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A territorially situated reading of agroecological transition processes: ecology of projects in the Sierra Fluminense Region

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Abstract

This article seeks to analyze, from a diachronic perspective, a diversified set of initiatives of environmentalization/ecologization of agriculture and the agri-food system, contextualized in the Sierra Region of Rio de Janeiro, particularly in the municipalities of Petrópolis, Teresópolis and Nova Friburgo. The reflections presented here seek to establish a dialogue with an emerging field of studies, of an interdisciplinary nature, which takes as an object of investigation the processes of transition to sustainability. The research seeks to integrate a systemic approach to the study of practices and experiences of social actors, also incorporating contributions from Brazilian critical geography and French sociology. The work was based on a diverse set of methodologies including document analysis, semi-structured interviews, and participant observation. The results achieved highlight the effects generated by a heterogeneous set of territorial containments, which impose limits to the incorporation of sustainability principles into the agri-food system at territorial level. At the same time, they draw attention to the agency capacity demonstrated by social actors in the construction of collective and individual projects, enabling the emergence, over time, of a shared field of relations, interpretative frameworks, and controversies, described in this research as an *ecology of projects*.

Keywords: Transitions to sustainability. Territorial agri-food systems. Rio de Janeiro. Territory. Ecology of projects.

Uma leitura territorialmente situada dos processos de transição agroecológica: ecologia de projetos na Região Serrana Fluminense

Resumo

Este artigo busca analisar, sob uma perspectiva diacrônica, um conjunto diversificado de iniciativas de ambientalização/ecologização da agricultura e do sistema agroalimentar, contextualizadas na Região Serrana do Rio de Janeiro, particularmente nos municípios de Petrópolis, Teresópolis e Nova Friburgo. As reflexões aqui apresentadas buscam dialogar com um emergente campo de estudos, de caráter interdisciplinar, que toma como objeto de investigação os processos de transição para a sustentabilidade. A pesquisa procura integrar uma abordagem de natureza sistêmica ao estudo das práticas e das experiências dos atores sociais, incorporando, também, contribuições advindas da geografia crítica brasileira e da sociologia francesa. O trabalho teve por base um conjunto diversificado de metodologias, incluindo análise documental, entrevistas semiestruturadas e observação participante. Os resultados alcançados colocam em evidência os efeitos gerados por um conjunto heterogêneo de contenções territoriais, que impõem limites à incorporação de princípios de sustentabilidade ao *sistema agri-alimentar* em nível territorial. Chamam atenção, ao mesmo tempo, para a capacidade de agência demonstrada pelos atores sociais na construção de projetos coletivos e individuais, possibilitando a emergência, ao longo do tempo, de um campo compartilhado de relações, quadros interpretativos e controvérsias, descrito pela pesquisa como uma *ecologia de projetos*.

Palavras-chave: Transições para a sustentabilidade. Sistemas agri-alimentares territoriais. Rio de Janeiro. Território. Ecologia de projetos.

Una lectura territorialmente situada sobre los procesos de transición agroecológica: ecología de proyectos en la Region Serrana Fluminense

Resumen

Este artículo busca analizar, desde una perspectiva diacrónica, un conjunto diversificado de iniciativas de ambientalización/ecologización de la agricultura y del sistema agroalimentario, contextualizadas en la Región Serrana de Río de Janeiro, particularmente en los municipios de Petrópolis, Teresópolis y Nova Friburgo. Las reflexiones aquí presentadas buscan dialogar con un campo de estudios emergente, de carácter interdisciplinario, que toma como objeto de investigación los procesos de transición hacia la sostenibilidad. La investigación busca integrar un enfoque sistémico al estudio de las prácticas y experiencias de los actores sociales, incorporando también contribuciones de la geografía crítica brasileña y la sociología francesa. El trabajo se basó en un conjunto diverso de metodologías que incluyen análisis de documentos, entrevistas semiestruturadas y observación participante. Los resultados alcanzados destacan los efectos generados por un conjunto heterogéneo de contenciones territoriales, que imponen límites a las posibilidades de incorporar principios de sostenibilidad al *sistema agri-alimentario* en nivel territorial. Al mismo tiempo, llaman la atención sobre la capacidad de agencia demostrada por los actores sociales en la construcción de proyectos colectivos e individuales, possibilitando el surgimiento, en el tiempo, de un campo compartido de relaciones, marcos interpretativos y controversias descrito por la investigación como una *ecología de proyectos*.

Palabras clave: Transiciones a la sostenibilidad. Sistemas agri-alimentarios territoriales. Rio de Janeiro. Territorio. Ecología de proyectos.

1 Introduction

Over the last decades, studies focused on transitions towards sustainability aimed at structuring socially just and environmentally sound *agri-food systems*, became an interdisciplinary field of reflection, mobilizing a diverse set of research tools and theorizing efforts. Although starting from slightly different approaches, several authors draw attention to the multilinear and, to a certain extent, contingent nature of these trajectories of sociotechnical change, involving coordination mechanisms and governance structures that cross different domains and scales of intervention.

From a sociological point of view, several approaches have been activated seeking to account for the multiple dimensions involved in these transition processes. It is important to mention, among them: food regime theory; socio-technical transition studies - with emphasis on the Multi-Level Perspective (MLP); assessments of the resilience of socio-ecological systems; the Actor-Oriented Perspective (AOP); as well as the debates involving the design and management of agroecological change. This listing also includes different strains of pragmatism, such as the Actor-Network Theory, among other perspectives affiliated to a sociology of practices¹.

It is not our objective, in this article, to present a systematic review of the different interpretation frameworks applied in the study of socio-ecological transitions in agriculture and the agri-food system. It is worth highlighting, however, that the definition of the relevant actors, guiding principles, and systemic levels to be considered in the analysis of these trajectories of change, has been the focus of debates and controversies. It is also important to remember that, as noted by Hinrichs (2014), the intensive research effort developed around this area of inquiry, keeps a close relationship with emerging criticisms regarding the sustainability of the current agri-food system. In addition, policies, projects, and initiatives related to this focus of intervention, developed in different parts of the world, have served as “context, occasionally as a counterpoint, and sometimes as empirical objects, to a research field that is dedicated to the transitions to sustainability”, which is now found in full development (HINRICHS, 2014, p. 145).

The definition that serves as inspiration, at least for a part of this literature, particularly for studies centered on technological innovation processes, comprises sociotechnical transitions as an interrelated and continuous set of changes in multiple dimensions (technological, material, economic, institutional, political), led by different actors and capable of producing significant changes in the structuring of sociotechnical systems (GEELS, 2019). In the case of the Multi-Level Perspective, these transformations are perceived as the result of interrelations established at three distinct levels, of eminently heuristic value: the *sociotechnical regime* - encompassing a broad set of actors, relationships, rules and norms, cognitive

¹ There is an extensive literature associated with this debate, involving both reflections of a more theoretical nature, as well as empirical studies developed in various countries, including Brazil. We chose to mention, here, some recent works that sought to systematize, review and/or develop critical assessments of the literature on transitions to sustainability in the context of the agri-food systems. See, for example: Hinrichs (2014); Ollivier et al (2018); Köhler et al (2019); Lamine (2020); Anderson et al (2021) – among others. The book published by Niederle and Wesz Junior (2018), even not defining transitions to sustainability as its main focus, brings important elements to this debate.

patterns, and materialities, which contribute to the stabilization of particular technological trajectories; the *innovation niches*, understood as actor-networks that operate as a *locus* of radical innovations; the *sociotechnical landscape*, defined as an exogenous environment, situated beyond the direct influence of both the niche and the regime, but which, under certain circumstances, can exert pressure on these two levels (GEELS, 2019).

The Multi-Level Perspective proposes that sociotechnical transitions, defined as regime changes, are the result of interactions established between the landscape, the niche, and the regime. But it is important to consider that, as Geels (2010) notes, “transitions do not happen easily, because existing regimes are characterized by lock-ins and path dependence, and oriented towards incremental innovations along predictable trajectories.” (GEELS, 2010, p.495). The formulations proposed by the Multi-Level Perspective have been widely debated, also suffering some criticism regarding the methodological challenges to be faced in connecting the established levels of analysis in empirical research, the treatment given to power relations and human agency, the absence of formulations capable of contemplating socio-spatial dimensions, among others².

Authors such as Anderson et al., (2021), Lamine (2020), Hinrichs (2014), among others, discussing the Multi-Level Perspective and other frameworks of analysis, highlight the role of human agency in the processes of transition-transformation of the agri-food systems towards sustainability. They call attention to the need for a closer examination of the networks, actors, and practices articulated in different research contexts, shedding light on the effects of social action on the dynamics of stability and change in food production and consumption. Anderson et al. (2021, p. 31) even suggest that large-scale shifts in these complex configurations, span multiple levels of transformation, in a movement in which “political changes, struggles, and networks that should be aligned, not always are”. They also call attention to the centrality of power relations as an explanatory element in the study of the dynamics of food production, marketing and consumption, and its transformation over time.

This article seeks to interact with the debate related to the transitions to sustainability from a specific territorial context. The research aims to analyze, from a diachronic perspective, a diverse set of initiatives of environmentalization /ecologization of agriculture and the agri-food system, taking as a reference the Sierra region of Rio de Janeiro, particularly the municipalities of Petrópolis, Teresópolis, and Nova Friburgo. The established time frame starts in the second half of the 1970s, the moment in which the experiences of alternative agriculture took their first steps in this territory, extending its look to the present time. The methodological strategy adopted seeks to combine two distinct levels of analysis: the historical reconstruction of the social and ecological changes that have taken place in the last four decades in these municipalities, focusing, at the same time, on the practices and experiences of social actors in the construction of a diverse set of arrangements related to the production, processing, and marketing of ecologically cultivated food. We employ, however, at different times throughout the text, the notion of agroecological transition, understanding that this conceptualization carries

² An effort to systematize and respond to criticisms addressed to the Multi-Level Perspective can be found in Geels (2019). For a dialogue between MLP and geography see: Chandrashekeran (2016).

with it a series of principles that contribute to a more precise definition of the research analytical framework³. We attempted to distance ourselves, however, from any intention in the sense of imposing on the actors a normative model of “sustainability transition”, understanding that the processes here analyzed, in their historicity, should not be reduced to a classificatory logic.

The analytical framework that guides the research mobilizes the notion of *territorial agri-food systems*⁴, developed in the context of French sociology (LAMINE, 2020; LAMINE, 2017). This concept encompasses not only the economic and social relations usually taken into account as part of the structure of agri-food chains (from production to consumption) including, as well, as an integral part of the agri-food system at territorial level, a series of other components: public policies; institutions operating in the fields of technical assistance, rural extension, research and development; the interactions established in the context of civil society organizations; among others (LAMINE, 2017).

These different levels are treated as spaces of interaction, crossed by ties of interdependence, prescription systems (CHATEAURAYNAUD, 2015), debates, and controversies. In these fields of relation, individual and collective projects of environmentalization/ecologization are manufactured. For researchers, building an integrated (non-reductionist) view of these processes is undoubtedly a challenge, describing in detail the operations put into practice by the actors, in their effort to reorient or modify their strategies over time. The analytical approach here adopted intends to break with teleological narratives, rescuing the different modes in which the agents themselves experience historical bifurcations. Taking as a reference the notion of *territorial agri-food system*, we seek to decipher the tangle of visions, networks of interdependence and norms, with which the social actors interact in their daily lives, while maintaining a systemic approach (LAMINE, 2017: 17).

The work also seeks to establish a dialogue with the Brazilian critical geography, particularly with the works developed by the geographer Rogério Haesbaert, in his formulations about the processes of de/re/territorialization that are under way in contemporaneity. Highlighted here are the theorizing efforts developed by the author in the analysis of a set of spatial dynamics interpreted through the notion of territorial containment (HAESBAERT, 2009). The choice of this term, as pointed out by Haesbaert (2009, p.115), is due to its ability to express the “always partial, temporary, and palliative character of the ‘closures’, or rather, the dam effect created through the attempts to contain the flows”. At the same time, the idea of containment seems to have the advantage of contributing to explain the actions and power games that seek to inhibit the proliferation of certain dynamics, or provoke their deceleration, always leaving open the possibility that they will recover under other rhythms.

³ Here, we recognize the efforts that have been made by different researchers in defining the principles of agroecology. Despite the experimental character of these formulations, which have been the subject of multiple controversies, we believe that they represent an important contribution in the construction of an agroecological perspective on transitions. See, for example: Wezel et al (2020); Anderson et al (2021).

⁴ In line with the literature referenced here, we use, in this work, the expression *agri*, and not *agro*, at the territorial level. In the original formulation in French, this shift would indicate a distancing in relation to a conventional view of the *agro*, as a set of relations structured around the production chains, emphasizing, above all, the mercantile relations.

It is important to point out, however, that the notion of territorial containment, in the way that it was used in this article, ends up taking a somewhat different direction if we consider the way Haesbaert (2016) mobilizes the concept in his research. It is worth remembering that some of the main references mobilized by the author when applying this concept empirically are the peripheries of large Brazilian metropolises. Haesbaert analyzes, in these scenarios, the effects generated by the walls and security devices that aim to contain the flows of subalternized populations. In our work, however, the idea of containment will be employed in a broad way, aiming to encompass the multiple forms through which certain flows, which could streamline processes of transition to sustainability at territorial scale, can be prevented and/or hindered, either through physical restrictions, by legal devices, or even by obstacles of a symbolic nature. The analysis seeks, at the same time, to observe how different actors, even in the face of contextual restrictions, concentrate efforts to stimulate territorially situated transition processes. We start from the hypothesis that these processes can be leveraged from actions articulated in different dimensions and arenas of the agri-food system.

We also propose, in a preliminary way, the idea that the territorially situated transition trajectories unfold over time through an *ecology of projects*, mobilizing actors and organizations with heterogeneous profiles and horizons of action, but which can, to a greater or lesser extent, establish synergies that ultimately strengthen these processes at the scale of the territory.

The notion of an *ecology of projects*, suggested here, results from an effort to translate formulations constructed by different authors in the field of organizational ecology, taking as a reference the original propositions elaborated by Hannan and Freeman (2005). One of the principles of organizational ecology is to analyze, in an integrated way, the relations established in time and space between organizations with similar profiles and behavior patterns, rather than analyzing them in an individualized way. This approach seeks to understand the cycles through which companies evolve in relation to the environment in which they are inserted, observing the conditionings that allow certain organizational profiles to predominate in a given period. Changes in the environment can contribute to the extinction of certain populations and its replacement by others. It is important to say that our contact with this literature was highly influenced by the formulations developed by Lavalle and Von Büllow (2014), focusing on the processes of institutionalized intermediation developed in the context of the Latin-American civil society. The authors propose a study of certain associative conglomerates and multi-sector entities from the point of view of an "expanded organizational ecology", encompassing, in their analysis, "diverse populations of civil society organizations that create specialized ways to deal with their interdependence within shared environments" (LAVALLE; VON BÜLLOW, 2014, p. 128).

On the other hand, the notion of project was directly influenced by the formulations of Boltanski and Chiapello (2009), who conceive projects as opportunities and pretexts for the construction of connections. A diverse group of people can gather, for a longer or shorter period of time, around a given project. This particular field of relations becomes a "strongly activated network segment" in this temporal interregnum, also allowing the creation of more lasting ties, which can remain dormant but which, to a greater or lesser extent, are always available. The

projects are thus constituted as "a large pocket of temporary accumulation that, being a creator of value, gives foundation to the need to expand the network, favoring connections" (BOLTANSKI; CHIAPELLO, 2009, p. 135).

It is by no means a question of conceiving these projects based on an evolutionary perspective, considering that, as projects (BOLTANSKI; CHIAPELLO, 2009), they are always constituted from connections that may or may not be reactivated. Furthermore, these different projects can be at odds at any time. In this direction, the notions of exclusion and adaptation, used by the authors linked to organizational ecology, contribute to draw attention both to the nonlinear developments that mark the evolution of this reticular fabric of organizations and projects, as well as to the agonistic component present in these interactions.

The results presented in this article are related to a long-term research work, associated with the preparation of a Doctoral Thesis⁵. The research involved a close approximation with the actors in the territory, through the use of various research methodologies, including: (i) semi-structured interviews with farmers linked to the socio-productive arrangements analyzed; (ii) participant observation, both in the farmers' markets and in different events organized by the associations and cooperatives; (iii) systematization of data related to 101 management plans elaborated by organic producers certified by the Association of Biological Producers of Rio de Janeiro⁶, working in the municipalities of Nova Friburgo, Teresópolis, and Petrópolis in 2017 and 2018.

The article was organized into four sections, including the introduction. Section 2 seeks to reconstruct the historical trajectory of specialization of the Sierra Fluminense Region as a geographical space focused on the production of vegetables, in a conventional system, having as its main outflow channel the Metropolitan Region of Rio de Janeiro. This is followed by a diachronic and multi-situated analysis of the structuring, in different parts of the territory, of a diverse set of socio-productive organizations and arrangements, originally inspired by the principles of an alternative agriculture (natural, biological, ecological). In the last two decades, these arrangements have come to be identified as experiences in organic agriculture. Section 4, which aims to present the final considerations, systematizes a series of notes on the cases analyzed, in line with the interpretation framework guiding the research.

⁵ The thesis entitled *Processos de transição agroecológica: ecologia de projetos - uma abordagem pragmática, sistêmica e territorial na Região Serrana Fluminense* was presented by the first author at the CPDA/UFRRJ. The second and third authors of this article acted, respectively, as advisor and co-advisor of the thesis. The research was supported by a scholarship granted by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), in addition to funding from the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Finance Code 001 (CAPES), which made it possible to carry out a Sandwich Doctorate that was held in France. The research also had the support of the Capes-Cofecub SH944/19 project.

⁶ Free translation. In the original: "Associação de Produtores Biológicos do Rio de Janeiro".

2 Modernization and specialization of agriculture in the Sierra Fluminense Region: conventional production of vegetables and territorial containments to agroecological transitions

The dissemination of practices and arrangements associated to the Green Revolution in Brazil made horticulture, based on conventional production techniques⁷, one of the predominant activities among family farmers in the Sierra Fluminense Region. Three different streams of socio-political change influenced the emergence of this configuration. Between the 1960s and 1980s, the region experienced the effects of policies that sought to articulate industrialization, urbanization, and technological modernization of agriculture. New production outlets were structured around the operational units of the public company called Supply Centers of the State of Rio de Janeiro (CEASA-RJ)⁸ which coordinates, since then, a series of public facilities dedicated to wholesale operations. During the 1980s and 1990s, the private sector gained increasing influence in the arrangements built around conventional vegetable production in the territory, with the expansion of private technical assistance services and the structuring of market circuits led by middlemen. Finally, the process of political and institutional recognition of family farming, from the mid-1990s, strengthened the use of so-called “modern technologies” in the region. Public policies specifically aimed at family farming - with emphasis on credit lines with differentiated interest and payment terms - were implemented in these municipalities, benefiting a whole set of actors (including producers, input sellers and brokers) associated with conventional production.

Over time, the specialized production of vegetables through conventional technologies started to impose a set of containments on agroecological transition processes. Conventional production began to absorb a considerable portion of the land suitable for agricultural production, also demanding an increasing amount of water for irrigation. Farmers' decisions related to the organization of production became increasingly guided by prescription systems structured around productivity parameters and quality conventions established by market agents.

Map 1, below⁹, allows the visualization of the three studied municipalities¹⁰, indicating areas with a significant concentration of farmers producing vegetables using conventional techniques. This cartographic representation also shows the presence, in the context of the Sierra Fluminense Region, of non-agricultural areas mostly dedicated to environmental preservation, due to their steep slope characteristics. This configuration seems to be the result of a confluence between different social and ecological conditions, being affected, among other factors, by

⁷ We are referring, here, to a vegetable production developed on a commercial scale, characterized by the intensive use of pesticides, chemical fertilizers, mechanization (often with the use of small implements), and highly dependent on irrigation structures.

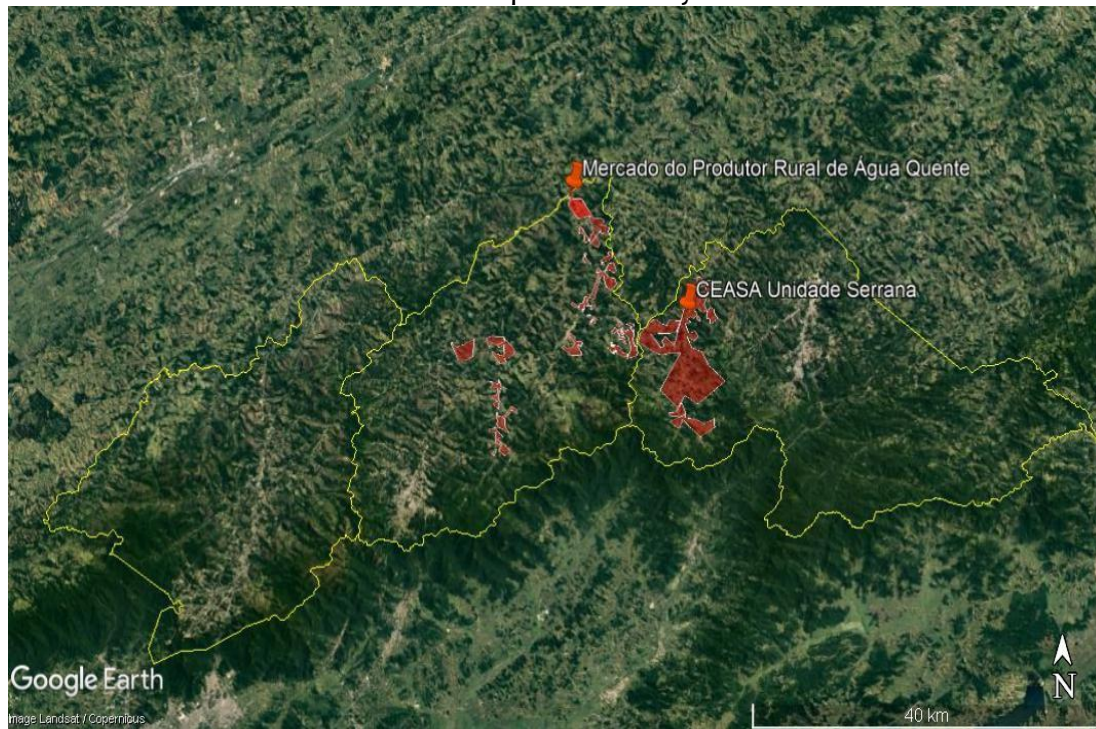
⁸ Free translation. In the original: “Centrais de Abastecimento do Estado do Rio de Janeiro”, CEASA-RJ.

⁹ This map was produced based on field observations and the identification, in aerial images, of zones with significant concentration of conventional vegetable production (indicated in brown). The main infrastructures related to the marketing of these products are also located in these areas. Those places where production systems are more rarefied, were not highlighted in this figure for technical reasons.

¹⁰ The city of Petrópolis appears on the left, Teresópolis in the middle, and Nova Friburgo on the right.

topography and its effects regarding temperature variations, as well as by the history of land use.

Figure 1 - Aerial image of the municipalities of Petrópolis, Teresópolis, and Nova Friburgo, indicating areas with a significant concentration of conventional horticultural production systems



Source: produced from field observations and identification of areas of interest in aerial images, using Google Earth.

With regard to the constraints related to the dissemination of ecologically-based agriculture on a territorial scale, it seems important to draw attention to the existence in the Sierra Fluminense Region, of an entire network of agricultural input stores. The resources made available by credit lines specifically directed to family farming¹¹ are crucial for the functioning of these commercial ventures. As far as vegetables are concerned, two different commercialization formats are worth mentioning. The first of them is organized around the operational units of CEASA, installed in the Sierra Fluminense Region and the Metropolitan Region of the state. The other is operated through private processing and marketing units, locally known as *galpões*. In both, the role played by intermediaries or middlemen, responsible for the transport of production, is central.

In the commercial arrangement that involves the connection between different CEASA units, the intermediaries work with a limited number of products,

¹¹ This chain of stores provides technical assistance in the elaboration of projects for the implementation of productive infrastructures and financing of agricultural costs. These commercial facilities maintain working routines related to these projects, counting on the support of banking units installed in the region. The resources that enable farmers' access to financial resources for production through banks often come from the National Program for the Strengthening of Family Farming (Programa Nacional de Fortalecimento da Agricultura Familiar - PRONAF).

due to the fact that truck loads are always composed of a selected set of crops, with little room for diversity. In the case of the *galpões*, the production is collected in the farm units using small trucks and transported to facilities located in strategic places, to be sanitized and packaged. From the *galpão*, vegetables are transported in large vehicles to the supermarket chains. The trucks that pick-up the products at farm level are adapted to collect specific types of vegetables. The market agents demand that rural communities specialize in specific lines of production - lettuce, cabbage, cauliflower and so on - which allows them to better organize the loads to be traded.

One of the effects of this mode of organization is the simplification and homogenization of production systems, regarding the diversity of cultivated species. Most farmers try to maintain a certain volume of deliveries throughout the year. It would not be possible to operate in this type of market by offering a large number of products in small quantities, which would raise transport costs to unfeasible levels. As one of our interviewees, who worked “only with watercress, for real, for 18 years”, noted: “If you don’t take care of the quality of the products, you have no customer (...) So if we do not keep the standard, you do not keep the customer”.

Due to their aesthetic characteristics, some varieties were favored by farmers to the detriment of their adaptability to the ecological conditions prevailing in the region. The case of the varieties of cauliflower with lighter flowers, which were increasingly introduced into the territory, is symptomatic. This quality standard was increasingly demanded by *middlemen*, due to its wide acceptance among consumers. However, according to farmers, these varieties are significantly more susceptible to phytosanitary problems.

The pressures arising from productive specialization seem to be reinforced, as well, by the conditions inherent to a mountain agriculture, with restricted availability of areas suitable for cultivation. In the Sierra Region of Rio de Janeiro, agricultural production expanded, mainly, in the valleys. Thus, in the rural communities where specialized vegetable production is predominant, the valleys are densely occupied, and the areas cultivated by different farmers are interconnected, as if they were contiguous.

This territorial configuration ends up imposing several obstacles to agroecological transition processes, often containing their emergence and dissemination on a territorial scale. By way of example, it's worth noting that the effectiveness of non-synthetic inputs authorized by the norms that regulate organic agriculture can be compromised by the spraying of pesticides by neighboring farmers. As pointed out by a farmer who lives in a rural community of Teresópolis, which started her transition to organic farming in 2011: “neighbors ask me if they cannot use some of the things [inputs] that I use (...) but look at his area there, it is in the middle of the other brothers, it is difficult, because everyone sprays [pesticides] all the time”.

Figure 2 - Rural community Vieira – Teresópolis-RJ



Source: Photographic record made during field work (Juliano Palm)

The limitations inherent to the structure of farm units – considering not only their total area, but also the farmable area – make the construction of protective barriers against pesticides sprayed in neighboring areas, a not a feasible strategy for most farmers in the region.

Figure 3 - Community of São Lourenço – Third District of Nova Friburgo



Source: Photographic record made during field work (Juliano Palm)

Problems related to the coexistence between conventional production and ecologically-based agriculture affect farmers in different ways. Those who have greater availability of area and are owners of their farm units are able, most of the time, to establish productive arrangements that are ecologically and economically viable, incorporating crop rotation practices or using fallow as a tool of phytosanitary control.

At the opposite end, tenant farmers who cultivate small areas, have their earnings diminished by the need to pay the lease and are forced to produce more intensively in small areas. In this type of situation, it becomes more difficult to incorporate agroecological practices given the need for farmers to dedicate themselves to crops that can provide greater financial returns, cultivated very often in consecutive cycles.

In this same scenario, the streams that cross the valleys play a key role in the irrigation of crops, benefiting not only those farmers who have direct access to these water sources, but also those who use these resources based on agreements with their neighbors. The possibility of contamination of these water bodies by pesticides and industrialized fertilizers cannot be disregarded, given the fact that they cross different agricultural areas, especially if we take into account the scarcity of natural barriers between the agricultural plots and these streams.

The proximity between the cultivated plots, the sharing of water resources for irrigation, and the absence of sources that can be completely free of the risk of contamination by pesticides, become important limitations for farmers to engage in

agroecological transition trajectories in the Sierra Fluminense, particularly in the case of organic farming, considering the norms that regulate this type of agriculture.

3 Strengthening territorially situated agroecological transition processes: an ecology of projects

In this section we will analyze the organizational structures built around the socio-productive initiatives that sought to incorporate environmental concerns into the management of agricultural production systems in the Sierra Fluminense Region. Initially, these experiences were inspired in different expressions of the so-called alternative agriculture (natural, biological, ecological), but in the past two decades, organic agriculture has asserted itself as the main reference for farmers involved in these transition processes¹². We start from the idea that these organizational arrangements can be apprehended as collective projects, operating as a reference point through which the actors involved in agroecological transitions sought to trigger and coordinate multilevel interventions, articulating different domains and scales of the agri-food system.

In the context here analyzed, pioneering experiments, developed in the 1980s, gave rise to the structuring of organizations with different formats. The study of the trajectory followed by these organizations presents itself as an instigating path to access the different ways in which social actors sought to strengthen these initiatives, reflecting on their experiences and moving forward, dealing, in different ways, with the challenges that appeared along the road.

We seek to observe how the different agents linked to these organizations were able to boost, on the analyzed time horizon, a diverse set of initiatives related to the production, distribution, and consumption of organic food, articulating, at the same time, other dimensions of the agri-food system. Our initial hypothesis is that these transition processes are unfolding from an *ecology of projects*, which involves a diverse combination of actors, practices and shared prospects. The web of relationships that sustains this organizational ecology enables the construction of synergies and complementarities, which does not exclude the emergence of tensions and antagonisms.

Coonatura: cooperativism approaching consumers and producers of natural food

One of the first initiatives that contributed to leverage experiments in ecologically-based agriculture in the Sierra Fluminense Region originated from the action of consumers living in the city of Rio de Janeiro, who, in 1979, founded the Mixed Cooperative of Producers and Consumers of Ideas, Products, and Natural Solutions¹³ (Coonatura). In the same year, one of the founders of this cooperative, Paulo Aguinaga, also from the city of Rio de Janeiro, rented a farm in the rural community of Brejal, in Petrópolis. When Coonatura structured its first

¹² The main reference guiding the experiences related to organic agriculture developed in the Sierra Fluminense region is the definition of “organic system of agricultural production” consolidated in Law 10.831/2003, which guided the structuring of participatory certification systems implemented in Brazil.

¹³ Free translation. In the original: “Cooperativa Mista de Produtores e Consumidores de Ideias, Produtos e Soluções Naturais”.

commercialization warehouse, back in 1980, Paulo's farm was able to offer "a small production, but that already justified going down to Rio".

Throughout the 1980s, this commercialization channel piqued the interest of a group of female farmers who lived in neighboring sites. The home gardens cultivated by these women for family supply were located in places relatively far from the production areas managed with conventional practices. In the crops cultivated for domestic consumption, synthetic fertilizers and pesticides were not used. At this initial stage, about five farmers from the community of Brejal were linked to Coonatura, in addition to the pioneering experience conducted by Paulo.

In 1985, the opportunity arose to expand production with the lease of Pedras Altas Farm, also in Brejal. In this context, the Rural Unit of Coonatura¹⁴ was constituted, with the cooperative carrying out investments in infrastructure and promoting collective initiatives of joint work in the cultivated plots, with the participation of consumer associates.

In the late 1980s, other farmers from Brejal, especially the husbands of the female farmers already engaged in the marketing of agricultural products through Coonatura, became interested in the arrangement built around the cooperative. The monetary income generated by women selling alternative products through Coonatura exceeded the income earned by their husbands through the marketing of conventional production. Comparing these results, these men became interested in starting the transition to an ecologically-based agriculture.

In this period, Coonatura was also creating new commercial warehouses in the city of Rio de Janeiro. The organization expanded its volume of purchases of ecologically cultivated products from other parts of the country, in an effort to supply a growing number of consumer associates. In this expansion movement, the cooperative reinforced its structure of transport and logistics.

In 1993, the entity participated, along with the Association of Biological Farmers of Rio de Janeiro¹⁵ (ABIO), of the structuring of the Glória Farmers' Market¹⁶, in Rio de Janeiro. ABIO began to act as an organic certification body, at a time when the legislation that in our days regulates the production, processing, and commercialization of organic products had not yet been implemented.

At the end of the 1990s, the network coordinated by Coonatura articulated almost 30 farming families, working in different valleys of the community of Brejal, along with around 2,100 consumer associates based in the city of Rio de Janeiro.

Throughout this process, as Paulo Aguinaga points out: "we have always been very radical in the principals of cooperativism (...) we observed the growth, but wanted to maintain the human dimension" Regarding the farmers: "the remuneration was significant, because we were already applying that cooperative spirit, authentic, (...) not aimed at profit (...). What we received there, we paid here." At the same time, in the relationship with the consumer associates, a very rigid stance was maintained: "we had several criticisms of disordered growth, several people

¹⁴ Free translation. In the original: "Núcleo Rural da Coonatura".

¹⁵ Free translation. In the original: "Associação de Agricultores Biológicos do Estado do Rio de Janeiro".

¹⁶ Glória is a neighborhood located in a transitional area between the city center and the so-called Zona Sul of Rio de Janeiro. This southern part of the city is inhabited mainly by middle- and upper-class people.

associated only to buy cheaper food, but they did not have this ideology". To avoid this profile among new associates: "the person had to go through a meeting, participate in a lecture about Coonatura, what was cooperativism, what duties, if they really wanted it. This was all a filter to avoid associations that we did not want".

Throughout the 2000s, however, Coonatura began to face a series of obstacles to maintain itself. One of the main problems, apparently, was the expansion of the organic market in the city of Rio de Janeiro, driven by the increasing institutionalization of this sector, from the end of the 1990s. The fact that the cooperative managed to maintain itself, at least in the early days, as the main channel of access to organic food for an increasing number of consumers, mainly recruited among the middle-class inhabitants of the *Zona Sul*¹⁷, was very important to the expansion of this initiative. However, the entry of new actors began to hinder the functioning of this market.

ABIO: biological producers and the strategy of "forcing a transformation" by structuring alternative market arrangements

ABIO was founded in 1985 by a group of people who had been involved in the implementation of experiments in alternative agriculture in rural communities of Nova Friburgo, Teresópolis, and other neighboring towns, bringing together, especially, young people of urban origin. One of the central objectives that drove the creation of this association was to build market arrangements, considered a strategic element to boost these initiatives. As pointed out by Cristina Ribeiro, one of the founding associates and member of the organization with extensive experience as director of ABIO: "our goal was to force a transformation", in which the creation of commercialization channels, enabling the social and economic reproduction of farmers, was considered a priority.

A first step in this direction was taken, still in 1985, with the creation of the "Feirinha da Saúde", held weekly in the city center of Nova Friburgo, and which motivated the structuring of ABIO itself. In addition to this fair, in the first years, members of the association also articulated, in dialogue with the directors of the Humaitá unit of the Brazilian Food Company¹⁸ (COBAL), in the city of Rio de Janeiro, a box for the commercialization of the production of associates, which began to operate from 1988. This warehouse soon became an important commercialization space.

However, the logistics necessary to enable the flow of production to the state capital presented numerous difficulties, being the object of intense debate. Thus, at the end of 1992, ABIO decided to deactivate the warehouse in Cobal, passing it to Coonatura. After that, ABIO began to work more intensely in the certification of organic products sold by its associates, staying away from marketing activities for a long period, only returning to work in this area in 2010.

¹⁷ South Zone of the municipality of Rio de Janeiro.

¹⁸ Free translation. In the original: "Companhia Brasileira de Alimentos".

Associations, small enterprises and the dissemination of organic agriculture through new market arrangements

The process of institutionalization of organic agriculture in Brazil brought significant changes to the environment in which the experiments in alternative agriculture developed in the Sierra Fluminense Region were inserted. On the one hand, ABIO began to consolidate itself as a certifying body; on the other hand, the emergence of new market outlets for these products in the city of Rio de Janeiro influenced the shutdown of Coonatura's activities. The entry of new actors into the sector also opened up new opportunities for farmers to access different marketing channels, especially through supermarket chains.

In 1997, two ABIO associates, who owned farms in Nova Friburgo, tried to structure a sales channel for organic products in partnership with one of the stores of the Zona Sul retail network, in the city of Rio de Janeiro. This experience, however, lasted only a few months. Already in the first month, one of the members gave up; the other producer also ended up abandoning the enterprise, months later, in view of the demand for time and labor that the transportation of products to the capital required.

In 1999, the Organic Garden Association¹⁹ was also organized, which began to commercialize the production of organic farmers from São José do Vale do Rio Preto²⁰ and Petrópolis (mainly from the community of Brejal) through supermarket chains in the Metropolitan Region of the state. The Organic Garden Association collected the products on the farm. These vegetables were sanitized, packaged, and labeled at the headquarters of the organization, and from there distributed to the supermarket stores. In the first half of the 2000s, 67 families of farmers, with 48 being from the municipality of São José and 19 from Petrópolis, were articulated through this association.

At the end of the 1990s, a company called Agrinatura was also created, which aimed to acquire the production of organic farmers from Teresópolis, Nova Friburgo and neighboring localities, and commercialize it through retail networks in Rio de Janeiro (capital).

The construction of these commercialization channels with the supermarkets started to be seen as a strategy for disseminating technological practices and scaling up initiatives related to ecologically-based agriculture developed in the Sierra Fluminense Region. These new channels were even more important due to the crisis experienced by Coonatura and the shutdown of commercialization activities within ABIO.

From the mid-2000s, however, these commercialization channels began to present serious problems. Companies from São Paulo started to sell organic products at much lower prices than those practiced by the initiatives based in Rio de Janeiro. These foods reached supermarket shelves in Rio for the same price that the Organic Garden Association paid to their associated farmers at farm level, without including the costs of sanitation, packaging, and logistics. Thus, at the end of the 2000s, these initiatives were closed. The actors involved in these experiments sought to build other commercialization arrangements, understanding that the articulation with

¹⁹ Free translation. In the original: “Associação Horta Orgânica”.

²⁰ Neighboring town to Petrópolis.

supermarket chains was unfeasible. The construction of direct selling schemes through farmers' markets became a central strategy at that time.

Other organic producers in the Sierra Fluminense Region, however, chose to expand their production scale in order to continue operating with supermarket chains and specialized stores.

One of the experiences that followed this trajectory was Sítio Cultivar²¹. Its owner was one of ABIO's associates, who had participated in the construction of the commercialization channel with the Zona Sul retail network in 1997. By transferring this commercial contact to an enterprise named Sítio do Moinho, installed in Petrópolis, the company began to market its production with one of the existing supermarket chains in Nova Friburgo. Throughout the 2000s, this initiative was expanded in order to include other supermarkets working at regional level, shops specialized in natural products, and restaurants. More recently, the Sítio Cultivar has also invested in the delivery of household baskets, participating, as well, in the farmers market organized in the city of Nova Friburgo. Other organic producers from these municipality were integrated into these circuits, selling their products through the intermediation of Sítio Cultivar.

Similar trajectories were built around Sítio do Moinho and Fazenda Vale das Palmeiras, installed in Teresópolis. Until the mid-2000s, these two initiatives had as their main commercialization channel supermarket networks based in the Metropolitan Region of the state. Subsequently, they started to establish their own stores in the city of Rio de Janeiro, specialized in organic products. More recently, they have structured home delivery systems for their customers.

It is important to note that Sítio do Moinho became, also, an important market outlet for other organic producers working in the municipality of Petrópolis, particularly for farmers living in the community of Brejal. This support was extremely important in the period marked by the Coonatura crisis and the creation of the Carioca Circuit of Organic Fairs (CCFO)²².

ABIO: participatory certification and the creation of the Carioca Circuit of Organic Fairs

From the early 1990s to the 2010s, ABIO assured the organic compliance of products cultivated by its partners through a third-party certification format, with hired technicians conducting inspection visits in the certified farms. Over these years, the association expanded its scope of action as a certifying body. In 1998, 74 producers, in 12 municipalities of the state of Rio de Janeiro, were linked to the association. In 2010, there were already 137 associated producers, operating in 28 municipalities in the state.

Since 2002, some of the ABIO associates actively participated in discussions, at national level, about the certification formats to be recognized by Brazilian legislation. Through participation in the Organic Agriculture Group²³ (GAO), this group contributed to the recognition of the Participatory Guarantee System (SPG) by the Brazilian "Organic Law", which occurred in 2007. As an offshoot of this process, the entity decided, through an assembly, to register as a Participatory Conformity

²¹ "Sítio", in Portuguese, means a small farm.

²² Free translation. In the original: "Circuito Carioca de Feiras Orgânicas".

²³ Free translation. In the original: "Grupo de Agricultura Orgânica".

Assessment Body²⁴ (OPAC). In 2010, it gained its accreditation from the Ministry of Agriculture, Livestock and Food Supply (MAPA)²⁵, and began to certify the production of its associates through SPG groups.

The participatory guarantee system, apparently, also contributed to a significant expansion of the number of ABIO associates since 2010, as well as to the incorporation of producers from other municipalities in Rio de Janeiro as members of the organization. In 2018, ABIO already certified 612 associated producers, distributed in 64 municipalities of the state (Cadastro Nacional de Produção Orgânica/CNPO, 2018).

The creation of the Carioca Circuit of Organic Fairs (CCFO), in 2010, was also of fundamental importance to the increase in the number of organic producers in the Sierra Fluminense Region. In 2006, ABIO promoted a seminar to discuss the obstacles faced by organic agriculture in Rio de Janeiro. In this event, the results of a survey that interviewed a large part of the associated producers were presented, showing that commercialization was the main difficulty faced by farmers. As a strategy, the participants considered that it would be necessary to create new direct marketing mechanisms, including farmers' markets, understanding that this had been the best strategy experienced so far.

From this period, members of the board of ABIO began to make efforts to enable the creation of new organic fairs in the city of Rio de Janeiro, where they identified the existence of a consistent consumer market. The structuring of organic fairs in the city of Rio de Janeiro had been hampered by a municipal normative, which prevented the creation of new farmers' markets in the city. Thus, through participation in public arenas related to the institutionalization of regulatory frameworks for organic production in the state of Rio de Janeiro, ABIO representatives were able to negotiate with public agents working at the municipal government, especially the Special Department for Development and Solidarity Economy²⁶ (SEDES), the construction of the CCFO.

Since the beginning, most of the farmers engaged in the CCFO fairs are from the municipalities of the Sierra Region. A large portion of them access the CCFO through commercialization groups, which facilitate the flow of production to the state capital. These collective strategies seem to be of crucial importance, as they enable the participation of a wider number of farmers in the commercialization arrangement built around the CCFO. Participation in the fairs held in the Metropolitan Region involves financial costs, especially with regard to transportation, also demanding a lot of dedication in terms of time, in view of the existing distances between production spaces and market places.

The growing number of ABIO partners registered in recent years also seems to have motivated the emergence of controversies within the association, especially regarding the social and cultural transformations that the organization intends to promote, in association with the processes of technical change. In this sense, the discussions about the location of fairs and the prices charged in the CCFO are emblematic. The prices adopted, significantly higher than those of conventional fairs, are compatible with a consumer segment composed by the upper middle class of Rio

²⁴ Free translation. In the original: "Organismo Participativo de Avaliação da Conformidade".

²⁵ Free translation. In the original: "Ministério da Agricultura, Pecuária e Abastecimento".

²⁶ Free translation. In the original: "Secretaria Especial de Desenvolvimento e Economia Solidária".

de Janeiro, residing in noble areas of the city. In recent years, associates have expressed the opinion that the fairs should be restricted to the neighborhoods in which they already occur, without expanding to other areas, while others understand that the fairs should seek to ensure access to organic food for people of different social classes.

As a result of these controversies, over the years CCFO fairs have expanded, at least in part, to more peripheral areas. Currently, CCFO consists of 21 fairs distributed in different neighborhoods of the city. There are more than 200 organic producers linked to ABIO (mainly from the Sierra Region and Baixada Fluminense), which serve about 5,000 consumer families. In addition, the creation of the circuit triggered a movement that has been extending to other cities in the Metropolitan Region.

The dynamics fostered by the creation of the CCFO and the SPG, coordinated by ABIO, were of crucial importance for the expansion of the number of organic farmers in the Fluminense Serrana Region. About 92% of the producers certified as organic by the Ministry of Agriculture, Livestock and Supply (MAPA), in the municipality of Petrópolis, are articulated to these certification and commercialization arrangements. This percentage reaches 99% of the existing organic producers in the municipality of Teresópolis, and 67% in Nova Friburgo (CNPO, 2018). At the same time, the network organized around ABIO encompasses other initiatives that emerged over time, such as the Agroecological Association of Teresópolis (AAT).

AAT: agroecology and solidarity economy in a situated arrangement of direct marketing

In 2005, the Agroecological Farmers' Market was organized in the municipality of Teresópolis, by a group of organic producers, essentially of urban origin, associated and certified by ABIO. In 2007, the initiative was formalized, giving rise to the Agroecological Association of Teresópolis²⁷ (AAT). Since then, the fairs promoted by AAT began to occur weekly.

The creation of the AAT was motivated, to a large extent, by the challenge of structuring a direct marketing arrangement involving consumers and organic farmers in the municipality of Teresópolis. One of the founders of the association, Roberto Selig, shared his experiences in one of the interviews carried out in this research. He remembered the innumerable problems faced as a participant in the initiative developed by ABIO in the Cobal warehouse, in the city of Rio de Janeiro. Considering the stress and the practical difficulties arising from this attempt to sell organic products in the state capital, he felt the need to articulate market channels in the municipality where he lived and where his farm was located: "I saw that this thing of going down to Rio did not work. There was a huge financial and labor cost." Throughout the 1990s, this producer participated in different commercialization initiatives in Teresópolis, until, in the first half of the 2000s, the group of people that participated in the construction of AAT got together.

Over the years, the fairs organized by the association reached a stage of consolidation, becoming the most consistent direct marketing initiative developed in

²⁷ Free translation. In the original: "Associação Agroecológica de Teresópolis".

the Sierra Region, involving producers and consumers based on the territory itself. More than 30 organic producers from Teresópolis are currently linked to AAT, being the fair one of the main destinations of the production of these farmers. It is also important to note that the AAT fairs also contribute to the articulation of other market outlets, such as the CCFO and the participation of farmers in public calls aimed at supplying the National School Feeding Program (PNAE)²⁸.

In line with the principle of “encouraging and promoting agroecology and solidarity economy” inscribed in the statute of the AAT, in addition to being a commercial space, the fair seeks to function as a differentiated arena of social interaction, articulating cultural manifestations and lectures, among other activities involving producers and consumers.

From 2010, AAT was established as one of the SPG groups of ABIO, starting to foster an exciting dynamic of knowledge construction and exchange. In the biweekly meetings held after the fairs, debates related to technical-productive matters end up having an important place. The need to combine respect for the rules of organic production together with the principles of agroecology is often highlighted in these discussions. The challenges associated with the multidimensionality of the agroecological transition at farm level are also addressed, while the traditional knowledge associated to family farmers agricultural practices is valued and shared.

The growing number of associates in recent years has also become a matter of concern among AAT participants. Especially among the founding partners, there is the idea that the association should not be considered only as a strategy to enable organic certification with lower costs or simply as a market outlet. As some of its members point out, it is necessary to cultivate: “this relationship with our cause, which is agroecology, organic agriculture, to have concern with human relations”.

Throughout this section, we aimed to reconstruct the multiple paths through which actors, practices, and shared ideas were mobilized, at different levels, in the effort to overcome a series of obstacles faced in the transition to agroecology in the Sierra Fluminense Region. Some of these restrictions were circumvented through connections established in the territory itself. Others, however, demanded (and still demand) wider articulations, in the territory and beyond, in order to enable deeper structural changes. The social fabric, built through this heterogeneous set of experiences, played a fundamental role in the mediation between individual and collective projects, in the coordination of actions over time, and in the ability to articulate practices and actors connecting multiple dimensions of the agri-food system. We will present, below, some final reflections about the relationships that make up this *ecology of projects*.

4 Territorial restrictions and *ecology of projects*: some final notes

The territorial configuration of the Sierra Fluminense Region, in its historicity, affected quite significantly the trajectories and developments of the experiences of ecologization/environmentalization of agriculture, which emerged over the years in this portion of the state of Rio de Janeiro. The socio-spatial arrangements existent in this territory served both to stimulate and to contain these initiatives. In rural

²⁸ Free translation. In the original: “Programa Nacional de Alimentação Escolar”.

communities in which the conventional production of vegetables gained more density over the years, a set of restrictions were interposed to the alternative initiatives, influencing their location, on the margins of agricultural production areas intensively managed with synthetic fertilizers and pesticides.

These restrictions were further reinforced by the importance achieved by the certification of organic products since the mid-1990s. Certification standards and rules made the obstacles to agroecological transitions in this territory more visible. For the vast majority of farmers managing farm units located in rural communities where conventional vegetable production predominates, the construction of physical barriers to prevent pesticide drift, demanded by certification bodies, runs into limits. Adding to these difficulties, farmers are constantly questioned and challenged by different actors (neighbors, technicians, brokers, among others) about the effectiveness of agroecological practices, their economic profitability, and so on. The pressures arising from these sociability networks work for many producers as a symbolic barrier.

The historical review previously presented seems to confirm, to a large extent, the hypothesis, derived from a territorial approach to agri-food systems, that transition processes can be strengthened from actions triggered and articulated at different systemic levels. We reinforce, in this sense, the idea that the unfolding of the studied initiatives, over time, can be better understood through the notion of an *ecology of projects*. Defined here as proposals for change that seek to overcome the dominant modes of organization in the agri-food system, these projects usually end up achieving fragmented results, being boosted by groups of actors who seek to transform the contexts in which they are inserted, working with the resources they have at their hands. The idea of an *ecology of projects* allowed us to observe interactions between the different groups, also identifying elements of continuity between a variety of projects (often loosely connected), amid pressing discontinuities.

In Petrópolis, for example, we observed that in the experience developed by Coonatura, focused on a cooperative market arrangement, the interactions established, with the actions developed by ABIO in the field of certification, in the first half of the 1990s were crucial. At the same time, in the midst of the crisis that led to the shutdown of Coonatura, the support of the Organic Garden Association was fundamental for the organic farmers of the community of Brejal, allowing them to commercialize their production, at that time, via supermarket chains. In the mid-2000s, when this articulation with supermarkets in the state capital began to weaken, the commercialization channels established with Sítio do Moinho, as well as the participation in public procurement initiatives for the supply of school meals, became important strategies. This trajectory made it possible to expand the number of organic farmers in the municipality, driven by the creation of both the CCFO, in the 2010s, and the SPG coordinated by ABIO, making Petrópolis the municipality with the largest number of organic producers in the state of Rio de Janeiro.

In Teresópolis, we observed that, throughout the 1980s and 1990s, the actors involved in alternative agriculture experiments enabled their family and individual projects in interaction with ABIO. In the second half of the 2000s, these projects merged into the creation of the AAT, and the strengthening of the “agroecological

fair”. But ABIO continues to play a central role in this arrangement, enabling the participatory certification of the organic producers.

In Nova Friburgo, on the other hand, since the beginning of the 2000s, interactions involving organic producers, the Sítio Cultivar, local/regional supermarket networks and specialized stores stand out.

In the three municipalities it is possible to observe synergies between individual or family projects developed, both by organic producers of urban origin, as well as by family farmers from the region. The articulation between these two segments was fundamental in the experimentation of alternative agricultural practices, in the structuring of different commercialization channels (especially the CCFO), in the implementation of the SPG and in the structuring of commercialization initiatives with supermarket chains.

We therefore consider that the longitudinal reading that allowed us to observe this *ecology of projects*, and its unfolding over time, creates the opportunity for a certain analytical shift in relation to studies centered on specific experiences or projects. By reconstructing the trajectory of these projects in their interactions over the years, we had the opportunity to identify connections that could go unnoticed. Synergies built over time and that ended up strengthening these processes were identified, while tensions or contradictions, capable of triggering, in moments of crisis, certain inflections became more evident. The commercialization established with the large supermarket chains, for example, was considered unfeasible by many producers for several reasons. As one of its developments it ended up motivating the construction of alternative circuits.

From this longitudinal analysis, we also realized that the collective projects derived from the experiences related to the construction of an ecologically-based agriculture in the region assumed different functions over the years. Some of these projects ended up being more multifunctional, managing to trigger and articulate actions in different systemic dimensions, while others had a more specific role, with actions aimed at a more circumscribed field; such as, for example, the implementation of a specific market channel. In general, however, they seem to have created the opportunity for the conformation of a vibrant social fabric over time, with the capacity to nurture a series of territorially situated transition processes.

The institutionalization of the regulatory frameworks related to organic agriculture, implemented in the late 1990s, ended up generating a profound redefinition in the conformation of markets. From this period, it is possible to identify, in the analyzed context, the predominance of two distinct perspectives. On the one hand, there is the improvement of organic quality and availability of organic products through large retail networks and specialized stores; on the other, there is a proposal focusing on participatory certification and the construction of an alliance between producers and consumers through direct marketing circuits.

The results generated by this research reinforce the idea that agroecological transition processes do not unfold in a unidirectional way, but through numerous inflections, alignments, and complementarities.

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