From the production of rules to seed production

Global Intellectual Property and local knowledge

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Abstract

This paper analyzes the links and overlappings between traditional knowledge and biodiversity in the context of ecological family farming in southern Brazil. The data presented are part of an ethnographic study carried out among a network of ecological farmers, Ecovida, in the west of Santa Catarina state. The current global patent regime, most prominently the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organization (WTO), has had direct effects on seed production and agricultural food crops. In a scenario of increasing creation of patents, patent regulations, provisions on cultivars (plant varieties and seed breeding) and a number of other global trade control mechanisms, family farmers and other related social actors have rejected the multilateral development agencies' notion of *life* as "*resource*". This study has a two-fold aim: first, it approaches the international context of the intellectual property regime on biodiversity and knowledge production; second, it examines the actions taken by farmers participating in the Ecovida network toward creating alternative ways of managing knowledge to produce "free" seeds. As an outcome, there is a parallel political action of criticism and resistance to the current narrowing of agriculture's genetic base, and organized efforts to multiply seeds, know-how and knowledge through networks, banks and centers of agro-biodiversity. Our central argument is that all these social actors – who make up the so-called ecological network and who seek, in their activities, to carry on the multiplication and variability of seeds and promote the diversity of knowledge to produce diverse seeds – are also creating collective strategies of social resistance vis-à-vis the prevailing global modes of controlling

knowledge, seeds and food production.
Keywords: Intellectual Property Rights (IPRs); Traditional Knowledge; Family farming; Agro-Biodiversity; Network; Seed Production

Resumo

Este artigo analisa a relação entre os conhecimentos e a manutenção da agrobiodiversidade entre agricultores familiares ecológicos do oeste de Santa Catarina. Os dados apresentados são parte de um estudo etnográfico realizado com a Rede de agricultores ecológicos, Ecovida, no oeste do estado de Santa Catarina, Brasil. O atual regime global de patentes, em especial no Acordo sobre os Aspectos dos Direitos de Propriedade Intelectual Relacionados ao Comércio (TRIPs) da Organização Mundial do Comércio, tem tido efeitos diretos na produção de sementes e de alimentos. Neste cenário de significativo aumento de criação de patentes, regulações de patentes, provisão sobre cultivares (variedades de plantas e sementes modificadas) e um número de outros mecanismos de controle do comércio global, agricultores familiares e outros atores sociais relacionados rejeitam a noção de vida, entendida como *recurso*, proposta pelas agências multilaterais de desenvolvimento. Este estudo tem dois objetivos: primeiro, analisar o contexto internacional do regime de propriedade intelectual sobre a biodiversidade e a produção de conhecimento; segundo, examinar as ações realizadas por agricultores que participam da Rede Ecovida de Agroecologia para criarem formas alternativas de gerenciamento de conhecimentos para produzir sementes "livres". O resultado é a ação paralela de crítica ao estreitamento da base genética na agricultura e o esforço de multiplicar sementes e conhecimentos através de redes, bancos e centros de agrobiodiversidade. Nosso argumento central é de estes atores sociais – que constroem a rede agroecológica e procuram, por meio de suas atividades, constituir a multiplicação e a variabilidade das sementes e promover a diversidade de conhecimentos vinculados a elas –também estão criando estratégias coletivas de resistência social aos atuais modos globais de controle sobre a produção de conhecimento, de sementes e de alimentos.
Palavras-chave: Propriedade Intelectual; TRIPS; Conhecimento Tradicional; Agricultura Orgânica; Produção de sementes

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Introduction

The current national and international scenario concerning one of agriculture's most basic elements – seeds – presents a dilemma for producers. While the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which sets the global rules for trade and intellectual property, demands increasing controls on the products of biotechnology, the United Nations' 1992 Conference on Environment and Development (also known as Eco-92) established as one of its chief steps the Convention on Biological Diversity (CBD), which points to the opposite direction. As an instrument of international law, the CBD aims at conserving biological diversity, the sustainable use of its constitutive parts, and the fair and equitable sharing of benefits stemming from the use of genetic resources (Carneiro da Cunha, 1999). The power balance between the TRIPS and the CBD introduces an impasse between the Convention and intellectual property regimes, which showcases the power of genetic modification and the innovative knowledge on which it is based (Dhar, 2003:77-81). In contrast with the understanding of traditional peoples and farmers, the discourse on nature and knowledge by

1 An earlier version of this study (Radomsky, 2011) was presented in the Panel *Anthropology and Global Policies: transnational perspectives on inequality* of the 9th Mercosur Anthropology Meeting, coordinated by Ondina Fachel Leal, Javier Taks and João Rickli. Both authors benefited from this discussion. This article has also profited from discussion among members of the Research Group on the Anthropology of Intellectual Property (ANTROPI) at the Federal University of Rio Grande do Sul (UFRGS). Data presented here was gathered during ethnographic fieldwork (Radomsky, 2010) supported by Brazil's National Research Council (CNPq).

governments, agencies, corporations and international organisms has drawn on an idiom of "resources".

Smallholders and technicians (as well as some consumers) who interact with family farmers, on the other hand, argue that life cannot be contained by a set of dispositions in relation to which the notion of "resource" reinforces the possibility of commodification and proprietary appropriation (Martinez Alier, 1996; Ingold, 2005).

There are thus two inter-related, unequal levels: the global networks made up of organisms, governments, corporations and agencies concerned with enforcing international trade rules as well as property rights (in the form of patents or *sui generis* control, in this case); and the critical exercise of proposition and resistance by movements, social networks and local communities which have come up with alternatives for managing knowledge and biodiversity in agriculture.

The purpose of this paper is, on the one hand, to examine the international landscape and the power relations between advocates of intellectual property rights, and the proposals for a common patrimony or the attribution of collective cultural property of seeds and knowledge to social groups. On the other hand, it analyzes the territorialized dimension of action of farmers, technicians and consumers linked to the Ecovida Agroecology Network that operates in the west of the Brazilian state of Santa Catarina, by focusing on two agro-biodiversity and local knowledge projects involving open seed banks and spaces for exchange.

The Ecovida Network emerged amidst environmental movements linked to agriculture in the Brazilian south during the late nineties. As a collective actor, Ecovida grew strong enough to establish a participatory certification system, besides other goals pertaining to the strengthening of relations in rural areas and ecologic family agriculture. With twenty-four nuclei in the three southern states, it is estimated that the Network is present in around 170 municipalities, 200 farmer groups, twenty NGOs, ten consumer cooperatives, and over one hundred ecological fairs and markets. In the west of Santa Catarina, the Network maintains an important nucleus in Chapecó, one of the region's most populous towns and home to many rural unions and social movements.

One of the authors, as part of his doctoral thesis, has followed up the work and activities of Ecovida in the west of Santa Catarina during fourteen months of ethnographic fieldwork, between October 2007 and June 2009,

with a few interruptions. Research involved open interviews with individuals and families, as well as observation of the Network's meetings. During this period, one of the most interesting processes observed related to the establishment and maintenance of cooperative, articulated network systems for seed conservation.

This article is made up of four parts, beginning with this Introduction. In what follows, we will briefly present the Ecovida Agroecology Network and the international scenario favoring the global consolidation of intellectual property regimes for biological resources. In the same section, we delve into the problems and processes involving Ecovida, examining how the narrowing of the genetic base finds a counterpoint in the notion of seed multiplication. The third part turns to the issue of knowledge within intellectual property regimes and to the notion of multiplicity of knowledges to tease out the role played by know-how(s) among ecological farmers. The closing section brings concluding remarks on the concepts of multiplicity, partiality and positionality of knowledges, always in relation to the problems put forth by the farmers as propositions/resistances to the global intellectual property regime.

Agro-ecology, seeds and intellectual property

During the 1980's and 90's, social movements linked to agriculture and the environment emerged and gained momentum in Brazil. It is also during this period that NGOs concerned with modern agriculture's impacts on nature are founded in the Brazilian south. These organizations took concrete steps toward organizing the development of alternative agriculture (Byé et al., 2002), and both questioned the model prescribed by the "green revolution" which was being widely adopted in Brazil.

Since the mid-nineties, debates on organic production became more effective, and the possibility of creating special markets for these products prompted the growth of agricultural production based on more environmentally friendly methods. The Ecovida Network emerged with the growth of agro-ecology, at first by promoting debates on participatory forms of certification (Rede Ecovida, 2007:8), as Brazil already had a legal framework for certification systems of organic production.

The Network's nuclei are the main organizing space where farmers interact; it is where local decisions and actions are taken, including meetings, field

days, organizing the granting of seals, priority visits for evaluating crops, and enrollment of farmers in entities. Each nucleus, which may encompass one or more municipalities, includes a range of actors such as farmer associations, consumer cooperatives, and others. They are an assemblage of families and collective actors. The Ecovida Network may be understood as a network that gathers smaller networks and local communities.
In their collective effort to secure the ecological orientation of food production, farmers linked to Ecovida have shown concerns about the gradual decline in the biological diversity of food crops. But wherein lays the source of such concerns?

During the 1960's and 70's, changes in the technical foundations of agriculture and cattle ranching have prompted deep transformations in the mode of appropriating, circulating, and utilizing seeds. The use, property and transfer of biological crop materials have taken up new forms as agro-industries, large biochemical companies, and public and private investments consolidated the scientific bias towards increasing production and productivity in rural areas. Seeds are no longer exchanged among farmers; they have become commodities to be "improved" and sold by biotechnology companies. We have arguably entered a stage Shiva and Jalees (2006) call the gene "revolution", thus leaving behind the heights of the green "revolution". While the latter was managed by research and public resources with the aim of increasing agricultural production and productivity, the former is based on private capital, monopolistic companies, transgenic seeds, and control of intellectual property for attaining those same goals.

In this field, conflicts concern the nature of novelty production, and the capacity of large corporations to have return on their investment in agriculture. The former involves a conflict that is difficult to resolve in the terms in which it is typically cast ("public versus private")[2], since the discourse on technological innovation tends to deconstruct the networks of

2 Up until the Convention on Biological Diversity (CBD), agreed upon during the Eco-92 in Rio de Janeiro, corporations and organizations were allowed to prospect biological diversity as if it were a patrimony of mankind, and patent the ensuing inventions/discoveries. With the CBD, which emerges in a moment of global concern with environmental sustainability, the aims of conserving biodiversity converge with the notion that genetic resources are not "public" patrimony. Rather, they are under the sovereignty of the states in which they are found, and all commercial exploitation should provide for the sharing of economic benefits, especially with the traditional peoples who detain knowledge on plants and territories.

(spatial-temporal) contributions that have led to an invention or discovery (Kirsch, 2001). The latter, on its turn, is based on the production of seeds that cannot be multiplied or re-used by farmers – thus the need to buy new seeds every year. In this latter dispute, the autonomy and inventive/adaptive capacity of farmers are potentially jeopardized by the stable and homogeneous varieties produced by the companies.

The impasse is therefore between an approach privileging the privatization of genetic resources and their exploitation in the form of monopolies, subsidies to large corporations and companies, and the TRIPS Agreement[3] as international safeguard; and the equitable sharing of biological diversity according to agreements on benefit redistribution and technology transfer between unequal countries.

It thus becomes evident how the problem of preserving biodiversity – especially agro-biodiversity, in our case – leads to particular forms of knowledge about crops (Carneiro da Cunha, 1999). If the form of life ceases to exist, it is just a small step towards annihilating the physical pillar sustaining the knowledge underlying its various applications and utilities. This knowledge is related to that particular variety, and it is collectively shared – for food, preparing medicine or natural poisons, to mention just a few. Moreover, the specialized literature indicates that corporations are not limited to appropriating and patenting genetic resources (or protecting them by means of other forms of intellectual properties, such as *sui generis* protection): traditional knowledge itself is being registered as inventions or discoveries by external agents (Dutfield, 2003; Aragon, 2010).

Farmers in the Santa Catarina far west region show special interest and concern with the issue of access to seeds. Vegetable species are indeed that which delimits the diversification of production. This leaves two avenues open for farmers: to produce their own seeds based on previous years' crops, or to purchase the "goods" produced by companies. Even organic seeds, which may be obtained from the crops in the fields, require great effort of depuration and selection. The ethnographic work among the farmers has left no doubt about the difficulties involved in obtaining their own seeds, which might lead them to resort to purchases. This common fact implies both

3 Agreed upon in 1994, the TRIPS harmonized dispositions on intellectual property on a global scale. See Leal and Souza (2010).

commercialization and acquiring a good protected by legal entanglements. If it is possible to alter (and protect by the system of intellectual rights defined as *sui generis* that favors the breeder of "improved" varieties) and patent (according to patent protections on biotechnology) such seeds, so there is a risk related to the fixity of the species, as well as to the susceptibility of control by actors who are foreign to the rural world.

The testimony provided by an agronomist during an event in Chapecó which brought together students, technicians and farmers is telling. After his lecture, when clarification on certain points that had remained unclear has been requested, replying to our questions, he said: "modern conventional agriculture has, after decades, consolidated a narrowing of the genetic base and the susceptibility of varieties". The notion of narrowing is peculiar; it indicates that, as corporations commercialize seeds, they standardize the plants, and varieties that are not lucrative tend to fall outside their research scope. This is the case for instance of soil cover plants used to produce green manure. Few companies are interested in them, so their seeds are costly. In the case of crops commonly used as food or inputs (beans, maize, soya), farmers end up planting every year the same varieties, which are unable to generate new seeds. The same speaker went on:

> Farmers get really excited about the different kinds of maize I show them, the different kinds of beans, potatoes, and so forth. This is something that touches farmers in their hearts. The companies that produce seeds whose plants cannot bear seeds destroy traditional agriculture. The gene terminator [a biotechnologically modified gene sequence that produces a chemical effect which turns the seed sterile] is the opposite of producing life. Agriculture and seeds produce life, and this gene produces death.

Based on observations and interviews, two strategies can be deployed by ecological farmers in the west of Santa Catarina for dealing with these constraints. The first is the establishment of seed banks for maintaining soil fertility, even though other seed varieties, particularly of food crops, are also present in some farms (beans and maize being the most common). The second is the construction of an agro-biodiversity center along with an itinerant festival bearing the same name, which takes place in the western region of the state and is headquartered in the municipality of Novo Horizonte, close to the border with the state of Paraná.

Seed banks have multiplied throughout Brazil with the support of (and in some cases, spearheaded by) public agencies such as (federal or state) research and extension institutions. In the case of Ecovida, there are general guidelines for the Network's role of providing continuous support for the establishment of seed banks, as well as encouraging partnership with public bodies. During the time one of us spent among the farmers, various supportive initiatives were proposed. Such actions were generally translated in the local idiom as "recuperating or searching in the colony" for seed varieties that were almost forgotten or are produced in tiny quantities in the rural space. These seeds are significant for their biological richness, as well as for the ecological memory of farmer groups.

Detailed field notes were taken on how banks operate according to the *in situ* conservation system. They are planted directly in the farms across the region, and their seeds and seedlings circulate among farmer groups. Such circulation usually follows the existing forms of exchange between people, such as in generalized reciprocity networks. But they may also generate "specialized" markets for buying and selling "goods" that are valued for their scarcity. This over-valorization is usually salient during harvesting festivals and fairs. Still, as conservation takes place among farmers themselves, diversification is promoted. It is, after all, on their own interest that varieties are adapted to new contexts and are freely disseminated, rather than remain stable or homogeneous. During a farmers' meeting in Chapecó, one of the leaders deployed a peculiar term. While addressing his colleagues, he insisted that the nucleus should choose somebody to act "like a bookkeeper, who would store his own seed and also the knowledge about how to put it to use". This was a high moment of "ethnographic attention" to every word used (Goldman, 2011), especially with respect to the "how". It denotes metaphorization, but the poetics and aesthetics implied in this ethnographic moment, when a special tone was deployed for addressing the other farmers, cannot be appropriately conveyed here. Various farmers responded positively to the proposal. The metaphor of the bookkeeper is accompanied not only by the object to be kept, but by its use – thus evoking the non-separation of the domains of "knowledge" and "nature" pointed out by Escobar (1999, 2008) and Ingold (2000).

Keeping with the chief concepts formulated by people in the field, we would like to bring up another one. To "multiply" is a word commonly used

for conveying the movement of these seeds. This is a notion deployed by farmers and local technicians to account for the double dimension of *being life*, and autonomously *producing life*. When performed collectively and effectively, multiplication goes against the grain of genetic erosion, and rises up as a form of resistance to it.

The Network's second proposition, the agro-biodiversity center (and the corresponding festival), is based on a principle of equating the "devolution of autonomy" to farmers with the "exit of dependency". Both expressions are commonly used by social actors in the field, and refer to a double-sided process that is interrupted by intellectual property and capital appropriation in agriculture. Through this project, it is expected that people will contribute to a centralized bank of biological "resources" and a stock of corresponding knowledge. The multiplication of seeds presupposes therefore the multiplication of knowledge, inasmuch as the uses and applications vary across space and are transformed in time. The Center is not restricted to ecological farmers; on the contrary, it is open to every and all contribution concerning plants and the knowledge applied to them.

Multiplicity of Knowledge

The Ecovida Network's nuclei make use of a mechanism for articulating knowledges and biodiversity that is quite ingenious, at least from the perspective of local agents. During the ethnographic work it was gradually realized that the step following the constitution of space is taken at the moment when people seek the seeds (which had been donated to the center for storage and multiplication). They should fill up and sign a form describing how they are going to use them. The idea is to make a spreadsheet with people's pictures, their names and the use they make of seeds – that is, people should describe what are they going to use those crops for, and this will effectively translate into a *traditional knowledge base*. One of the technical brokers (also a farmer in the region) stressed that such knowledge

> will belong to them [the people], but in the moral sense, so that academics and others won't come later and use the material deposited here, and then claim that such knowledge has been produced by them.

Back from the field, reading the fieldwork notebook to review the account of this dialogue, it was clear that indeed the interlocutor never used the term "intellectual property". But it was also clear that he had spoken of farmers' know-hows and their modes of appropriation and/or *desappropriation* from who they belong by *right*. The knowledge and seed base is supposed to abide by moral rights, and to be an open and collective database repository. In fact, the architecture of this mechanism is such that it does not allow for patenting (or any other kind of curtailment, *enclosure* intellectual property strategy); it has to be mandatorily open, free, an unbounded flow. However, such openness should rely in an authorship scheme that identifies the creators and ascribes moral ownership or "property" to them.

A brief digression on this topic will help illustrate the facts. Traditional knowledge (TK) has received special attention both in TRIPS and in more recent documents and treaties. Discussions have taken place at the level of the World Intellectual Property Organization's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. It should be highlighted that agencies have recognized traditional knowledge linked to (the maintenance of) biological diversity – a point in the CBD agenda that has played a significant part in international networks of indigenous groups, NGOs and academic scholarship. Precisely because biological diversity is a topic dealt with in parallel to (especially ecological) local and traditional knowledge, it is different from crop breeding (submitted to the breeders' *sui generis* rights) and biotechnology (regulated by patents and inventor rights). A document titled *Intellectual Property Rights: Implications for Development* was produced by the ICTSD and the UNCTAD[4] (2003) to support debates on IP and development. With such recognition, local peoples came to be understood as repositories of essential knowledge on biodiversity, on the territory they occupy, on species conservation practices, and on knowledge about food uses or biological materials that are potentially useful for the pharmaceutics industry.

It is worth recalling that the incorporation of traditional knowledge to intellectual property regimes has not been without problems. Castelli and

4 UNCTAD is the United Nations Conference for Trade and Development, and ICTSD is the International Center for Trade and Sustainable Development – both multilateral agencies, linked to the United Nations system.

Wilkinson (2002) note that traditional knowledge is defined both in CBD and UNCTAD documents in very broad terms, as "knowledge, innovations and practices by indigenous peoples and local communities tat are contained in traditional life styles", or as "technologies belonging to such communities" (Castelli and Wilkinson, 2002:4). To define what is knowledge is seemingly a simple task. Scholarly debates have however shown that this involves significant challenges that cannot be comprehensively approached here. It is nonetheless important to point out that heterogeneous forms of knowledge showing greater or lesser degree of hybridity are defined by such agencies as *traditional* in opposition to science. This is the key point for understanding the power relations enmeshed in discourses; it evokes what Santos (2008, p. 98) has called "dichotomy with hierarchy": terms that seem to be complementary are, implicitly, understood as hierarchical (scientific knowledge/traditional knowledge, capital/labor, white/black, North/South).

After briefly discussing how TKs are being approached in the literature, Castelli and Wilkinson proposed five aspects to be taken into account a propos traditional knowledge:

> i) it is, as a rule, socially constructed, even though certain kinds of TK may bear on specific individuals or subgroups within a community; ii) it tends to be orally transmitted across generations, and therefore are not documented; iii) many of its aspects are tacit; iv) it is not static but evolves in time, as communities respond to new challenges and needs; v) what makes TK "traditional", as pointed out by UNCTAD, is not its age, but the "way in which it is acquired and put to use". In other words, it is the social process of learning and sharing of knowledge, which is proper and unique to each (traditional) culture and is at the center of their traditions [...] (Castelli and Wilkinson, 2002:6-7).

Five problems or actual dilemmas may be remarked with respect to the relationship between traditional knowledge and intellectual property. First there is the issue of how to monetarily quantify such knowledge in the perspective of potential financial revenue – in all cases, a hard task for any kind of knowledge. Second, we have difficulties involved in using IP schemes for social groups in which the "inventor" is either too diffuse or too ancient. To approach cultural transmissibility is different from attributing individual authorship. Third, it would be how to come up with a language for objectifying traditional knowledges in their own terms or those of the multilateral

intellectual property regime. There will always be an asymmetry, because the dialogue takes place within an international rights regime, itself part of the modern Western landscape. As Aragon (2010) and Escobar (2008) have pointed out, this empties out the validity of local concepts that escape Western thought's antinomies and dualisms. Fourth: can traditional knowledge be frozen in time, or is it dynamic? Intellectual property mechanisms may paralyze the dynamics that is proper to such knowledges, as well as their spontaneous diffusion. This may jeopardize the very inventiveness of objects and technologies – an issue that shows telling connections with debates on cultural patrimony (Salaini and Arnt, 2010). Finally, since traditional knowledges are related to modes of living and therefore reflect dilemmas involving cultural change, maintenance of traditions, and market regulations, the imposition of an expiration date on such rights would not be reasonable.

Buchillet (2002) has proposed some alternatives. Based on indigenous demands included in the São Luís Letter (issued in 2001 in Brazil), the author shows how indigenous peoples present projects for protecting their knowledges and cultures that are based on principles alternative to those of intellectual property. One of them is a demand for effectively participating in decision-making arenas where they are stakeholders, such as the Brazilian genetic patrimony Council or the WIPO itself, even if that would require catching up with the juridical idiom prevailing in the global regime. Another author to provoke debate from a different perspective was Brush (especially 1996). He proposed as a reasonable way to redress inequalities among the populations that manage resources and detain knowledge, the use of multiple systems of compensation and recognition for those producing knowledge about nature.

A peculiar problem that came up during fieldwork was how to accommodate what was heard and seen concerning the knowledge of farmers with notions prevailing in the specialized literature, such as traditional knowledge (significantly linked to cultural property ideia) or local, situated, and indigenous knowledges. If the literature on intellectual property indicates that protection is effected on knowledges that affirm themselves as traditional, therefore understood as patrimony and potential property of traditional societies, our field empirical data point to something less purist: at stake were perspectives and world views that openly expose and articulate knowledges.

Even though such perception emerged among Chapecó farmers, it was

also present very eloquently during field forays into Novo Horizonte. One of the interlocutors in that municipality spoke about the meetings, demonstration of cultivation or raising techniques known as "field days", and festivals. He made the point that these events were relevant less for the demonstration itself or for the expert lectures than for providing a space for interaction. According to him, the meetings provide an unique opportunity for farmers to exchange and enter into relationships, to get to know each other and discuss their experiences. His account became even more interesting when he claimed that his own work as a mediator was more effective when performed locally rather than elsewhere. In his words, his work benefited from the fact that he came to know the farmers and the other technicians, to understand the region's natural events and its historical formation, and to get acquainted with farms in the municipality as well as with the workings of local politics. He emphasized, in sum, that local knowledge is better appropriated "in the local"[5]; it is better used where it is generated – a form of embedded knowledge.

In fact, our field data seems to indicate a higher prevalence of the localness of knowledge, rather than a notion of unspoiled tradition – although the latter also exists. The notion of locality is however problematic, as not all knowledges that circulate in places are produced in them (Mudege, 2008).

Thus, more than local knowledge, we prefer the perspective that this knowledge is situated: first, because this perspective breaks with the common sense that there is an essential opposition between science and tradition, or science and local knowledge; and second, because it maintains the tension between the knowledge that is situated (underlining its positionality) and that which claims universality (modern science). Since we are taking native concepts seriously (Viveiros de Castro, 2002), at times the denomination "local" will be kept in the text.

Let us move forward, then. If the duality of forms of knowing may reinforce colonization and the simplification of what is local knowledge (cf. Oguamanan, 2008), it also puts forth an irreducible difference between such forms of knowledge, inasmuch as non-Western knowledges cannot be isolated from the rites, myths, and the ensemble of society –neither are they generally inscribed in rules and norms, as remarked by Nazarea (2006).

Acknowledging the tension between these two poles, Sillitoe (2002) has

5 We acknowledge Olavo Ghedini for this formulation.

sought a conceptualization that understands indigenous knowledge as

> relating to any knowledge that is more or less collectively maintained by the people, and that informs their understanding of the world. It may pertain to any domain, natural resource management in particular [...]. It is based on the community, and is immersed in and conditioned by local tradition. It is culturally understood, and is inculcated in individuals since birth, thus structuring how they deal with the environment [...]. Its distribution is fragmented [...] (Sillitoe, 2002:9).

Let us look at this point carefully. Some of the characteristics described by Sillitoe can be also associated with science, too. This poses a challenge to the notion of situated knowledges. On the one hand, it deconstructs the incommensurable opposition between science and local knowledge by acknowledging that science, too, was born somewhere and from a certain tradition of thought, and that all forms of knowledge are practices of tacit action in social and physical environments, and involve accumulated experiences and acquired dispositions (Li, 2000; Ingold, 2000; Smith, 2007). Moreover, this opposition does not capture the fact that so-called "traditions" are many times colonized, the outcome of epistemological geopolitics and colonial difference (Mignolo, 2005)[6]. On the other hand, not to differentiate between science and situated knowledges creates other dilemmas, by ignoring the fact that the latter are more embedded, do not aspire to be absolute nor uniform, are not formally organized according to empirical-hypothetical procedures, and evoke world views and cultural logics that are often non-dualistic (Escobar, 2008; Li, 2000; Martin and Vermeylen, 2005).

Before continuing this debate, more ethnographic facts. The Network also compels to knowledge on certification in general, a method for organizing ecological guarantees elaborated endogenously by the groups[7]. This is the case of Horácio, a farmer known for preserving and experimenting with creole seeds. His account on seals and certification was very illuminating,

6 As Mignolo (1995) put it, modernity depended on colonialism and created a colonial wound. On knowledges and their unequal distribution, Mignolo (2005: 44) affirms: "I call the uneven distribution of knowledge the geo-politics of epistemology".

7 For a detailed analysis of the different certification processes (global norms, main formats, and various applications), see Radomsky (2010). On certifications and institutional and evolutionary economy, see Almeida, Pessali and de Paula (2010).

and we would like to bring it up here. He reported that, while strolling around a market in his municipality, he spotted products with the Network's seals. He inquired about who had supplied that product, and the vendors refused to reveal. Yielding to Horácio's insistence, they admitted they had bought the product from a company and cheated the system by adding the stamps to the foodstuffs. He went on to recount that, in another occasion, he met a farmer who had guaranteed that he was certified by Ecovida because two agronomists had made an inspection on his farm. Horácio asserted that this (to claim a visit by technicians) made him sure that that farmer did not have a permission to use the seal, as he knew all certified farmers in the region, and that agronomists generally do not play a part in this process.

The two events briefly recounted by Horácio put the problem differently. Surely, these are local or situated knowledges. Moreover, the fact that the Network's seals have been procured by free-riders suggests their symbolic and economic value. But it also shows that the farmer is aware of what it means to be a certified and an uncertified (ecological or not) farmer, as well as of the applicable sanctions and penalties. This is knowledge about this seal and the corresponding certification process, even if it also prepares him to understand how certifications work in general. The two problems reported by this farmer suggest a tension in the label protection mode, which is at once controlled and open to family farmers who really wish to get involved in Ecovida's proposal as described in this study. Moreover, it is analytically relevant that the farmers know the certification process, and in some cases take on leadership of the Network's local groups. Most fundamentally, the second case told by this farmer points to the fact that the process for granting eco-labels passes by farmers' hands and skills, and not exclusively by those of technicians, although there is a collaboration to this goals.

Final remarks: multiplicity, partiality, positionality

The Network's situated knowledges and their collective nature are manifested in the relations it promotes between individuals and local organizations, as they unfold in the form of partial knowledges that are socially negotiated but nonetheless essential for the continuity of agro-ecology. Therefore, and based on what was found in the field, the productivity of the notions of partial and situated knowledge must be reasserted. We take Haraway's (1991)

concept of partial knowledge to evoke this notion as well as the potentiality of situated forms of knowledge, which are not and can never be total – they are realized as collectives, but aspire to objectivity precisely because they acknowledge their own positionality. They promote principles of social articulation precisely because they are incomplete.

The notion of partiality proposed by Haraway (1991) makes clear that knowledges are always in perspective and positioned. If the partial perspective guarantees an objective view, Haraway (1991: 187; emphasis added) argues that this takes place through connections: "we do need an earth-wide network of *connections*, including the ability partially to translate knowledges among very different – and power-differentiated – communities".

The term *connections* was highlighted here in order to evoke the dialogue between Haraway and Strathern's notion of partial connection (Strathern 2004, original published in 1991). Knowledges are realized in perspective, and the connections established between them cannot be but partial: even if, as the actors recognize, there are no perfectly fitting understandings in agro-ecological knowledges, neither is there total exclusion and contradiction – the forms of knowing overlap and partially connect (Law, 2004). For Law, the keyword for this process is multiplicity, which evokes an alternative to the mode of knowledge based on singularity and pluralism. Law (2004:62) explains: "The dominant enactments of Euro-American metaphysics make it very difficult to avoid singularity on the one hand, and pluralism on the other. Either there is a single world, or there are lots of different worlds. This is what seems to be the choice". Standing by multiplicity, Law argues for the need to pay heed to

> [...] the claim that there are many realities rather than one. This arises because practices are endlessly variable and differ from one another. The additional claim that practices overlap in many and unpredictable ways so there are always interferences between different realities. Multiplicity is inconsistent with singularity, but also with pluralism (Law, 2004:162).

In this sense, the notion of *multiplicity* educes another, deeper understanding on the reason why farmers insist in the *multiplication* of knowledges and seeds: they do not require uniformity in applications and uses; they intrinsically signal that multiplication implies both dissemination and difference, that is, the almost inescapable condition, in this context, whereby each

shapes particular forms that entertain partial connections with the use made by their peers. They evoke that which Strathern (2004: 39) has rendered problematic about the creation of a connection between participants, "but they continue to be partial inasmuch as they do not create between them a singular entity". As noted multiple times during fieldwork, each farmer seeks to define his or her way of working as the best way by which a particular technique or seed use is multiplied. But this is true only in part. If they see their own way of working as the best, this does not mean they see the others' as wrong – the context has allowed them to discover new conditions. What is important is to realize that each has an opinion and a judgment, which may even conflict with that of others – and one should not underestimate the personal power of the Network's intellectuals and those privileged within the groups.

An attention to situationality and partiality allows for potentializing the perspective that knowledges (and seeds) will be multiplied by dissemination and difference – the multiplication and the multiplicity of the world run in parallel.

The notion of partial connection not only illuminates the collective assemblage of knowledges on agro-ecology, as it leads to a productive interpretation of the relation between situated knowledges and the experiments carried out by farmers, which are forms of multiplying uses and accumulated experience.

The assumption that knowledges are situated allows for the traditional to be present without implying that all knowledge is necessarily inherited. Situated knowledges aggregate fragments of science, mimesis, appropriation of external forces, impositions, coloniality, knowledges generated and circulated within the Ecovida Network, combinations, and hybridizations.

If the social actors enact a simultaneous politics of protection and controlled opening, proposals for curtailing these knowledges are likely to be less polemic if they find a mid-way between extreme closure (typically the case of unrestricted application of intellectual property to them) and total opening (public domain).

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