enough in a socio-economic sector (*i.e.* agriculture) characterized by strong vested interests and by the dominance of modern science. As David Harvey (1996) argued, quoting Marx: ‘between equal rights, force decides’ between competing visions of justice.

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 the cultural subordination today 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, my emphasis). Like cultural misrecognition, cognitive injustice is an ‘institutionalized relation of social subordination’ (Fraser, 2000). 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. Post-colonial theorists see cognitive injustice as the consequence of what Santos et al. (2007) call the ‘coloniality of knowledge’: the hegemonic conception of modern scientific knowledge.

Cognitive justice encompasses not only the right of different knowledge forms to co-exist (which is a necessary condition nevertheless), but entails an active engagement across them (Visvanathan, 2005; 2009). It requires rethinking the very way in which knowledge emerges in modern science, where one side produces and the other passively consumes, and challenges the ‘monocultures of the mind’ (Shiva, 1999) and of modern science (Santos, 2007; 2014). Cognitive justice is given shape by an ‘ecology of knowledges’, through which the dominance of scientific knowledge and objectivizing rationality is challenged by an active dialogue with other situational knowledges and practices (Santos, 2014). It thus implies that the plurality of heterogeneous forms of knowledges be recognized (Santos, 2007).

Cognitive Justice and Agriculture

In today’s agriculture farmers and communities opposing conventional farming face a double form of misrecognition. First, today’s agriculture in both Global North and South is characterized by the subordination of alternative forms of agriculture to conventional high-input farming. As Altieri and Nicholls (2012) note, no matter how much evidence of the effectiveness of agroecology is produced, it is still considered a *marginal* form of agriculture, and thus replaced by conventional solutions via political decision-making. While this could be explained by the economic power the agro-industry has over democratic decision-making, this is only ever part of the story. Looking at agriculture through a justice-as-recognition lens, the sustained importance of high-input agriculture, despite overwhelming evidence of disastrous social and environmental impact, may also be explained by the fact that the industry, the world vision it represents, and the knowledge it uses have gradually imposed themselves as the dominant Western agricultural narrative (Coolsaet, 2015). Contemporary European agriculture is the result of historical constructions of cultural discourse, ideas and ideology, both economic and scientific, formed by dominant actors (Vanloqueren and Baret, 2009; Potter and Tilzey, 2005).

This status inequality is made possible by a series of laws and policies denying equality of social interaction to alternative farming and 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);
- 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-productive actors;
- 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); 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 organic agriculture has been stagnant, with 7% of the total in 2013 (Baret et al., 2015).

The alleged universality of conventional agriculture thus rests on a form of cultural and legal domination that denies collective identities and peasants’ rights to adopt another agriculture. Beyond it being unfair, cultural misrecognition creates dependence upon a conventional farming model, with its known social and ecological consequences.

Second, alternative farmers and communities are also cognitively misrecognized. Over the course of the XX^e century, farmer and community-driven agricultural knowledge has been sacrificed in the name of progress and modernity. Through a highly centralized knowledge system, it appears that modern science-based agriculture has gradually made impossible the confrontation and interaction with alternative knowledges and worldviews, in Europe and elsewhere. The division of agricultural labor and the increasing power of non-productive 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 (Timmerman and Félix, 2015; van der Ploeg, 1993). Conventional agriculture has generalized a top-down approach to the production and sharing of scientific knowledge (*i.e.* from the scientist to the farmer), thereby excluding other ways of preserving knowledge based on participation, reciprocity and inter-generational sharing. It has also popularized a reductionist conception of agricultural biodiversity, where plant and animal genetics are 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. It thereby *de facto* excludes integrated forms of farming built around holistic rural development processes and based on an agroecosystem, a balanced nutrient cycle, and the relation between farm(er) and animal. The inclusion of traditional knowledge and techniques is not excluded *per se*. But it generally amounts to a process of enclosure (through property rights) or to ‘muzeumization’ (Visvanathan, 2009), thereby depriving farmers from their cognitive or natural resources and/or devaluating their knowledges and practices.

The environmental impact of high-input agriculture is a well-documented issue. Less known is that beyond soil quality, groundwater and biodiversity, what is threatened by conventional agriculture is the whole body of knowledge associated to their preservation (Visvanathan, 2005). 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 the industrialization of agriculture happened later and the rural population is much larger, much of that knowledge has disappeared in Europe. One of the challenges of alternative agricultural movements hence is the regeneration of situational knowledge, and the creation of supportive governance processes.

3 Building an Agroecology of Knowledges in France

Following the above, an agroecology of knowledges can be defined as *a struggle for the recognition of alternative farming, through a critique of and counter-hegemonic engagement with 'modern' agronomic science, and the recovery of farm-based knowledge. Based on co-production of situational, environment-specific knowledge and reskilling, it aims not only at making agricultural science more effective, but also at rebuilding collective identities and reclaiming autonomy.* In essence, I believe an agroecology of knowledges is what cognitive justice looks like in practice for farmers.

In the following sections I analyse how AgroBio Périgord (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. I do so by discussing the different elements that constitute the definition of an agroecology of knowledges. The discussion is illustrated by quotes from interviews gathered through interviews with the association's members, its internal and external publications, and participatory observation undertaken in 2013 and 2015.

Among other things, ABP hosts a community seed network in Périgeux, a small city in southwestern France. ABP is known nation-wide for its activities of *in situ* conservation of local and regional plant landraces threatened by genetic erosion (called 'conservation varieties' or 'peasant varieties'). It is a key member of the national French Peasant Seed Network ('*Réseau Semences Paysanne*'), and hosts a community seedbank ('*Maison de la Semence*') for both professional farmers and home gardeners. The organization was born in early 2000, when a small group of farmers started gathering and reusing local plant landraces. Failing to properly use these landraces, mainly due to a lack of knowledge and know-how, ABP launched an ambitious participatory plant breeding program to select environment-specific breeds and foster the conservation of local plant landraces through their utilization.

The Critique of and Counter-hegemonic Engagement with Modern Agronomy

Following the Second World War, and until the late 1970s, agronomic science in France is largely steered by the State. With the creation of the National Institute for Agricultural Research (INRA), Europe's biggest agricultural research institute, in 1946, France launches an ambitious 'modernization' program for its agriculture. Science and technology are 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 Europe was characterized by a high level of muzeumization: 'obsolete' traditional varieties and local landraces were gradually replaced by 'high-performance' breeds which were 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 [...] 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 (Lassaigne, participating farmer, interview 2013).

From the 1980s onwards, the dominant role of the State in agriculture and rural development in France and Europe was replaced by the dominance of 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-productive actors and characterized by the growing capacity of multinational firms to control agricultural production and agronomic research (Bonneuil & Thomas 2009). Since the turn of the century, this dominance has been actively opposed by emerging social movements (Sumberg et al., 2014; Rosset and Martinez-Torres, 2013; Bonneuil and Thomas, 2009), such as ABP.

They challenge the 'scientization of public debate' (Kinchy 2012) and the 'technologisation' of varietal creation (Chable and Berthelot, 2006), where agricultural and broader rural policy is defined on the basis of a reductionist and quantifiable plant or animal science, disconnected from its social and

ethical contexts. This is most notably visible in the debates on varietal innovation and on the introduction of new biotechnologies, such as GMOs, one of the triggers for the creation of ABP:

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 (Lassaigne, participating farmer, interview 2013).

Counter-hegemony hence entails questioning the neutrality of agricultural biotechnology, which has become preponderant in today’s agriculture. Like other forms of technology (Feenberg, 1999; Van der Velden, 2009), agricultural biotechnology is not neutral. Not only does it make farmers materially dependent upon the suppliers of the technology, the way in which it is designed to be used also casts an ontological and epistemological vision on the users.

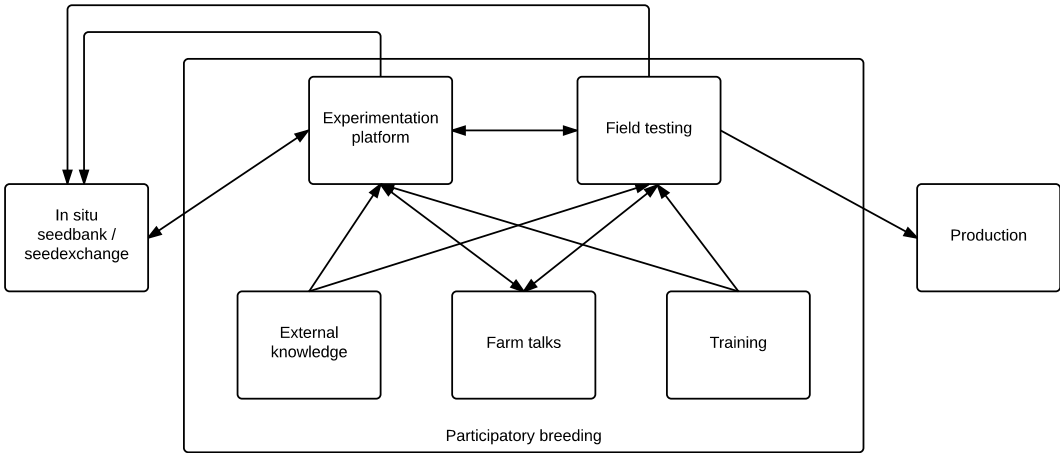
Moreover, what is put in doubt is not only the primacy of modern agronomic science, but the whole world vision that underlies it. ‘Epistemology is politics’ (Visvanathan, 2005) and the struggle for cognitive justice thus needs to challenge both its scientific fundamentalism, and its relation to a certain neoliberal economic agenda (Pimbert, 2006). A notable example of this relation 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.

Finally, used semantics echo the counter-hegemonic nature of ABP’s actions. 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). ABP considers these elite varieties, protected by intellectual property rights, as a barrier to the autonomization of farmers and the recovery of farm-based knowledge.

Co-production of Knowledge and Reskilling

Started in the early 2000s, ABP’s collective agrobiodiversity governance model aims to replace the dominant top-down and/or linear model of varietal selection (from ex situ collection, to external breeders, to farmers) with a decentralized and/or participatory approach (figure 1).

Figure 1 – Decentralized participatory breeding process at AgroBio Perigord



Governing an agroecology of knowledges leads to a ‘diálogo de saberes’ (Rosset and Martinez-Torres, 2013; Martinez-Torres and Rosset, 2014): 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):

Owning local seeds is not enough to be able to reintroduce local landraces. 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 (Lassaigne, participating farmer, interview 2013).

Developing a new crop at ABP generally starts with an explicit demand from one of the members. Based on the expressed needs, the farmer’s environmental conditions (soil, climate) and his preferred output, possible candidate-crops are identified in the organization’s seedbank and/or in the 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 seedbank. This return not only allows keeping of a ‘safety-copy’ within the seedbank, 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 variety (Combette et al., 2015; Gras, ABP staff, interview 2013).

During the whole breeding process, a constant dialogue between different knowledge systems is being organized. First, farmers initiate the breeding process, based on their own experience, knowledge and identified needs. This demand-driven process lies in stark contrast with the offer-driven model of seed companies and the official seed catalogue. Second, ABP employs a team of agricultural facilitators, who ensure the who provide training and assist farmers when introducing local landraces and developing new varieties. Third, through peer-based ‘farm-talks’, farmers visit their respective farms and discuss their respective 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 process which bears significant resemblance with the South-American *campesino-a-campesino* methodologies (Holt-Giménez, 2006)

The quest for a different way of knowing and doing agriculture, however, does not reject scientific knowledge. Since 2007, ABP works with official 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 external input by partner scientists, but does so in dialogue with its own knowledge and within its own co-production model:

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 Berthelot, 2006, p. 129-130).

Finally, external input 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. From a more theoretical point of view, learning from the South also means adopting a ‘peasant/indigenous way of solving or avoiding conflicts, because these isn’t one knowledge to be imposed on others’ (Martinez-Torres and Rosset, 2014). ABP’s participatory governance models hence does not only have an instrumental goal of making agricultural knowledge more efficient. What is sought for is a genuine transformative process, where participation is seen as a democratic practice through which different knowledges enter into debate on par with one another (Pimbert, 2011).

Rebuilding Collective Identities and Reclaiming Autonomy

ABP’s fight for new ways of knowing, doing and validating science also aims for social change and rural justice. The reintroduction of traditional varieties and the creation of new varieties takes places within a holistic rural development process (Coolsaet, 2015). Reusing traditional seeds, made possible

through the critique of modern agronomy and the re-appropriation of associated 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-productive commercial actors on the other. 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 [...]’:

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 (Armand Duteil, participating farmer, cited in Bio d'Aquitaine 2011, p. 39).

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. The movement is running with or without researchers (Véronique Chable, participating researcher, cited in Bio d'Aquitaine 2011, p. 29).

Under the banner of peasant, local and/or organic agriculture, the reintroduction of traditional varieties, the creation of new varieties using farm-based knowledge, the holistic development process and the participatory breeding network all contribute to the reconstruction of a common identity (Demeulenaere and Bonneuil, 2011). Complementing Van der Ploeg's material resources base, ‘the affirmation of identity is a resource for demanding recognition of collective rights’ (Santos et al., 2007).

4 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 our agri-food system both unsustainable and ineffective (Tilman et al., 2002). While recent evolutions in agronomic science have increasingly paid attention to the development of environment-specific solutions, the scientific vision on living organisms and their relation with farmers has disconnected agronomic science from the objectives and aspirations of Europe's (new) peasant communities.

This paper has argued that this is due to the misrecognition of different ‘ways of knowing’ agriculture in Western society. Productivist agriculture translated in an extremely centralized knowledge system, where only laboratory-tested products and their underlying scientific hypothesis are seen as useful for modern agriculture. Not only has this created a system in which farmers have increasingly been considered simple tools in the food production process, it is also responsible for a massive de-skilling process which further reinforced the need for externally produced input, and the reliance on non-productive actors and external know-how.

Remedying both these problems 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 viable solutions. On the other, cognitive justice offers not only equal terms, but an active counter-hegemonic engagement of the knowledge systems at play in the different models. This counter-hegemony provides farmers' with tools to reclaim autonomy from externally produced inputs, (re)gain control over the production-chain and rebuild bargaining power and political influence.

This paper has illustrated how the current agricultural knowledge system, based on centralization and proprietary systems, is being replaced by an agroecology of knowledges. Agroecology initiatives recognize the plurality of knowledge systems, (including ‘modern’ science) and engage actively across them. Through innovative governance system, often inspired by similar initiatives in the Global South,

the agroecology of knowledges challenges the primacy of agronomic science and the economic agenda that underlies it. These initiatives remind us that re-inventing today's agriculture will require more than financial re-distribution schemes and green subsidies, an approach long favored by the EU's Common Agricultural Policy.

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