

# Reconciling Tradition and Innovation in Traditional Mountain Cheese Value Chains: The Role of Social Capital

## The Case of the Artisanal Serrano Cheese Value Chain in Southern Brazil

*Abstract:* Globalised and production-oriented agriculture often leads to the exclusion of rural mountain areas and to the marginalisation of their traditional food value chains, of which cheese is particularly interesting. Important elements for such value chains are the valorisation of the product quality and of traditional know-how. Territorial innovations, defined as a response to a problem identified collectively in a territory, allow adaptation to changes. Reconciling tradition with territorial innovation is central for the resilience of the value chain and social capital is the resource that needs to be mobilised to cooperate and innovate. In this contribution, we analyse the history of the artisanal Serrano cheese in southern Brazil. The aim of this article is to analyse strategies for building a resilient artisanal Serrano cheese value chain by studying the role of social capital in the balance between maintaining traditions and the emergence of territorial innovations. In the results, first, we observe that the peasant families are central actors in maintaining tradition by passing on know-how to the next generations through bonding social capital. Second, the agricultural advisory services (EMATER-RS and EPAGRI-SC) are the central actors in the innovation processes by diffusing technical innovations, but also for the emergence of organisational innovations through the creation of producers' associations. The associations allow connecting the different actors of the value chain through linking and bridging social capital, necessary for territorial innovation to emerge.

*Key Words:* tradition, territorial innovation, social capital, mountain cheese value chains

## Introduction

Globalised and production-oriented agriculture often leads to spatial inequalities and exclusion of peripheral rural regions; often, rural mountain areas experience a delay in their development compared to more advantaged agricultural areas.<sup>1</sup> Consequently, the dominant

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agro-food system contributes to the marginalisation of traditional food value chains, like those of artisanal cheeses, often located in rural mountain areas. Indeed, livestock grazing is a common activity for most mountain communities because it makes use of non-arable areas. This activity has multiple economic, social, and environmental functions, often linked to other rural, but also urban, activities.<sup>2</sup> Moreover, livestock farming has a central place in maintaining the socio-cultural traits of these territories, in preserving traditions.<sup>3</sup> In addition, cheese represents an essential source of food and income for various mountain populations. At the same time, the quality and distinctiveness of the cheese, most of the time made from raw milk, confer an added value on milk and often become a cultural object.<sup>4</sup> In fact, the cheese value chains are firmly anchored in various dimensions of history, identity, and culture, as well as being community-based and collectively organised activities.<sup>5</sup>

Such traditional value chains are linked to the concept of territory,<sup>6</sup> defined as “a developed area, socially constructed, culturally labelled and institutionally regulated”.<sup>7</sup> Indeed, these value chains are considered territorialised systems, meaning that they are localised in a defined space and represent a group of actors with a specific identity. The term “actor” denotes any individual who intentionally participates in activities with territorial implications and who is capable of reflexivity.<sup>8</sup> The valorisation of product quality and of traditional know-how, as well as control over technical innovations, are important elements in these value chains. Major elements of governance include horizontal coordination between local actors, which implies the cooperation of the actors operating in this territory.<sup>9</sup>

In the context of globalisation, it is necessary to pay special attention to marginalised territories such as rural mountain areas and to turn them into dynamic spaces in order to increase the well-being of local populations<sup>10</sup> and thus avoid depopulation. Indeed, rural mountain areas are usually difficult to access and far away from political decision-making, with infrastructures that are poorly developed. These areas can hardly compete with urban and more developed rural regions concerning generic resources (e.g. labour, wages, and infrastructures).<sup>11</sup> Nonetheless, globalisation at the same time provides new paths forward for these territories through endogenous development based on local resources, local cul-

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- 1 André Torre/Dominique Vollet, Aux fondements du développement territorial, in: André Torre/Dominique Vollet (eds.), Partenariats pour le développement territorial, Versailles 2016, 11–32.
  - 2 Laurent Dobremez/Dominique Borg, L'agriculture en montagne – Évolutions 1988–2010 d'après les recensements agricoles (Agreste Les Dossiers 26/July 2015), Grenoble 2015.
  - 3 Martin Price, Mountains: A very short introduction, Oxford 2015, 83–84.
  - 4 Claire Delfosse, La localisation de la production fromagère. Évolutions des approches géographiques, in: Géocarrefour 81/4 (2006), 311–318.
  - 5 Evander Eloí Krone, Identidade e cultura nos *Campos de Cima da Serra* (RS): práticas, saberes e modos de vida e pecuaristas familiares produtores do queijo serrano, Porto Alegre 2009.
  - 6 Roger Brunet, Le territoire dans les turbulences, Montpellier 1990.
  - 7 Elisabeth Lopez/José Muchnik, Petites entreprises et grands enjeux: le développement agroalimentaire local, Paris 1997, 23.
  - 8 Guy Di Méo, Introduction à la géographie sociale, Paris 2014, 86–89.
  - 9 Jorge Jordana, Traditional foods: challenges facing the European food industry, in: Food Research International 33/3–4 (2000), 147–152.
  - 10 Torre/Vollet, Aux fondements, 11.
  - 11 Gabriel Colletis/Bernard Pecqueur, Révélation de ressources spécifiques et coordination située, in: Economie et Institutions 6–7 (2005), 51–74.

tures and identity, in order to offer specific and differentiated goods and services.<sup>12</sup> For this, increasing participation of the local population in decision making and innovation processes is needed, based on the legitimacy of territorial governance, which involves the local actors in the definition of common projects for future development.<sup>13</sup> Here, innovations are territorial, meaning that they are a response to a problem or a need identified collectively in a territory, with the aim of improving well-being and supporting sustainable local development.<sup>14</sup> Such innovations call on the inventiveness of local populations. They are set up and adopted by the networks of actors and are not only technical, but also social, organisational, or institutional.<sup>15</sup>

Cooperative relations between actors are a central element of governance. They allow communication, better reflexive capacity, and circulation of information in order to make better decisions. Social capital, understood as the “norms and networks that facilitate collective action”,<sup>16</sup> is the resource that needs to be mobilised to cooperate and innovate. This requires two forms of social ties: first, strong ties connecting individuals who are close (family, friends) and socially homogeneous; second, weak ties linking individuals who are more distant, dissimilar in a demonstrable fashion, and have different occupational status.<sup>17</sup> Marginalised mountain territories often lack the combination of these two forms of social capital, a shortcoming which restricts their innovations and information flows due to organisational issues and leads to difficulties in developing endogenous projects.<sup>18</sup>

The aim of this study is to better understand the role of weak and strong ties in reconciling tradition and innovation. It is based on a historical analysis that provides insights into the foundations of the current configuration of the value chain. We aim to uncover the conditions of its development, its tradition, as well as its potential and limitations for innovation. We focus on the case of artisanal Serrano cheese, a traditional mountain cheese in southern Brazil. Serrano cheese is produced by peasants and sold to end consumers either directly or via traders. However, this chain remains informal; the cheese sales have even become illegal as a result of changed consumer preferences and new hygiene standards incompatible with small-scale and artisanal production.

The article is structured as follows: the initial sections outline the conceptual framework. After defining the notion of “peasantry” and the role of social capital in shaping the relationships of the various actors involved, we explore the importance of tradition and territorial innovation for development. Then, after describing the material used in the case study, we present the area, the production systems, and the current situation of the Serrano cheese value chain. Subsequently, we narrate the historical development of this value chain in four periods. The first two periods (1700–1825 and 1825–1950), corresponding to the origins of Serrano

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12 Bernard Pecqueur, *Qualité et développement territorial: l'hypothèse du panier de biens et de services territorialisés*, in: *Économie rurale* 26/1 (2001), 37–49.

13 André Torre, *Théorie du développement territorial*, in: *Géographie, économie, société* 17/3 (2015), 273–288.

14 Akim Oural, *L'innovation au pouvoir! Pour une action publique réinventée au service des Territoires*. Rapport établi avec l'appui du secrétariat général pour la modernisation de l'action publique, Paris 2015, 7.

15 Torre/Vollet, *Aux fondements*, 19.

16 Michael Woolcock/Deepa Narayan, *Social capital: implications for development theory, research, and policy*, in: *The World Bank Research Observer* 15/2 (2000), 225–249, 226.

17 Nan Lin et al., *Social resources and strength of ties: Structural factors in occupational status attainment*, in: *American Sociological Review* 46/4 (1981), 393–405; Mark Granovetter, *The strength of weak ties: A network theory revisited*, in: *Sociological Theory* 1 (1983), 201–233.

18 Torre/Vollet, *Aux fondements*, 11–12.

cheese production and the beginning of its trade, allow a better understanding of the later developments. The two more recent periods (1950–2000 and 2000–today) correspond to the diffusion of technical innovations and the emergence of collective organisation within the value chain, and are presented through the lens of social capital. Finally, the discussion and conclusion connect the historical development with the aspirations to territorial innovation which shape the current situation.

## Theoretical framework

### *Building resilience of traditional mountain cheese value chains: the role of social capital*

Endogenous organisations provide the capacity to resist economic pressure.<sup>19</sup> In this sense, peasant farming and traditional production are interesting objects for the study of resilience, because peasants preserve and transmit know-how from generation to generation and encourage a focus on the quality of products instead of quantity by not following the economic mainstream. Before continuing our case study, we will define “peasant”, a term that seems more appropriate for this context than “farmer” or “smallholder”. The definition given by Shanin assigns the following features to “peasantry”:

“The family farm as the basic multi-functional unit of social organisation, soil management and usually animal rearing as the main means of livelihood, a specific traditional culture closely linked with the way of life of small rural communities and multi-directional subjection to powerful outsiders”<sup>20</sup>

Also, peasantry is typically characterised by a gender division of labour and gendered internal power relations.<sup>21</sup> Peasants are extremely diverse and can belong to many different social classes and ethnic groups, as well as farming systems, around the world.<sup>22</sup>

Chayanov was the first author to explain that peasantries meet their subsistence needs through the balance between the level of satisfaction of family needs and the level of hardness of work. In fact, peasant farming has a different economic logic from either capitalism or socialism, as maximising profit is not the main aim.<sup>23</sup> An activist definition, such as that developed by La Vía Campesina, characterises peasantries as “people of the land”, having a

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19 Ika Darnhofer, Strategies of family farms to strengthen their resilience, in: *Environmental Policy and Governance* 20/4 (2010), 212–222.

20 Teodor Shanin, The nature and logic of the peasant economy 1: A generalisation, in: *Journal of Peasant Studies* 1/1 (1973), 63–80, 63–64.

21 Carmen Diana Deere, What Difference Does Gender Make? Rethinking Peasant Studies, in: *Feminist Economics* 1/1 (1995), 53–72.

22 Marc Edelman, What is a peasant? What are peasantries? A briefing paper on issues of definition. Prepared for the first session of the Intergovernmental Working Group on a United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas, Geneva 2013, 15–19.

23 Alexandre Chayanov, *The theory of peasant economy*, ed. by B. Kerblay/R.E.F. Smith/D. Thorner, Homewood, IL 1966.

direct and special relationship with the land and nature through the production of food and/or other agricultural products on a small scale.<sup>24</sup> This definition implies that being a peasant is an act of resistance against the globalisation and industrialisation of food production and distribution.<sup>25</sup> Similarly, Van der Ploeg characterised peasantries by their struggle for autonomy, arising from a reaction to excessive dependence on agribusiness. Inventiveness, the ability to value and arrange the environmental and social resources at their disposal, and the ability to reconfigure the market are the strengths of peasantry in facing agribusiness.<sup>26</sup>

We apply the concept of social capital to analyse the social ties within the value chain. Here we will use the definition given by Woolcock and Narayan, who define social capital as “the set of norms and networks that facilitate collective action”.<sup>27</sup> Social capital corresponds to a synergy between a normative and a structural dimension, which depend one on another.<sup>28</sup> The first dimension is related to the norms and values (e.g. trust) that govern interactions between agents. The second determines social capital by its structural characteristics, that is the formal framework within which the relations between the agents are established. This dimension relates to the configuration of networks (e.g. their density and hierarchy) and relies on recognised roles of individuals.<sup>29</sup> Social capital assists the flow of information by sharing experiences and know-how; it also allows reflections and communication between actors in order to make smarter decisions.

Forms of social capital can be distinguished according to the density of social ties, which corresponds to the combination of the amount of time, emotional intensity, intimacy, and reciprocal services between actors. Thus, different types of social capital have been defined according to the configuration of their ties.<sup>30</sup> First, bonding social capital connects individuals within the same community, actors belonging to the same group – relations within the family and to close friends as well as within communities. Bonding links are strong ties;<sup>31</sup> they need to be constantly reactivated to make the social capital a useful resource.<sup>32</sup> Second, bridging social capital consists of relationships where the actors are distant from each other. The latter notion refers to both their physical distance and the discontinuity in the activation of the link. Finally, linking ties characterise interactions between actors belonging to different groups. These links are vertical in nature. In this type of relationship, actors have different status or belong to different organisational levels. Linking and bridging ties are considered “weak”, connecting more distant individuals, who occupy different places or statuses and are dissimilar in a demonstrable fashion (i.e. age, education).<sup>33</sup>

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24 La Vía Campesina, Declaration of Rights of Peasants – Women and Men, 2009, <https://viacampesina.org/en/declaration-of-rights-of-peasants-women-and-men/> (last visited in Oct. 2019).

25 Cf. Jan Douwe Van der Ploeg, *The new peasantries: struggles for autonomy and sustainability in an era of Empire and Globalization*, London 2008.

26 *Ibid.*, 17–18, 49–50.

27 Woolcock/Narayan, *Social capital*, 226.

28 Robert Putnam, *The prosperous community*, in: *The American Prospect* 4/13 (1993), 35–42.

29 Emmanuel Lazega, *Réseaux sociaux et structures relationnelles. Que sais-je?*, Paris 2014, 38–73.

30 Michael Woolcock, *Social capital and economic development: Toward a theoretical synthesis and policy framework*, in: *Theory and Society* 27/2 (1998), 151–208.

31 Granovetter, *Strength*.

32 Valérie Angeon/Jean-Marc Callois, *Fondements théoriques du développement local: quels apports du capital social et de l'économie de proximité?*, in: *Économie et Institutions* 6/7 (2005), 19–50.

33 Granovetter, *Strength*, 202–204.



Bridging and linking social capital (with weak ties) allows developing new ideas and values, facilitates information flows, and is indispensable to individuals' opportunities for integration into communities.<sup>34</sup> In contrast, bonding social capital (with strong ties) has a psychological role: it brings local cohesion but can lead to overall fragmentation and lock-in situations; a one-sided focus on being embedded in communities with a concentration on bonding social capital may weaken the ability to innovate.<sup>35</sup> Woolcock frames social capital with the notions of "embeddedness" and "autonomy".<sup>36</sup> We can understand bonding and bridging social capital on an individual level as providing embeddedness and autonomy respectively. On a collective level, we could understand tradition as providing embeddedness (bonding) and innovation as a result of autonomy (bridging). However, only the simultaneous presence and balance of embeddedness and autonomy, also in the sense of tradition and innovation, leads to progressive development and resilient communities.

The strength of a tie can be measured by the frequency and duration of contact, with strong ties assumed to be more frequent and longer ones. Social homogeneity is also an interesting indicator to define the strength of ties, in that strong ties connect socially homogeneous individuals while weak ties cross social distances and differences in occupational status.<sup>37</sup> In conclusion, social capital, in particular the strength of ties between actors, appears to be a relevant concept for analysing the resilience of traditional food value chains, especially the capacity to reconcile the maintenance of traditions with the development of territorial innovations. In this contribution, we apply the concept of social capital in a qualitative way. We do not aspire to measure the frequency, duration, or homogeneity of relations with numerical values, but rather analyse the functional consequences of weak and strong ties for maintaining tradition and introducing innovation.

### *What is the meaning of traditions in traditional food value chains?*

Practices of extensive animal husbandry in mountain areas are adapted to the constraints of a harsh environment. For example, transhumance is a usual practice to benefit from the availability of forage at different altitudes and in different seasons (summer and winter pasture). These practices, considered traditional, include specific know-how transmitted from generation to generation. Tradition also refers to collectivity as a way of organising collective memory.<sup>38</sup> Raffestin and Bresso define tradition as "a repetition of similar operations, where the experiences are memorised, accumulated and then transmitted".<sup>39</sup> Tradition is something self-evident and allows acting within determined limits, without distinguishing between

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34 Michael Woolcock, The place of social capital in understanding social and economic outcomes, in: *Canadian Journal of Policy Research* 2/1 (2001), 11–17.

35 James Coleman, Social capital in the formation of human capital, in: *American Journal of Sociology* 94 (1988), 95–120, 101–118.

36 Woolcock, Social capital, 162.

37 Peter Marsden/Karen Campbell, Measuring tie strength, in: *Social Forces* 63/2 (1984), 482–501.

38 Anthony Giddens, A vida em uma sociedade pós-tradicional, in: Anthony Giddens et al. (eds.), *Modernização reflexiva: política, tradição, estética na ordem social moderna*, São Paulo 1997, 73–133.

39 Claude Raffestin/Mercedes Bresso, Tradition, modernité, territorialité, in: *Cahiers de géographie du Québec* 26/68 (1982), 185–198, 187.

knowledge and practices. The aspects that characterise tradition include rituals, understood as part of the social structures that give integrity to traditions.<sup>40</sup> Time is an important factor, but not the main or only determinant, since a practice does not need to be old to be defined as traditional. It must have a dimension of involvement with the past and one of persistence in the present. In traditional cheese value chains, the cheeses studied are traditional not only because they have been produced for more than 200 years, but because they are connected to knowledge and practices that, for some reason, make sense for the actors involved and in their view deserve to be preserved. For tradition to be alive, it must be significant in the present,<sup>41</sup> and it is not only the product itself that has to be preserved (for example a cheese), but an entire set of representations, symbols, and identities, created and recreated from it. Tradition provides no means of dealing with unforeseen situations; new practices are developed, but they take the form of incremental adaptations over the long term. Tradition evolves over time and is permanently under reconstruction by its “guardians” (in our case, cheese makers). These “guardians” have the legitimacy to interpret traditional practices,<sup>42</sup> for example, to alter the production process, to develop new packaging, or to experiment with new ways of working together. In other words, tradition is not the opposite of modernisation. Innovation appears as a key element in traditional value chains, because it allows a constant adaptation to maintain the resilience of such territories.<sup>43</sup>

### *Innovation processes at the heart of the resilience of traditional food value chains*

Territorial innovations, defined as a new response to a problem or a need identified collectively in a territory, with a view to improving well-being and sustainable local development,<sup>44</sup> are central elements for maintaining the resilience of territories and their processes depend largely on territorial governance. Territorial innovations involve not only technological innovation, which generally dominates national policy, but are more complex processes that include other forms of innovation, organisational, social, and institutional, related to governance and based on social and cultural foundations.<sup>45</sup> In this way, innovation processes most often do not correspond to a linear model in which innovation is developed by scientists and taken up by practitioners. Rather, they appear to unfold independently of new scientific knowledge or simultaneously with it, with other forms of knowledge such as tacit knowledge or social capital coming into play, and with learning processes occurring in local social networks.<sup>46</sup> Organisational innovation is central in the sense that it provides favourable condi-

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40 Giddens, *A vida*, 83.

41 Cf. Fabiana Thomé da Cruz, *Produtores, consumidores e valorização de produtos tradicionais: um estudo sobre qualidade de alimentos a partir do caso do queijo serrano dos Campos de Cima da Serra – RS*, PhD thesis in Rural Development (Programa de Pós-Graduação em Desenvolvimento Rural, Faculdade de Ciências Econômicas, Universidade de Federal do Rio Grande do Sul), Porto Alegre 2012.

42 Giddens, *A vida*, 96.

43 Torre/Vollet, *Aux fondements*.

44 Oural, *L'innovation*, 7.

45 Torre/Vollet, *Aux fondements*, 19.

46 Lorna Dargan/Mark Shucksmith, *Leader and innovation*, in: *Sociologia Ruralis* 48/3 (2008), 274–291.

tions for collective organisation and for further innovations.<sup>47</sup> Indeed, territorial innovation comes from the creative energy of local actors sharing the same mental representations.<sup>48</sup> Mountain areas, often characterised as peripheral regions with many physical constraints, instead appear as unexplored niches with their own potential for innovation, where the territory is the place of transformations and innovations with a collective and organisational dimension.<sup>49</sup>

Local actors in these territories contribute to the creation and also to the acceptance of innovation. The diffusion of innovations occurs in the territory when their appropriation and learning are successful among the actors. Nonetheless, political orientations defined at higher levels (i.e. regional or national) appear instrumental in favouring or impeding the emergence and diffusion of innovation at the local level.<sup>50</sup> Territorial innovations enable the transformation of generic resources into territory-specific resources, allowing an escape from competition with standardised products, in effect creating a “distinguishing advantage”.<sup>51</sup> Eventually, innovations can lead to important modifications of the initial model.<sup>52</sup>

## Methods

In considering the Serrano cheese value chain, the concept of social capital will be used to understand how territorial innovations emerge and develop over time, and also how traditions are maintained, pointing out the role of central actors in these processes.

The information needed was first collected through semi-structured interviews with local actors during three sessions of fieldwork. The first fieldwork was carried out in February 2017, the second session in August and September 2017, and the third in March 2018. A total of 67 producers were interviewed about the technical aspects of production and commercialisation, as well as the historical and social aspects of the value chain. More precisely, we asked about their level of involvement in associations (i.e. position in the association, frequency of participation in monthly meetings), their qualitative assessment of trust relations and the frequency of meetings with other actors of the value chain, and the evolution of the production systems and means of commercialisation since the beginning of their activity.

Agricultural advisors (EMATER-RS<sup>53</sup> in Rio Grande do Sul and EPAGRI-SC<sup>54</sup> in Santa Catarina), veterinarians, and municipal functionaries of agriculture in eight different municipalities in the Campos de Cima da Serra region were also interviewed. These interviews inquired as to the organisation of the value chains, its evolution over time since the 1950s (the

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47 Andréa Finger-Stich, *L'innovation au pluriel des cré-acteurs alpins*, in: *Journal of Alpine Research* 97/1 (2009), 66–75, <https://journals.openedition.org/rga/809> (last visited 22 Oct. 2019), DOI: 10.4000/rga.809.

48 Torre/Vollet, *Aux fondements*.

49 Jean Corneloup, *Comment est abordée la question de l'innovation dans les sciences sociales?*, in: *Journal of Alpine Research* 97/1 (2009), 113–128, <https://journals.openedition.org/rga/828> (last visited 22 Oct. 2019), DOI: 10.4000/rga.828.

50 Torre/Vollet, *Aux fondements*.

51 Corneloup, *Comment est abordée*, 116.

52 Torre/Vollet, *Aux fondements*.

53 Brazilian Company of Technical Assistance and Extension Rural in the Rio Grande do Sul state, created in 1955.

54 Company of Agricultural Research and Rural Extension of Santa Catarina, created in 1956.



beginning of technical innovation diffusion by the advisory services), and current conflicts between actors of the value chain. We also asked these actors to describe their activities, the frequency of their visits to the farms, and to assess the quality of their relationships with the producers (i.e. trust). Finally, one interview was conducted at the head office of EMATER-RS in Porto Alegre and two at the regional office of EPAGRI-SC in Lages to gain insights about the value chain organisation from the regional and state perspective. We also interviewed a deputy of the Rio Grande do Sul state assembly involved in supporting the artisanal Serrano cheese value chain to ask about the actions taken at the state and federal levels for the legalisation and recognition of the cheese.

Then, semi-structured historical interviews (“farm biographies”) were conducted with two families of producers. They provided important details about the history of their properties since the nineteenth century and of the evolution in production systems and the organisation of the value chain over time, as well as the development of other activities in the region.

Additionally, historical and scientific literature, such as narratives, master and PhD theses written about the region and the artisanal Serrano cheese value chain were consulted.<sup>55</sup>

## The artisanal Serrano cheese value chain today

### *Localisation*

The artisanal Serrano cheese is a traditional raw milk cheese, produced as a by-product of beef cattle farming in the Campos de Cima da Serra in the states of Rio Grande do Sul and Santa Catarina. The Campos de Cima da Serra region is mountainous, with 77 percent of the area at altitudes between 700 and 1,100 metres, the highest peak reaching 1,822 metres. The region is located at the transition between the Atlantic Forest and the Pampas biome. The climate is temperate, with average temperatures between 8° Celsius in winter, with some frost and snowfalls, and 19° Celsius in summer. Average precipitation is 1,500 to 2,000 millimetres, spread across the year. The ecosystem is made up of plateaus of natural pastures, where the species *Andropogon lateralis* and *Schizachirium tenerum* dominate, and isolated stands of araucaria forests (*Araucaria angustifolia*). The soils are shallow, with rocky outcrops. Fertility is low and comes from the decomposition of volcanic rock. The relief is wavy and the eastern side of the region is characterised by the presence of canyons.<sup>56</sup>

16 municipalities in the federal state of Rio Grande do Sul and 18 in that of Santa Catarina produce artisanal Serrano cheese, together making up the Campos de Cima da Serra region (Figure 1). Population density is low, with an average of 10.2 inhabitants per square kilometre (compared to overall averages of 38.0 for Rio Grande do Sul and 65.3 for Santa Catarina).<sup>57</sup>

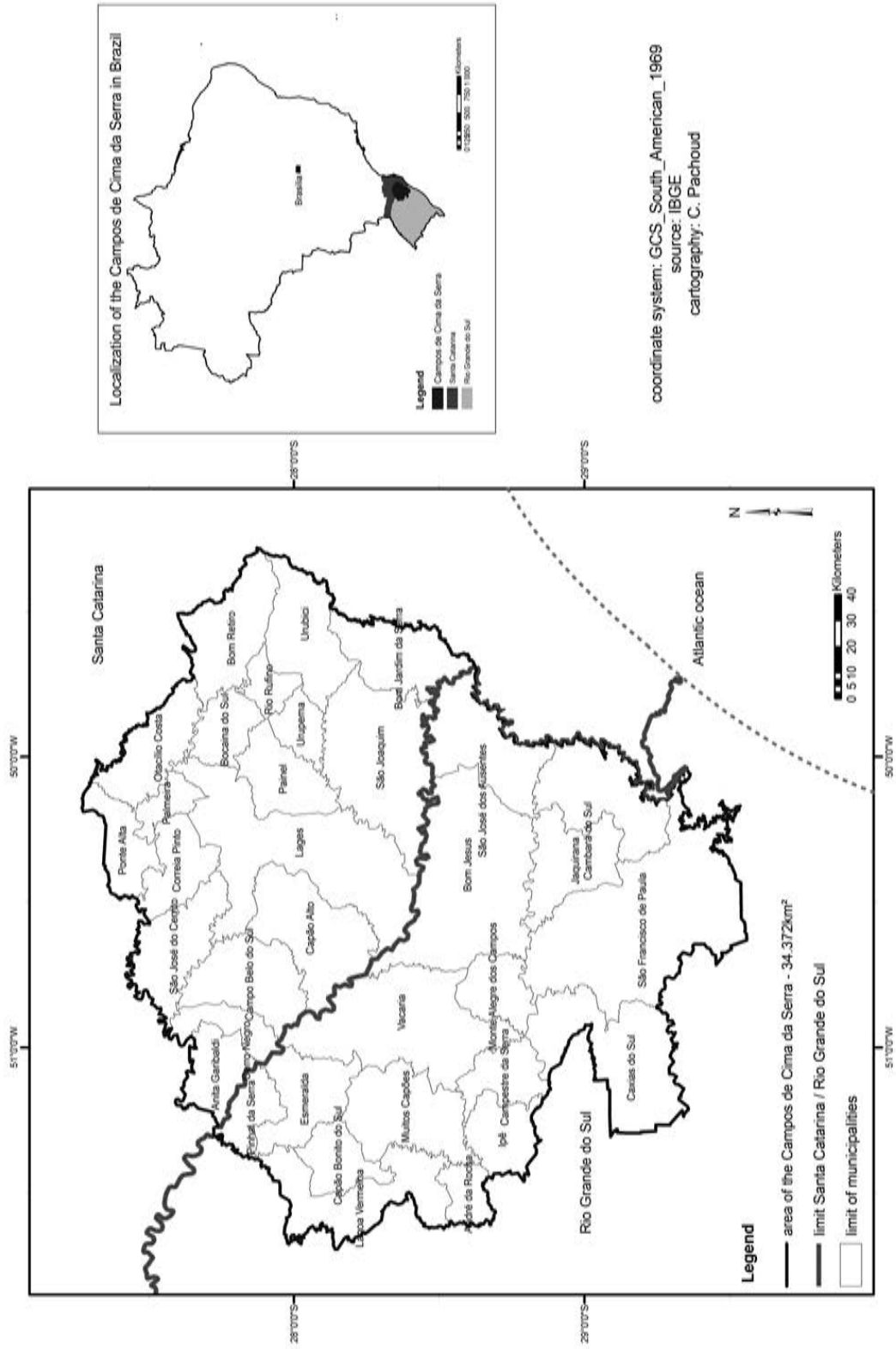
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55 Fidelis Dalcin Barbosa, *História do Rio Grande do Sul*, Porto Alegre 1976; Moacir Flores, *História do Rio Grande do Sul*, Porto Alegre 2003; Krone, *Identidade*; Cruz, *Produtores*; Lucila Maria Sgarbi Santos et al. (eds.), *Raízes de Bom Jesus e São José dos Ausentes*, XXIV Encontro dos Municípios originários de Santo Antônio de Patrulha, Companhia Rio-Grandense de Artes Gráficas (CORAG), Porto Alegre 2016.

56 Francisco Vieira/Denilson Dortzbach, *Caracterização ambiental e delimitação geográfica dos Campos de Cima da Serra*, Florianópolis 2017, 13.

57 Atlas Socioeconômico Rio Grande do Sul, Índice de Desenvolvimento Humano – IDH e IDHM, <https://atlas-socioeconomico.rs.gov.br/indice-de-desenvolvimento-humano-idh-e-idhm> (last visited 26 Jun. 2018).

Figure 1: Localisation of the municipalities producing artisanal Serrano cheese



Source: Instituto Brasileiro de Geografia e Estatística (IBGE), cartography by Carine Pachoud.

Today around 460,000 people live in the region; the two biggest cities are Lages/SC, with 158,500 inhabitants, and Vacaria/RS, with 65,400 inhabitants. Thus, 2.6 percent of the population live in 8.9 percent of the total territory of the two states. The Human Development Index is lower on average than for either of the two states overall, at 0.694 in the Campos de Cima da Serra region, compared to 0.746 in Rio Grande do Sul and 0.774 in Santa Catarina.<sup>58</sup> This region is isolated, with low infrastructure development (transport axis, information and communication technologies).<sup>59</sup>

## *Production systems*

Livestock farming is the prime economic activity in the region.<sup>60</sup> More than 90 percent of its farms are small-scale, family-owned cattle-breeding systems. A total of 3,000 families produce artisanal Serrano cheese and for most of them this is the principal economic activity, providing more than 50 percent of revenue.<sup>61</sup> The most common production system is an extensive mixed dairy-beef livestock system, with dairy and beef cattle simultaneously on the same farm. The breeds are mainly European ones, such as Hereford, Devon, Charolais, Jersey, and Holstein cows, though some are local, like Girolanda or Franqueiro. Only a few cows in any herd are milked for cheese production, with the others left to provide milk for the calves. They are milked once a day and the women generally take over the processing of milk into cheese. Milk productivity is low – the average yield of a cow is 8.0 litres per day, compared to 19.3 litres for specialised dairy farms in the EU-15.<sup>62</sup> The herds graze on the natural pastures all year round, supplemented by temporary grazing on managed pastures of oats and ryegrass. In winter, to supplement the shortage of natural forage, a concentrate feeding of soya or maize silage is given especially to the lactating cows. Ambrosini identified six different production systems, all of them peasant farming systems. Five of these are considered traditional breeding systems (mixed dairy-beef systems), the distinctive factors being the presence or absence of breeding and/or fattening calves and the presence or absence of commercial crops on the property. Only one system has been identified as an intensive dairy system, which means that there is a separation between dairy and beef breeds, no fattening of the calves, and cows are milked twice a day. However, this intensive system represents only 3 percent of the farms producing artisanal Serrano cheese. The six farming systems are:

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58 Instituto Brasileiro de Geografia e Estatística, Estimativas da População, <https://www.ibge.gov.br/estatisticas-novoportal/sociais/populacao/9103-estimativas-de-populacao.html?=&t=o-que-e> (last visited 26 Jun. 2018).

59 Larissa Ambrosini, Sistema agroalimentar do Queijo Serrano: estratégia de reprodução social dos pecuaristas familiares dos Campos de Cima da Serra – RS, Master thesis in Rural Development (Programa de Pós-Graduação em Desenvolvimento Rural, Universidade Federal do Rio Grande do Sul), Porto Alegre 2007.

60 Evander Eloí Krone/Renata Menasche, A formação da pecuária de corte e da produção tradicional do Queijo Serrano dos *Campos de Cima da Serra*, in: Paulo Waquil et al. (eds.), *Pecuária familiar no Rio Grande do Sul: história, diversidade social e dinâmicas de desenvolvimento*, Porto Alegre 2016, 169–184.

61 Jaime Eduardo Ries et al., *Aprocampos – uma experiência de sucesso na qualificação e valorização do queijo artesanal Serrano*, Emater-RS 2014, 50–62, 54.

62 Marie-Laure Augère-Granier (European Parliamentary Research Service), The EU dairy sector. Main features, challenges and prospects, [http://www.europarl.europa.eu/RegData/etudes/BRIE/2018/630345/EPRS\\_BRI\(2018\)630345\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2018/630345/EPRS_BRI(2018)630345_EN.pdf) (last visited 15 Jun. 2019).

- 1) Raising calves with feed produced on the farm (corn, soya, and managed pasture)
- 2) Raising, reproduction, and fattening of cattle with feed produced on the farm
- 3) Raising calves with feed produced on the farm for their own herd and for commercialisation (corn, soya, beans)
- 4) Raising and reproduction of cattle with feed produced on the farm for their own herd and for commercialisation
- 5) Raising, reproduction, and fattening of cattle with feed produced on the farm for their own herd and for commercialisation
- 6) Dairy system without raising of calves<sup>63</sup>

Table 1 presents the size and production of 67 family farms producing artisanal Serrano cheese in the Campos de Cima da Serra region. The data was gathered in February 2017, August/September 2017, and March 2018.

Table 1: Production and size of properties producing artisanal Serrano cheese

	Average	Minimum	Maximum
Number of cattle	90,6	14,0	800,0
Number of cows milked	14,4	3,0	40,0
Milk production (L milk/cow/day)	8,0	2,0	20,0
Cheese production (kg cheese/day)	10,5	2,0	70,0
Total area (ha)	132,2	6,5	980,0
Area of natural pastures (ha)	96,7	3,0	90,0
Area of managed pastures (ha)	17,5	2,0	70,0

Source: Own calculation.

### *Agricultural advisory services*

Agricultural advisory services form an important resource for these production systems. As the case study region spans two federal states, two different institutions are present to fulfil this function. EPAGRI-SC is the public Company for Agricultural Research and Rural Extension of Santa Catarina. It is connected to the office of the Secretary of State for Agriculture and Fisheries and was created in 1991. However, advisory services had already existed in the state since 1956. There are two regional offices located in Lages and São Joaquim, and every municipality has its own local office. At the regional scale, one advisor coordinates a group of 18 advisors (one in each municipality) working especially on the artisanal Serrano cheese value chain.

EMATER-RS is the Company of Technical Assistance and Rural Extension in the Rio Grande do Sul state, created in 1955. This institution is private and has no agreements with

63 Ambrosini, Sistema agroalimentar, 95–124.

the federal Ministry of Agriculture, Livestock, and Supply (MAPA) to implement joint projects with EPAGRI-SC. There is one regional office in Caxias do Sul and one state office in Porto Alegre. All municipalities have their own office with one or several advisors working directly with the producers. At EMATER-RS, there is no group dedicated to the Serrano cheese value chain. The advisors are expected to deal with all activities in which the service is involved and all kinds of productions.

### *Legal situation*

The Brazilian legal framework does not permit the selling of raw milk cheese with less than 60 days of maturation since law no. 1,283<sup>64</sup> came into force in 1952 through regulation no. 30,691.<sup>65</sup> Most Serrano cheese makers do not respect this restriction because consumers prefer young cheese to matured cheese. They therefore sell their produce within less than 30 days, which makes the sales illegal.

Moreover, the sanitary norms for dairy products in Brazil do not consider the specificities of artisanal production, but subject them to the same sanitary standards and require the same facilities as for big dairy industries, making it impossible for small-scale farmers to comply because of the high costs of adaptation. Furthermore, producers claim that the high standards have a negative impact on artisanal characteristics of the cheese, for example, by requiring them to replace wooden moulds with plastic ones. The producers feel marginalised and the informality of production and the illegality of sales leads to greater health risks for the consumers in the long run, as there is no sanitary control.<sup>66</sup>

In Brazil, regulatory systems exist at different levels: municipal, state, and federal, each with their own control bodies. The Municipal Inspection Service (SIM) establishes and controls the sanitary norms for production and sale of artisanal Serrano cheese, but only for mature cheese, ripened for more than 60 days. This is a precondition for selling the cheese, but only within the area of the municipality. The veterinarians employed by the municipal prefectures in principle inspect the health of herds and the adequacy of infrastructure, supported by EMATER-RS and EPAGRI-SC. However, take-up by the producers is low. The main difficulties for small producers are the high costs of complying with the rules, without credit facilities or subsidies, and the cost of the annual inspection of the herd for control and eradication of brucellosis and tuberculosis (a national program of the MAPA). This includes the vaccination of female calves three to eight months old against brucellosis, testing for brucellosis and tuberculosis, as well as inspection of the chemical and microbiological quality of the water and of the microbiological quality of the cheese once a year. Moreover, most of the milk processing facilities are very far from the required norms and the lack of prospects for passing the farm on to the next generation makes the producers reluctant to invest in new equipment. However, requirements can vary between the different SIMs because there

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64 Presidency of the Republic of Brazil, Lei no. 1,283, 18 Dec. 1950, Dispõe sobre inspeção industrial e sanitária dos produtos de origem animal, Presidência da República, Casa Civil, Brasília.

65 Presidency of the Republic of Brazil, Decreto no. 30,691, 29 March 1952, Aprova o novo Regulamento da Inspeção Industrial e Sanitária de Produtos de Origem Animal, Presidência da República, Casa Civil, Brasília.

66 Cruz, Produtores, 33.



is no standardisation of the norms between the municipalities; for example, only some SIMs mandate attending a course on cheese production. In Santa Catarina, an Intermunicipal Consortium (CISAMA) exists between the 18 municipalities producing artisanal Serrano cheese, which allows uniform requirements by the different SIMs. However, given the lack of market within the municipalities, most producers sell outside them, and thus the SIM certification seems useless to them. Thus, relations of proximity and trust between producers and consumers seem to be more important than standardisation.<sup>67</sup>

At the state level, in Rio Grande do Sul a law authorising the sale of cheese throughout the state was signed in 2016 (law no. 14,973)<sup>68</sup> and the decree was approved in August 2018 (decree no. 54,199).<sup>69</sup> In Santa Catarina a law was signed in September 2016 (law no. 17,003/2016)<sup>70</sup> and the decree in July 2017 (decree no. 1,238/2017),<sup>71</sup> but until today no producer has acquired the state legalisation. To date, there is no regulation at the federal level to authorise the marketing of artisanal Serrano cheese throughout Brazil as a whole. These two levels apply stricter norms than the municipal level, which would make it more difficult for the producer to legalise commercialisation of cheese at the state or federal level. However, the SIM can confer the SUSAF<sup>72</sup> or the SISBI-POA<sup>73</sup> label, which correspond to the equivalent state and federal certification, if they have authorisation from the state or the federal authorities after an inspection of the SIM.<sup>74</sup> Currently, only the SIM of São Francisco de Paula/RS is authorised to award the SUSAF label and only one producer obtained this certification in 2017. No producer has the SISBI-POA label, because no municipality has yet received authorisation to award it. In Santa Catarina, CISAMA has been authorised by state and federal inspection services to confer the SUSAF and SISBI-POA labels on dairies which respect the standards required in all the municipalities of the producing region. The major problem is that complying with federal or state inspection services represents high costs for

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67 Jaqueline Sgarbi, Dilemas e desafios na valorização de produtos alimentares tradicionais no Brasil: um estudo a partir do queijo do serro, em Minas Gerais, e do queijo serrano, no Rio Grande do Sul, Pelotas 2014, 224.

68 State of Rio Grande do Sul, Lei no. 14,973, 30 Dec. 2016, Dispõe sobre a produção e a comercialização do queijo artesanal serrano no Estado do Rio Grande do Sul. Assembleia legislativa, Gabinete de Consultoria Legislativa, Porto Alegre.

69 State of Rio Grande do Sul, Decreto no. 54,199/2018, Dispõe sobre a produção e a comercialização do queijo artesanal serrano no Estado do Rio Grande do Sul, Assembleia legislativa, Porto Alegre.

70 State of Santa Catarina, Lei no. 17,003, 1 Sept. 2016 (Regulamentada pelo Decreto no. 1,238/2017), Dispõe sobre a produção e a comercialização do queijo artesanal serrano, no Estado de Santa Catarina, Assembleia Legislativa, Florianópolis.

71 State of Santa Catarina, Decreto no. 1,238/2017, Dispõe sobre a produção e a comercialização do queijo artesanal serrano, no Estado de Santa Catarina, Assembleia Legislativa, Florianópolis.

72 Unified Sanitary State System for Agroindustrial, Artisan and Small-Scale Production, regulated by state decree no. 49,340 of 5 July 2012. The system guarantees the equivalence of the Municipal Inspection Services and Municipal Sanitary Vigilance, by municipality or by means of an intermunicipal consortium, for the production and commercialisation of animal and vegetable products of family agriculture and small-scale production throughout the state territory.

73 Brazilian System of Inspection of Animal Products, which is part of the Unified System of Attention to Agricultural Health (SUASA), standardises and harmonises procedures for inspection of animal products to ensure food safety. The states, the Federal District, and the municipalities can request the equivalence of their inspection services with the SISBI Coordinating Service. To obtain this, it is necessary to prove that they are able to assess the quality and safety of animal products with the same efficiency as the Ministry of Agriculture.

74 <http://www.agricultura.gov.br/assuntos/inspecao/produtos-animais/sisbi-1> (last visited 15 May 2018); <http://www.agricultura.rs.gov.br/susaf> (last visited 15 May 2018).

many municipalities – for example, a second veterinarian and a car are required to inspect the farms, a room is necessary to organise meetings, etc.

### *Organisation of the value chain*

Due to this complexity of the legal framework, most artisanal Serrano cheese is sold locally in the region or in cities nearby (such as Porto Alegre, Caxias do Sul, or Criciúma), by direct sales to consumers or in small markets of the region. Consumers come to the farms to buy, or producers take the cheese to market, or occasionally intermediaries buy on the farms for resale in bigger cities,<sup>75</sup> sometimes in neighbouring regions. There are also new marketing strategies: for example, a trader from São Paulo comes to get cheese from a producer for resale in São Paulo at a higher price, and some people order cheeses by mail.<sup>76</sup>

## Historical analysis of the artisanal Serrano cheese value chain: a value chain in constant adaptation

### *1700–1950: introduction of cattle and development of Serrano cheese production*

#### 1700–1825: the settlement of the region and the beginning of Serrano cheese production

Until the end of the seventeenth century, the region was inhabited by indigenous people living by gathering, hunting, and fishing. They also began to cultivate corn and cassava using the slash-and-burn system, but there was still no animal husbandry. The introduction of livestock was the work of the Jesuits. They arrived in the region between 1702 and 1707; their objective was to convert the indigenous people to Catholicism. They decided to settle the area to protect the cattle in the *Vacaria*<sup>77</sup> *del Mar* from being stolen by cattle dealers, so-called *bandeirantes*, interested in the leather. The Jesuits explored the Campos de Cima da Serra and were attracted by the immensity of the natural pastures. Moreover, the canyons and rivers surrounding it served as natural fences for the animals and made access difficult for the cattle dealers.<sup>78</sup> The cattle were used for meat and leather in Jesuit reductions (settlements for indigenous people established by the Jesuits). In 1709 it was estimated that there were about 100,000 head of cattle.<sup>79</sup> In 1750 the region became Portuguese after the signing of the Treaty of Madrid to redefine the frontiers between the Spanish and the Portuguese crown. Fearing that the Jesuits, who were autonomous and very well organised, would form their own theocratic state,

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75 Cruz, Produtores, 154.

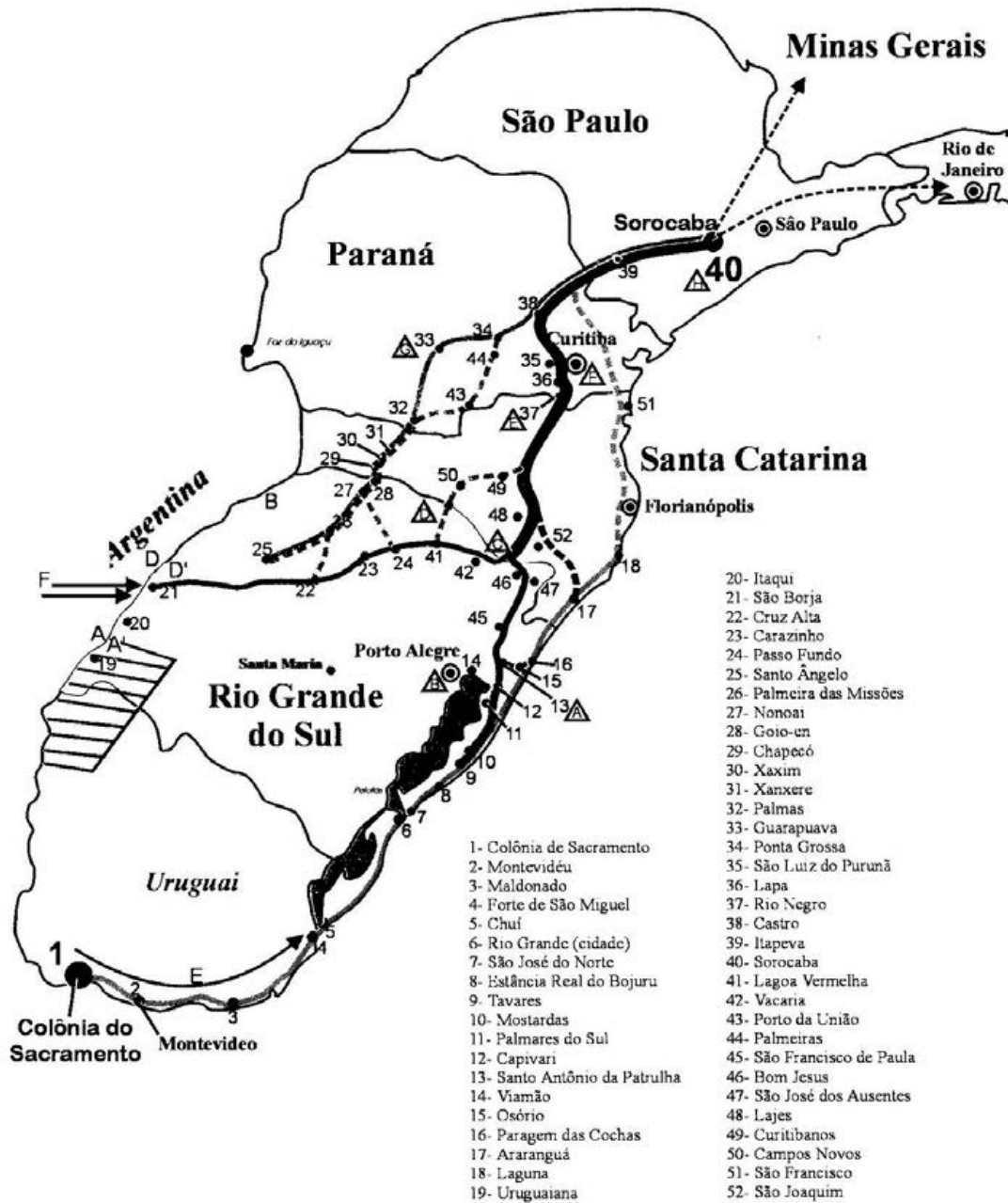
76 Sgarbi, Dilemas, 141.

77 A *vacaria* was a big reserve for cattle formed by the missionary Jesuits.

78 Cruz, Produtores, 75.

79 Flores, História, 42.

Figure 2: Roads used for the mule and cattle trade in the seventeenth and eighteenth centuries



Source: João Carlos Paixão Côrtes, *Danças Birivas do Tropeirismo Gaúcho*, CORAG, Porto Alegre 2000, 52.

the marquis de Pombal expelled them in 1759. The indigenous people were decimated, and the Jesuit reductions fell into ruin, allowing wild animals to graze in the natural pastures.<sup>80</sup>

From the end of the seventeenth century onwards, the discovery of gold mines in south-eastern Brazil led to a trade in mules from Argentina and southern Brazil, used to carry gold, and a trade in cattle to supply the lack of food in the mining region, where there were no agricultural activities. This form of trade was called *tropeirismo*.<sup>81</sup> In 1727 and 1733, two roads were constructed through the Campos de Cima da Serra for the mule and cattle traders to pass through on their way to the mining region<sup>82</sup> (Figure 2).

Some Portuguese, early immigrants to São Paulo or Laguna, were attracted by the wild cattle and vast pastures and decided to settle in the region. They were given large estates (*sesmarias*) with the intention of protecting the frontiers and developing agriculture. Land was granted especially to nobles, navigators, or soldiers to reward their services to the crown. One *sesmaria* usually measured around 13,000 hectares, but some families received up to ten *sesmarias*.<sup>83</sup> The new settlers started extensive livestock breeding. The workforce was composed of workers who herded the cattle and processed their milk into cheese, which had to be delivered to the landlord, most of it being given to the workers as salary. Cattle and leather were sold by the landlord of the *sesmaria* on the market. There were up to 30 families of workers per farm.<sup>84</sup> Slaves were probably only used for domestic tasks, agriculture, and construction.<sup>85</sup> Indeed, extensive livestock husbandry needs few workers, and the use of horses for the management of the cattle would have allowed the slaves to escape.

In this context the workers developed a system of subsistence farming, including the production of cheese.<sup>86</sup> The first record mentioning artisanal Serrano cheese dates from 1864, corresponding to the beginning of trade in it, but production may have begun with the installation of the first properties.<sup>87</sup> At that time the cheese, although the landlords kept a part of it for their own consumption, was mainly consumed by the workers. In fact, they used to produce cheese only in summer from the milk of lactating cows. In winter it was not possible to produce any because of a shortage of natural forage, which meant a reduced milk yield. A transhumance system was implemented to handle the shortage of forage during winter. The cattle were driven to the slopes along the rivers, where forests protected them from the cold and provided food. The cheese production during summer allowed the workers to conserve milk for consumption in winter.<sup>88</sup>

In conclusion, during the first century of Serrano cheese production, from the second quarter of the eighteenth century onward, the first farmsteads were established in the Campos de Cima da Serra through land grants to Portuguese people by the crown. However, the

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80 Cruz, *Produtores*, 75.

81 Ivo Pacheco Velho, *Bom Jesus: primeiros tempos*, in: Sgarbi Santos et al. (eds.), *Raízes*, 93–99.

82 Barbosa, *História*, 32.

83 Luiz Antônio Alves, *São José dos Ausentes: o marco do povoamento português no Rio Grande do Sul*, in: Sgarbi Santos et al. (eds.), *Raízes*, 25–47, 30.

84 Krone/Menasche, *A formação*, 76.

85 Ambrosini, *Sistema agroalimentar*, 55.

86 Krone/Menasche, *A formação*, 180.

87 Moacir Daros, *A prova do Queijo Serrano*, in: Elusa Maria Silveira Rodrigues et al. (eds.), *Bom Jesus e o tropeirismo no Cone Sul*, Porto Alegre 2000, 369–373.

88 Ambrosini, *Sistema agroalimentar*, 84.

properties were isolated from each other and from cities; some owners used to live outside their property, in more populated areas on the coast, leaving the farm to be managed by the workers.<sup>89</sup> While cattle and leather were destined for the market, the cheese was produced by the workers for their own consumption and served no commercial purpose.

## 1825–1950: European immigration and the beginning of the artisanal Serrano cheese trade

The nineteenth century marked the end of the imports of cattle and mules to the mining region, because of the decline in gold production as the mines became depleted. However, starting in the first quarter of that century, with the arrival of European immigrants in Brazil, another kind of trade developed. First, Germans, who arrived from the second quarter of the nineteenth century onwards, established themselves in the region of Porto Alegre and Laguna, growing cassava, sugarcane, corn, beans, and tobacco, and producing flour, molasses, and cachaça. These products were exchanged for the artisanal Serrano cheese, pine nuts, and jerked beef produced in the Campos de Cima da Serra region. Groups of dealers riding mules went down the mountain to trade with the Germans. This form of trade was no longer called *tropeirismo*, but *tropeirismo regional*,<sup>90</sup> as trade became regional. From 1860, some Germans bought lands in the Campos de Cima da Serra, because they were attracted by the climate, similar to that in Germany. They began breeding cattle and intermarried with local people.

After 1875 Italians arrived and settled in cities, living as artisans, such as bricklayers or shoemakers, or as merchants. After the Second World War, as they became more prosperous, some bought land in the region like the German immigrants before them and began breeding cattle or married local people.<sup>91</sup>

The trade in artisanal Serrano cheese developed from the first quarter of the nineteenth century. Its value increased thanks to the growing demand with the arrival of new European immigrants. The *tropeiros regionais* were the only people trading cheese with other regions. During this period, the cheese was still matured longer than two months, as the *tropeiros regionais* needed several weeks to bring it from the Campos de Cima da Serra to the littoral and they did so only a few times a year. The production system remained the same, with cheese only produced in summer by workers and transhumance to the forest areas in winter.

In conclusion, these two periods of time are important for understanding the development of the artisanal Serrano cheese value chain. Initially, it was the presence of workers on the farms and also the market for beef and leather that allowed the beginning of its production. Then with the arrival of more Europeans, a new market for the cheese allowed the maintenance of its production and made partitions by heritage possible through the production of cheese on smaller areas. Farms were isolated and there was little exchange between workers on different farms. Cheese was at first mainly produced for subsistence, later also for sale.

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89 Krone, *Identidade*, 30.

90 *Ibid.*, 38.

91 Krone/Menasche, *A formação*, 179–180; Nilza Huyer Ely, *A participação dos alemães na formação étnica, cultural e econômica dos Campos de Cima da Serra*, in: Sgarbi Santos et al. (eds.), *Raízes*, 274–299, 275–276.



In both cases it remained mature cheese, on account of the seasonal production combined with transhumance.

The two more recent periods (1950–2000 and 2000–today) will be presented in the next section through the lens of social capital. They correspond to the diffusion of technical innovations and the emergence of collective organisation within the value chain.

### *1950–2000: the development of peasant farming and the technical modernisation of artisanal Serrano cheese production*

In the Campos de Cima da Serra region, inheritance customs always divided the land equally between the heirs, which led to fragmentation over time. With the decrease in the size of holdings, the former landlords gradually became farmers themselves. Moreover, with new regulations for employment contracts, the hired workforce declined and gradually vanished. We can understand the process as a sort of gradual “peasantisation” of the farmers, which was completed in the middle of the twentieth century. This social group was characterised by family units producing mainly for their basic needs on the farms and selling surplus beef and cheese on the market, with a strong identity guiding their way of life.<sup>92</sup>

Things changed in the following era of modernisation during the 1950s. In 1952 law no. 1,283 came into force through regulation no. 30,691, which prohibited the marketing of raw milk cheese with less than 60 days of maturation. The regulation aimed at standardising production processes and hygiene and was designed under pressure from food industries, disregarding artisanal production.<sup>93</sup> Usually artisanal Serrano cheese is sold at between ten and 30 days of maturation because of new consumer preference; thus, the law made marketing it illegal.

At the same time, an important transition in the traditional agrarian system of extensive cattle and seasonal cheese production occurred in the 1960s and 1970s with the green revolution, called the “conservative modernisation” in Brazil. The green revolution was encouraged by the government to modernise agriculture by diffusing technical innovations to the farms. The inheritances that led to smaller properties facilitated this transition, as cheese became of greater importance for the family income, because dairy production usually utilises the area more intensively than extensive beef production systems.<sup>94</sup> Many properties no longer included both winter forest and summer pasture, but were located either in the pasture or in the forest zone. During that period, European beef breeds (such as Charolais or Hereford) and dairy breeds (such as Holstein or Jersey) replaced the creole cattle and almost led to the extinction of the original Franqueiro breed. These less rustic but more productive breeds demanded a more nutritious diet. Pasture management was introduced with a mixture of oats and ryegrass to graze the herd in the winter during the shortage of natural forage. Such pastures required additional fertiliser and equipment for planting, ploughing, and fertilising. Moreover, the less robust European breeds required better veterinary services: vaccines,

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92 Cruz, *Produtores*, 72–73.

93 *Ibid.*, 159–163; Sgarbi, *Dilemas*, 141–143.

94 Carine Pachoud et al., Energy analysis of livestock systems. A comparison of different livestock systems in the Eastern Brazilian Amazon, in: *Journal of Agriculture and Environmental Sciences* 6/1 (2017), 30–37.

vermifuges, and the like.<sup>95</sup> These improvements allowed increasing the cheese production and made it possible to produce all year round without transhumance. From the 1990s, pastures of oat and ryegrass were planted in rotation with vegetables in summer. Indeed, in the early 1990s cultivation of potatoes started, first for seed production and later also for human consumption. Usually the new planters came from outside the region and rented the land from cattle breeders in the summer. Finally, the cultivation of vegetable crops such as broccoli and cabbage arrived in the early 2000s. All these activities led to a significant decline in natural pastures.<sup>96</sup>

Finally, in the middle of the 1990s, tourism developed in the region, especially in the municipalities located close to the canyons, São José dos Ausentes and Cambará do Sul. Breeders themselves were developing infrastructure to host tourists. According to the tourism office of São José dos Ausentes, today there are 18 bed-and-breakfast operations on farms and Serrano cheese is a central ingredient on the menu. An average of 600 tourists visit the municipality per month, rising to up to 5,000 per month in winter. Cold, frost, and snow attract these tourists, the majority being Brazilians from the southeast of the country. The tourism sector is growing fast and expected to increase tenfold in the next 20 years.<sup>97</sup> Today rural tourism appears to be an important element to preserve the extensive breeding system and the production of artisanal Serrano cheese.

In conclusion, it was during this period that the peasant farming system evolved and the agricultural advisory services (EMATER-RS and EPAGRI-SC) were installed. This resulted in an important change in the traditional systems through technical innovations, initiated by the government during the Brazilian green revolution. Public research (Brazilian Agricultural Research Corporation, EMBRAPA) developed the innovations and the advisory services diffused them among the producers. This process did not involve organisational changes among local actors of the value chain as it was a process of individual diffusion of technical innovations. Moreover, it did not affect the methods of cheese production, even if it changed from seasonal to perennial. Producers and advisors were linked by weak ties, as meetings between these two types of actors, of different occupational status, occurred only during the visits of the advisors to the farms. Strong ties linked producers belonging to the same family, usually living on the same farm. In fact, in this period exchanges between families were infrequent, due to their geographical isolation.

### *Since 2000: emergence of territorial innovations through the progressive involvement of the local actors for the defence and valorisation of artisanal Serrano cheese*

At the beginning of the 2000s, the extensive livestock system, mixing beef and cheese production, was still the main activity in the region and accounted for 90 percent of the land

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95 Ambrosini, Sistema agroalimentar, 120–121.

96 Ibid., 58.

97 Personal communication of the tourism secretary of São José dos Ausentes, 2017.

use.<sup>98</sup> However, a change in consumer preference had appeared at the end of *Tropeirismo regional* from the middle of the twentieth century, as modern consumers preferred less matured cheese. This clashed with the legal framework and the control of raw milk cheese. Since 2001 health surveillance activities have been reinforced, with the right to control food products in municipalities (law no. 8,080/1990 and decree no. 2,665/2001).<sup>99</sup> Monitoring services impounded cheese without SIM certification or sold outside the municipality. A new federal environmental law prohibited removing any native species of the Atlantic Forest biome without authorisation, natural pasture included (law no. 11,428/2006<sup>100</sup> and decree no. 6,660/2008<sup>101</sup>). As a result, it has become impossible for producers to expand the cultivated pasture areas, often rented during summer for the cultivation of potatoes or vegetables such as broccoli. Thus, this law severely restricts income generation possibilities for peasant family farms.

In this new legislative context, different groups of producers have evolved. On the one hand, families who want to continue marketing cheese and/or to intensify their production are keen to legalise their cheese sales. On the other hand, families who do not want to comply with the current regulations either continue to sell illegally or have stopped producing Serrano cheese and now produce only beef or pasteurised cheese. Some families limit themselves to subsistence production.

To counter the threat of a decrease or extinction of artisanal Serrano cheese production, two mutually non-exclusive strategies have been implemented, largely supported by the agricultural advisory services, EMATER-RS and EPAGRI-SC (Table 2). The first strategy focuses on improving of the legal status of the cheese. The advisory services signed agreements with MAPA. The first one in 2008, between MAPA and EPAGRI-SC (with EMATER-RS participating informally due to its private status), aimed at implementing projects with the objectives of promoting the historical recovery of artisanal Serrano cheese, delimiting the producing region, registering and training producers, analysing physical, chemical, and microbiological characteristics, and describing production and manufacturing processes. This agreement led to regulation no. 214 issued by the State Secretariat for Agriculture, Livestock, Fisheries, and Food Supply (SEAPPA) on 14 December 2010, which established the possibility of producing artisanal Serrano cheese, defined the characteristics, and delimited the producing region. A second agreement in 2013, again between MAPA and EPAGRI-SC (and EMATER-RS informally), aims to organise the value chain and to obtain the status of a protected designation of origin for cheese produced in the Campos de Cima da Serra. The request for this appellation

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98 Jaime Eduardo Ries/Luiz Gonzaga Messias, Campos de Cima da Serra: caracterização da região e do pecuarista familiar, EMATER/Porto Alegre 2003.

99 Julio César Corino, Avaliação da atuação da vigilância sanitária municipal de São Francisco de Paula referente ao queijo Serrano, Master thesis in administration, Universidade Federal do Rio Grande do Sul, São Francisco de Paula 2015, 25.

100 Presidency of the Republic of Brazil, Lei no. 11,428, 22 Dec. 2006, Dispõe sobre a utilização e proteção da vegetação nativa do Bioma Mata Atlântica, e dá outras providências, Presidência da República, Casa civil, Brasília.

101 Presidency of the Republic of Brazil, Decreto no. 6,660, 21 Nov. 2008. Dispõe sobre a utilização e proteção da vegetação nativa do Bioma Mata Atlântica. Presidência da República. Casa civil, Brasília.

was submitted to the National Institute of Industrial Property, which has the power to grant such certifications in Brazil, in August 2017.<sup>102</sup>

The second strategy was directed towards improving the organisational capacity of producers and their supply chain. Some producers decided to associate, with support from the advisory services, to develop sustainable solutions. Local actors organised themselves to give more strength and visibility to the product and the region. The first Association of Serrano Cheese Producers of the Campos de Cima da Serra, Aprocampos, in the municipalities of São José dos Ausentes and Bom Jesus, was created in September 2010 with the support of the two local EMATER-RS offices. There are currently around 50 members. On the model of Aprocampos, Aprojaqui was founded in 2012 in the municipality of Jaquirana. In 2017 the municipality of Cambará do Sul decided to join the association, which currently has 26 families as members. Then in 2013, Aproserra was formed, grouping the 18 cheese-producing municipalities in Santa Catarina state, on the initiative of EPAGRI-SC. Today, more than 70 families are members of the association. Lastly, Aprosãochico began in 2016 in the municipality of São Francisco de Paula; only six families producing artisanal Serrano cheese currently belong to it. A federation, Faproças, was formed in 2017 to align these four associations. This allowed requesting the designation of origin, which would protect artisanal Serrano cheese and its typical quality by recognising the region and the know-how of production.<sup>103</sup>

Many other activities have been undertaken since the associations were created. Aprocampos, as the oldest group, has been the leader of collective action:<sup>104</sup> In May 2013, the designation of immaterial cultural heritage was awarded by the National Historic and Artistic Heritage Institute to recognise and enable the development of policies to preserve the know-how of production. In December 2016, the law was approved, which legalises the production and marketing of artisanal Serrano cheese in the state of Rio Grande do Sul,<sup>105</sup> and the decree was approved in August 2018.<sup>106</sup> In the Santa Catarina state, the law was signed in September 2016<sup>107</sup> and the decree in July 2017.<sup>108</sup> Over and above that, meetings are organised monthly to share information between the members and throughout the associations. Also, members can participate in courses offered by the agricultural advisory services to improve hygiene in milking and cheese making. As the standards of the SIM are not harmonised between municipalities, some require producers to attend the lecture on good practices of cheese making to obtain the SIM label. Lastly, through the associations, the state or private institutions such

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102 John Wilkinson et al., *Indicações geográficas e produto de origem no Brasil: instituições e redes em ação recíproca*, in: John Wilkinson et al. (eds.), *O sabor da origem: produtos territorializados na nova dinâmica dos mercados alimentares*, Porto Alegre 2016, 73–106, 12–13.

103 Vieira/Dortzbach, *Caracterização*.

104 Ries et al., *Aprocampos*.

105 State of Rio Grande do Sul, Lei no. 14,973, 30 Dec. 2016, *Dispõe sobre a produção e a comercialização do queijo artesanal serrano no Estado do Rio Grande do Sul*. Assembleia legislativa, Gabinete de Consultoria Legislativa, Porto Alegre.

106 State of Rio Grande do Sul, Decreto no. 54,199/2018, *Dispõe sobre a produção e a comercialização do queijo artesanal serrano no Estado do Rio Grande do Sul*, Assembleia legislativa, Porto Alegre.

107 State of Santa Catarina, Lei no. 17,003, 1 Sept. 2016 (Regulamentada pelo Decreto nº 1238/2017), *Dispõe sobre a produção e a comercialização do queijo artesanal serrano, no Estado de Santa Catarina*, Assembleia Legislativa, Florianópolis.

108 State of Santa Catarina, Decreto no. 1,238/2017, *Dispõe sobre a produção e a comercialização do queijo artesanal serrano, no Estado de Santa Catarina*, Assembleia Legislativa, Florianópolis.

as banks give loans at low interest rates to families who want to build dairies on their farms. The Banco do Brasil Foundation offered 80 percent financial backing for the construction of nine dairies. Also, the state of Rio Grande do Sul provided financial support to 15 families, members of the different associations, for the construction of small dairies and to the Aprocampos association to build its head office. In Santa Catarina, Aproserra received funds in 2016 from the state government's SC Rural program<sup>109</sup> to encourage the construction of 32 dairies, covering 50 percent of construction costs for each.<sup>110</sup>

Since the creation of the associations, producers, technicians, and researchers have become more and more active to promote artisanal Serrano cheese, at both the local and the federal level. Thus, in 2011 in Fortaleza/CE and in 2013 in Porto Alegre/RS, EMBRAPA and EMATER-RS organised the first two symposia on artisanal cheese in Brazil. The objective was to discuss topics related to the valorisation, quality, safety, and certification of Brazilian artisanal cheeses. At the regional level, interstate symposia on artisanal Serrano cheese have been held every two years since 2012 by EMATER-RS and EPAGRI-SC, involving all the municipalities producing the cheese. These events are an important space for discussion between producers, technicians, and public authorities on issues related to the production, regulation, and marketing of artisanal Serrano cheese at the national level. In addition, EMATER-RS and EPAGRI-SC regularly arrange Serrano cheese competitions at the local level, where all producers can participate, with or without certification. Moreover, various festivals are organised by the prefectures and the advisory services in different municipalities: for example, the Gila Festival and artisanal Serrano Cheese Festival are held every year in Bom Jesus.

Finally, a new project was started in 2018 by the Brazilian Service to Support Micro and Small Enterprises (SEBRAE) in partnership with the agricultural advisory services to improve marketing strategies for artisanal Serrano cheese, for example, to create better packaging.<sup>111</sup>

These actions by the associations to produce better quality cheese and to promote its sale have already shown results. Indeed, today the average price of a kilogram of cheese is 20.40 *reais* (R\$); ten years ago it stood at R\$ 7.10, according to estimates in interviews with producers during the three field visits in 2017 and 2018. 50 of the 67 producers interviewed also reported that demand has increased dramatically over the last ten years. One respondent even said, "Sometimes we don't have enough cheese to meet the demand".<sup>112</sup> However, these actions depend mainly on the efforts of the advisory services. Today, in the Campos de Cima da Serra region, 18 families have the SIM certification (twelve in Rio Grande do Sul and six in Santa Catarina), while only one has state certification through the SUSAF label. Many others will soon have their cheese sales legalised: more than 15 families of producers are in the process of certification with the SIM in Rio Grande do Sul state and 24 in Santa Catarina. However, the large majority of producers do not want to legalise, for two main reasons: first, because of the high costs of complying with the standards, and second, because they do not agree with these new standards. According to these producers, standardisation would change the traditional characteristics of the Serrano cheese.

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109 The Rural SC program is an initiative of the state government with financing from the World Bank (Bird) to increase the competitiveness of family agriculture in Santa Catarina.

110 Interview conducted with an extension agent of EPAGRI-SC, Lages, 14 Mar. 2018.

111 Interview conducted with an extension agent of EMATER-RS, São José dos Ausentes, 6 Mar. 2018.

112 Interview conducted with a producer, Bom Jesus, 15 Sept. 2017.



Table 2: Overview of the two strategies implemented from the 2000s to face the threat of decrease or extinction of artisanal Serrano cheese production

Improvement of the legal status of the Serrano cheese	Improvement of the organisational capacity of producers and their supply chain
<ul style="list-style-type: none"> <li>• SEAPPA regulation no. 214/2010 establishing the possibility of producing Serrano cheese, defining its characteristics and delimiting the producing region</li> <li>• Request for a protected designation of origin in 2017</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of four producers' associations that allowed obtaining or developing:               <ul style="list-style-type: none"> <li>✓ the designation of immaterial cultural heritage</li> <li>✓ state laws for the legalisation of the production and the marketing of the cheese</li> <li>✓ meetings and courses</li> <li>✓ loans for building dairies</li> <li>✓ promotional activities</li> </ul> </li> <li>• Creation of a federation of the associations which allowed requesting the designation of origin</li> </ul>

Source: Own evaluation.

Starting in the 2000s, new organisational and institutional arrangements allowed reinforcing existing links or creating new ones between the actors of the value chain. Thus, advisors and producers are still linked by weak ties. Nonetheless, increasing numbers of opportunities for contact (such as association meetings or courses) improve the level of trust between them. Also, these new arrangements involve additional local actors in the value chain, such as the inspecting veterinarians and municipal functionaries of agriculture, offering opportunities to create new weak ties with the producers. However, producers have demonstrated a lack of trust in these functionaries, which limits interactions. Strong ties link producers belonging to the same family, as was the case during the previous period (1950–2000). Nonetheless, association meetings, courses, or other new opportunities for encounters bring together producers from different families and communities. This reinforces the social capital between the different families and builds up weak ties. With time, it may form a dense group and generate bonding social capital.

## Discussion: from technical to territorial innovations – the role of social capital

The period between the beginning of the eighteenth and the middle of the twentieth century saw the development of cheese production and trade in the Campos de Cima da Serra region. At first, from the eighteenth to the nineteenth century, there was a capitalist system with large properties owned by landlords and most farm work done by families of workers living on the farms. The objective of the landlords was to produce leather and beef for the market, while cheese was made mainly for the consumption of the workers; it was produced in summer and could be conserved and consumed all year long. Then, from the nineteenth century until

the 1950s, the cheese began to be exchanged for commodities from other regions, thanks to a new market created by the arrival of European migrants in neighbouring regions. It served as a surplus market good in combination with a strong subsistence orientation and helped to sustain the farming economy even when farm sizes were shrinking as a result of inheritance rules. These two periods are important to understanding how the cheese production developed and was maintained over the centuries.

About 60 years ago, this process of “peasantisation” was completed, due to repeated partitions of holdings between heirs and the nearly complete disappearance of non-family workforce because of the reduction in the size of farms. Until then the social unit was the farm, with little economic exchange and virtually no collective economic activity having developed between farms. We only analyse the social capital within the value chain and the emergence of territorial innovations from that period onwards.

The traditional farming system in the Campos de Cima da Serra region has evolved considerably since the development of the peasant system from the 1950s to adapt to changes. First, from the 1950s to 2000, farms have constantly maintained and increased their resilience by implementing new practices. Nonetheless, technical innovations have been the dominant form of innovations in the artisanal Serrano cheese value chain until the last decade. Most of these were introduced top-down during the green revolution by the advisory services, initially to increase production, but later also to adapt to standards of legalisation following changed consumer preferences. Producers and advisors were linked by weak bridging ties. Meetings between both occurred only during the visits by advisors to the farms. All these innovations and adaptations were made at the level of individual farms and did not involve collective action.

Second, from the 2000s to today a transformation has affected the original network, once characterised by few relations between local actors, through an organisational innovation involving the creation of associations and other collective actions. This can be understood as the beginning of a territorial innovation. Nonetheless, this collective organisation is recent and still faces many problems. The foremost of these is the low involvement of producers and the lack of a culture of cooperation. Few producers have joined associations and not many of the members participate in the monthly meetings. Producers take on few responsibilities and have little autonomy in making decisions for the collective.<sup>113</sup> The agricultural advisory services are the central actors in the organisation of the associations, their interventions are crucial. In this sense, they still operate following a top-down model.

Also, the clandestine nature of the value chain restrains the establishment of relations of trust between producers and other local actors. Production and marketing are hidden, one producer recounted, “who is not seen, is not remembered”.<sup>114</sup> The concept of social capital allows a better understanding of the network structure within the value chain and of the sources of innovation.<sup>115</sup> Indeed, trust relations are usually strong among the family members living on the farm, which increases bonding social capital and allows maintenance of tradi-

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113 Information was obtained from the interviews with extension agents and participation to monthly meetings of the associations.

114 Interview conducted with a producer, São José dos Ausentes, 14 Sept. 2017.

115 Granovetter, Strength; Robert Putnam, *Bowling Alone: The Collapse and Revival of American Community*, New York 2000.

tion, transmitted from generation to generation. Distances between farms are great and each family is isolated from the others. Conflicts or denunciations occur between different families of producers, especially between legalised and non-legalised ones, with the latter accusing the former of benefiting from the veterinarians of the inspection services. Bonding social capital, represented by strong family ties which correspond to the production unit, is much more important than the few forms of linking and bridging social capital between different families and communities. For example, the ties between members of the same church or between participants of rodeos are not very strong, as they meet infrequently.

Similarly, bridging social capital between producers and various other actors (veterinarians, politicians, etc.) is low, except for the advisory services, which enjoy a high level of trust from the producers as they are close to the families and have worked with them since the beginning of peasant farming. Moreover, local politicians like the municipal functionaries of agriculture have little involvement in the development of the value chain, resulting in a lack of trust in them. For example, the agricultural functionary is responsible for the management of machinery available for the producers, but the latter often complain that access is difficult and often not available when they need it; likewise, the lack of paved roads within the municipalities inhibits trade and access to meetings.<sup>116</sup> Additionally, there is a disagreement in the perception of sanitary risks of raw milk between the producers and the veterinarians of the inspection services. Only industrial and large-scale production standards are taught at the universities; small-scale and artisanal production is not a subject there. Sometimes conflicts occur because producers want to defend the artisanal raw milk cheese produced from generation to generation, whereas veterinarians see these practices as a potential danger to the health of consumers. The advisory services more often support the point of view of the producers, although they are aware of the necessity of the sanitary norms. However, during the last field visit in March 2018 we saw an increase in communication between producers and veterinarians, who shared and discussed their views on the subject, thus increasing bridging social capital. More and more veterinarians are assuming a role of advisor rather than controller in their dealings with producers.

In this sense, associations allow bringing together producers from different families or communities with other actors (advisory services, veterinarians, local politicians, etc.). This reinforces the social capital between actors of the value chain and builds up weak ties, a key element in information flows and innovation processes. This temporary proximity during meetings is important in reducing the isolation of some producers and in creating opportunities for sharing and discussing the different points of view. Moreover, this diversity of producers and other stakeholders can be a great benefit for the emergence of new ideas and innovations, but also for the maintenance and valorisation of traditions which can be protected through geographical indications. The complementarity of both sides in traditional food value chains is a motor of territorial development.<sup>117</sup> In this case, the agricultural advisory services, which already have well-established links with producers, facilitate the formation of bridging social capital between producers and other actors at association meetings

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116 Carine Pachoud/Martin Coy, *Relações de proximidade entre atores locais e as dinâmicas de desenvolvimento territorial: análise da cadeia produtiva do Queijo Artesanal Serrano nos Campos de Cima da Serra/RS*, in: *Revista Brasileira de Gestão e Desenvolvimento Regional* 14/2 (2018), 157–182.

117 Torre/Vollet, *Aux fondements*.

or other occasions such as courses, symposia, or competitions. Given time, this can allow the formation of a dense group with shared language and representations, in other words, the creation of bonding social capital. Moreover, new institutional arrangements appear to be an opportunity for local actors to link with actors at higher levels (such as state deputies) and build weak ties with them.

To sum up, we observe that, on the one hand, the territorial innovations come from the advisory services, which have a better overview of the value chain and its external pressures and information. On the other hand, the focus on traditions seems to come from the producers, transmitting know-how from generation to generation. Thus, innovations sometimes face resistance from producers. For example, many do not want to legalise their production facilities because they want to keep making cheese with wooden moulds instead of plastic ones and prefer to continue to sell on the quiet. Nonetheless, most producers adopt the technical innovations in the long run – for example, all producers today manage pastures. Some appear to be less resistant to technical innovations. Indeed, nine families out of the 67 interviewed have a specialised dairy system, meaning that they separate the dairy herd from the beef herd. Of these nine families, six also have the SIM certification.

The existing literature still provides few studies on the relationship between social capital and resilience in rural areas.<sup>118</sup> Rural resilience determines the degree to which a specific rural area is capable of self-organisation to face changes and shocks<sup>119</sup> and encompasses three dimensions: ecological, social, and economic.<sup>120</sup> Thus, social capital can be seen as the main aspect of social resilience in such areas.<sup>121</sup> According to Hofferth and Iceland, people living in rural areas share more strong ties based on kin than people living in urban areas.<sup>122</sup> Relationships in rural areas are often embedded in networks of close personal ties (strong ties), which are largely based on geographical location and shared norms (i.e. trust) and values.<sup>123</sup> In this point our research differs, as we find that strong ties mainly link producers belonging to the same family living on the farm, but not the producers of the entire rural community. This may result from the physical isolation of the families and poor transport infrastructures, which lead to a lack of interaction between families and therefore to a low level of trust. The high degree of bonding social capital can decrease rural resilience. Indeed, strong ties may obstruct the capacity for learning after changes or shocks and adapting in order to be able to anticipate and respond to further shocks and changes in the future.<sup>124</sup> In rural areas, the

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118 Wim Heijman et al., Rural resilience as a new development concept, in: Danilo Tomić/European Association of Agricultural Economists (eds.), *Development of agriculture and rural areas in Central and Eastern Europe. 100th Seminar of EAAE, Novi Sad 2007*, 383–396; Gonne Beekman et al., *Social capital and resilience in rural areas: responses to change*, working paper, Mansholt graduate school 2009; Mark Scott, *Resilience: a conceptual lens for Rural Studies?*, in: *Geography Compass* 7/9 (2013), 597–610; Lynda Cheshire et al., *Community resilience, social capital and territorial governance*, in: *Revista de Estudios sobre Población y Desarrollo Rural* 18 (2015), 7–38.

119 Heijman et al., *Rural resilience*; Nadine Marshall, *How resource dependency can influence social resilience within a primary resource industry*, in: *Rural Sociology* 72/3 (2007), 359–390.

120 Heijman et al., *Rural resilience*; Beekman et al., *Social capital*.

121 Beekman et al., *Social capital*.

122 Sandra Hofferth/John Iceland, *Social capital in rural and urban communities*, in: *Rural Sociology* 63/4 (1998), 574–598.

123 Beekman et al., *Social capital*.

124 Marshall, *Resource dependency*; Beekman et al., *Social capital*.

opportunity to develop weak ties providing information and promoting innovation is less,<sup>125</sup> although weak ties may lead to more resilience, as people can exchange information, experience, and capital in case of shocks.<sup>126</sup> In our study, advisors play an instrumental role in increasing the number of weak ties and therefore promoting resilience. Thus, a larger amount of social capital, through a well-balanced combination of weak ties that allow change and innovation and strong ties that allow maintaining traditions, can lead eventually to more resilience in rural areas.<sup>127</sup>

## Conclusion

Today, artisanal Serrano cheese is an important resource for cattle breeders in the Campos de Cima da Serra region, as it can represent up to 60 percent of these families' income. Ancestral know-how is still used in production and processing and feeding is essentially based on pastures of natural grasslands, although an intensification of production by the use of corn silage or soya has been observed in recent decades. Since the development of peasant farming and the creation of agricultural advisory services in the 1950s, the technical innovations brought by them have sometimes met with resistance from producers, who wanted to maintain traditional ways; but over time the innovations spread nonetheless.

In the artisanal Serrano cheese value chain, cheese making has been done individually on the farms since the beginning of its history, and there was no cooperation between producers to organise the value chain until the last decade. Indeed, the chain is short since the producer sells cheese directly to consumers at points of sale (cheese shops, markets) or through one intermediary. However, the illegalisation of cheese marketing resulting from the increase of controls, as well as competition with industrial cheese, led to an impasse for the production of artisanal Serrano cheese. In this way, cooperation through producers' associations appeared as one solution for local actors to keep producing and to defend the typical characteristics of the cheese and the related traditions. Nonetheless, this approach is still facing many problems: there is a lack of involvement on the part of producers; the advisory services are the central actors and the only trusted forces with links to the mainstream administration system; and there are many tensions between producers, veterinarians, and local politicians.

The concepts of social capital and strength of ties appear promising for the analysis of resilience and of the ability to reconcile tradition with innovation. Indeed, the advisory services, as central actors in the territorial innovation process, allow the different actors (producers, veterinarians, politicians) to join through linking and bridging social capital. Bonding social capital is present only among the family members within production units. In this sense, peasant families are central actors for the maintenance of tradition by transmitting know-how from generation to generation. However, weak ties are necessary for collective organisation and for innovation to emerge. In this sense, advisory services are key actors in the strengthening of weak ties, which can over time lead to bonding social capital through the repeated interactions between actors. Nevertheless, the analysis shows the instability of local

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125 Hofferth/Iceland, *Social capital*, 577.

126 Woolcock, *Place of social capital*.

127 Beekman et al., *Social capital*.



coordination between producers and the necessity for support from the advisory services for the operation of the associations.

Social capital is a central resource for cooperation: bonding social capital allows a dense network and the transmission of know-how from generation to generation, while linking and bridging social capital encourages the emergence of territorial innovations. The combination of both provides the resources to resist and adapt to changes, which forms the basis of resilience of the territory.