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Evolutions of the dairy economy in the territories of Sud-Isère

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Introduction: what are the future of undifferentiated milk production in mountain areas?

- 1 Many studies converge on the observation of an uncertain future of milk production in certain mountain areas, following the end of milk quotas and widespread competition among producers (Dervillé *et al.*, 2012). Relationships between milk production and territories are evolving with major restructuring (Roguet *et al.*, 2015) and gaps are widening between production basins, particularly between plains and mountains (Ricard, 2014), except for areas benefiting from high added value as some Protected Designations of Origin (PDO). This work presents the dual originality of focusing on mountain dairy basins producing "undifferentiated" milk, little studied unlike those valuing PDO, and on the South-Isère in particular, territory having made the choice of an undifferentiated milk production, while the neighboring dairy basins value quality and origin (Savoie, Vercors, Chartreuse). It is thus highly dependent on international groups (collection by Lactalis, Danone, Sodial), while the decrease in the number of farms and the volume of milk might cause milk collection to stop in the future.
- 2 In this context of uncertainty stakeholders from South-Isère engaged a common reflection on the future of milk production in their territory, as part of a research-action project¹. In this article we examine the possible futures of this dairy area. We make the hypothesis that it is the renewed articulation between the geography of production and the geography of transformation (Ricard, 2014) and more generally the forms of embeddedness of value chains and territories (Forney and Häberli, 2016), and their evolutions over time (Napoleone *et al.*, 2015), which explain the current brakes and levers to face the crisis. To show this, we propose a detailed historical analysis of

the successive forms of embeddedness and distancing between dairy value chains and territories. We discuss what they might be in the future, particularly by confronting to the dynamics of other dairy basins.

Framework for analyzing forms of interaction between value chains and territories

Territorial embeddedness

- 3 A large part of studies on interactions between value chains and territories analyzes localized food systems (Muchnik *et al.*, 2008), value chains under geographical indication (Paus and Reviron, 2010) and looks at the recompositions at work from notions of "quality, territory and embeddedness" (Ilbery *et al.*, 2005). The concept of "embeddedness" is widely used in this literature (Deverre and Lamine, 2010), and three conceptions are generally used: social, spatial or geographical, and ecological embeddedness (Barिताux *et al.*, 2016). For the standard sectors, few studies address the organizational structure of these sectors as lock or lever to ensure a (re)-territorialisation of the productions (Fares *et al.*, 2012), whereas Sonnino (2007) shows that territorial specificities can be "appropriated" by globally operating players to maximize their profit by accessing niche markets. This requires a careful assessment of the nature of this "embeddedness", including the role played by "quality", "localisation", and the distribution of power between actors in these systems (Murdoch *et al.*, 2000).
- 4 Sonnino (2007) emphasizes that these studies do not sufficiently take into account the process of embedding, resulting in often simplistic classifications opposing localised (ie alternative and embedded) and globalized (ie conventional and non-embedded) systems. But embeddedness is not an inherent and fixed feature. Actors must constantly redefine and negotiate its forms to give their product a historical and territorial identity that can be defended, involving a dialectical tension between embeddedness and distancing forces. Embeddedness then becomes a social, temporal and spatial process (Sonnino, 2007). We are inscribed in this dialectical tension, and propose to examine three aspects of it:
 - the geography of production and the link to the use of local resources (production orientation, breeds, cows' food system, inputs);
 - the geography of the transformation (location of operators in relation to the concerned area: processing units and decision centers, supply and distribution radius, competitive relations/synergies between operators);
 - the interactions between value chains and territories through: the capacity of the actors to specify the resources, that is to say to differentiate them by giving them "qualities"; power relations and the capacity of local actors to self-organize and to be autonomous.

The processes of change

- 5 For Sonnino (2007), the adoption of a dynamic approach complicates the notion of embeddedness by highlighting its multidimensional nature and its inherent tensions. This has led us to choose a diachronic and processual approach. Our analysis is based on Pettigrew's (1990) conceptualization of the processes of change, for whom

causality is neither linear nor singular, the understanding of change necessarily being holistic and multifaceted. He emphasizes the consideration of interconnected levels of analysis and temporalities between past, present and future changes. Mendez *et al.* (2010) propose an analysis with four key concepts: ingredients (analysed system and context), engines, sequences and bifurcations. In our case, the ingredients of the system are those described above: geography of production, transformation, interactions between value chains/territory). The context can be both local and global. Like Moustier *et al.* (2010), we pay particular attention to the roles of actors and production models. The analysis then aims to identify the generative mechanisms (engines) of the movement of the ingredients and their assemblages, as well as the sequences (time segment in which the ingredients are ordered in a singular way) and bifurcations (intense recomposition of the configuration of the ingredients that lead to a change of direction).

Methodology and field

The device

- 6 We relied on a mixed methodology, combining historical research, statistical data, field surveys and meetings in the territory. Six meetings with producers and agricultural advisors took place between 2015 and 2017 to discuss about the dairy sector, set up the work process, and discuss results in progress. From there, a "timeline" workshop was conceived as a collective highlight, borrowing methods and postures from companion modeling and a tool for facilitating dialogue (Bergeret *et al.*, 2015). The aim was to collectively build a synthetic timeline of past and present dynamics and a shared narrative, highlighting elements of transformation of the territory's dairy sectors, by gathering the knowledge of the participants (7 farmers, 2 technicians, 3 researchers). Additional bibliographic research was carried out in order to deepen, qualify and enrich the representation. An analysis of the censuses of agriculture from 1979 to 2010 was conducted, and other figures were retrieved from the corpus. Finally, 11 additional interviews were conducted in 2017-2018 with: dairies or former managers (G1 to G3); breeders (E1 and E2); elected officials and professional leaders (R1 to R3); former agricultural advisers in the area (C1 and C2); Director of the Matheysine Museum and editor of the review *Mémoire d'Obiou* (D1).

Presentation of Sud-Isère

- 7 South-Isère is a mid-mountain area located between the Grenoble metropolitan area in the north, the Vercors in the west, the Oisans in the east, and the Hautes-Alpes in the south on the Mediterranean road. This territory composed of 73 municipalities is divided by the Drac river into two entities: the Trièves and Matheysine, constituting in 2018 two intercommunalities grouping 6 cantons: Mens, Clelles, Monestier (Trièves), La Mure, Valbonnais, Corps (Matheysine). With more than 10% of jobs, agricultural activity still weighs in the economy of this territory, and values 20% of surfaces. In 2010, 420 farms were registered, of which 87% were oriented on livestock farming (specialised or mixed, with sheep, goats, dairy cattle or meat).

Results: history of the dairy economy of Sud-Isère.

- 8 We trace this story back to the arrival of the first dairies, the point of bifurcation of a territory of self-consumption (with sale of surplus) towards a market economy and the introduction of structured dairy sectors, ie 1878.

From the end of the 19th century to the year 1955: birth of a dairy sector and rapid industrialisation

- 9 Arbos (1922) distinguishes five agricultural regions: Matheysine, Beaumont, Valbonnais, Trièves and Gresse valley. Due to the transitional position between northern and southern Alps and communication routes², he notes an economic precocity and a variety of forms of exploitation, endowing the South-Isère from the eighteenth of a "prosperous" and exporting agriculture. In the Trièves, breeding concerns sheep and young cattle for labor and butchery. Dairy farms are rare there, unlike in the Matheysine (5045 cows in the cantons of Corps and La Mure, against 719 in those of Mens and Clelles in 1913). The double activity is strongly present in Matheysine with the "peasant-miners"³ (Martinon, 1974).

Geography of production

- 10 With the arrival of the dairies, on-farm milk processing decreases, the sale of milk becomes the salary. The farms are numerous and produce little: 90% of the farmers have 2 to 6 cows, 10% have between 10 and 20 cows (Ministry of Agriculture, 1937). The livestock is increasing in quantity but also in quality thanks to the improvement of breeds carried by the unions ("local" breeds from elsewhere: Tarine, Abondance, then the Simmental is introduced, Arbos, 1922). To feed animals, cereals give way to the development and improvement of artificial and natural meadows (yields doubled between 1929 and 1962, Veyret-Verner, 1962) thanks to the arrival of chemical fertilizers with the arrival of rail.

Geography of transformation

- 11 On the one hand, there is a movement of dissemination of "fruitières" and village dairies, with a local embeddedness, due to the forest administration⁴ that supports the installation of the fruitière of Gresse en Vercors in 1878 (Duclos, 1986), and private initiatives near the railways (dairies of Cholonge and Villard St Christophe in 1878) to feed the basins of consumption of Grenoble and La Mure where the mines prosper. This movement is gaining the Alps from Switzerland (Ricard, 2015). Arbos (1922) lists in 1914 seven dairies on the Matheysine side, then in the 1930s four dairies were created in the Trièves including the Mont Aiguille Dairy (MAD). For Galvin and Benoist (2011): "This micro-industry plays a significant role in the local economy at the beginning of this century, but it is struggling to meet demand" (p. 121).
- 12 On the other hand dairy industries, especially "luxury" industries (condensers) will be established, pay the milk at an attractive price and transform in a few years the production of some regions (Ministry of Agriculture, 1937). The Beaumont is collected by the Briançonnaise dairy a few years before the war (Arbos, 1922), then by Nestlé who settled in Gap in 1929 (Moustier *et al.*, 2010). The Trièves, is collected by the company

Seinturier (05) since 1926. Very early, we thus witness the establishment of external operators on the territory, with processing units outside or on the territory but with the centers of decision elsewhere. This is the case of La Mure dairy, which will go from hand to hand between its installation in 1918 by a Northern company, to the Swiss Nestlé (Galvin and Benoist, 2011). These purchases and expansions of companies go beyond the village context. We can also mention the dairy Mestrallet installed in 1936 in Pierre-Châtel, branch of that of Villard de Lans. Thus, in the inter-war period, foreign capital already arrived in the territory and contributed to the rapid industrialisation of the dairy sector, with national or even international markets (Mediterranean market for Seinturier and colonies in addition for Nestlé).

Interactions between value chains and territories

Product differentiation

- 13 The products are diverse, covering a whole range of fresh products and cheeses. We can note the absence of "specific" products, the cheeses are mostly produced according to recipes from elsewhere, except the Bleu de Lavaldens, the only local cheese, made on farms, which owes its reputation to a maturing in caves⁵. On the other hand, products are developed, brands are registered and some products with recognized quality are sold abroad. We can mention: the Col Vert, registered trademark in 1934 for a blue cheese by Mestrallet; Cholonge butter, reputed by the Grenoble confectioners, exported to England (Berthier, 1939); the condensed milk Berna from la Mure, a luxury item; the Carré du Trièves, artisanal cheese developed in 1954 at the MDA. This valuation is found through labels or packaging, but is not in the hands of producers.

Collective organizations

- 14 Following the milk crisis of 1929⁶, milk producers' unions multiplied in Matheysine (Ministry of Agriculture, 1937), and organized themselves to defend their interests against private dairies. This takes two forms: the creation of dairy unions -DU- and cooperative with direct management. The DU's aim is to represent producers, negotiate prices and establish contracts with dairies (eg the Muroise DU created in 1930). They then have real bargaining power. But that's not enough for some. In 1946, the dairy of La Mure plays only a secondary role for the Nestlé group until the closure of the site in 1955, reduced to a collection center that still collects 16000L/day (when 95% of French dairies collect less than 15 000L/day, Galvin and Benoist, 2011), Fréjus Michon then creates the dairy cooperative that collects milk and sells it to another cooperative in the Grenoble region: Dauphilait (Appendix 1), before integrating it in 1960.

From the years 1955 to 1995: the productivist revolution, white gold flows afloat

Geography of production

- 15 As elsewhere in France, the "modernization" of farms (fodder intensification, more productive breeds, complementation of animals, mechanisation) is accompanied by a sharp decrease in the number of farms⁷. This "productivist revolution" (favored in the Trièves by a control area⁸) led to overproduction of milk at the national level and the

introduction of milk quotas in 1984, leading to another wave of restructuring. 43% of Sud-Isère farms disappear between 1979 and 1988 (Table 1). Through the expansion of the remaining farms, the volume of milk remains constant. Dairy specialisation is increasing, a phenomenon reinforced by the disappearance of the agriculture-mine activity in Matheysine⁹.

Table 1: Evolution of the number of farms with dairy cows (DC) and DC according to agricultural censuses between 1979 and 2010

	Number of farms				Number of dairy cows			
	1979	1988	2000	2010	1979	1988	2000	2010
La Mure	174	84	46	27	2 233	1 713	1 372	987
Valbonnais	71	38	16	8	523	336	221	122
Corps	91	51	18	13	921	608	408	334
Monestier	85	54	32	13	892	849	731	381
Mens	129	82	47	28	1 574	1 507	1 288	1084
Celles	52	35	22	15	757	740	668	486
Sud-Isère	602	344	181	104	6 900	5 753	4 688	3 394

Sources: cantonal data, Agreste

Geography of transformation

- 16 Over this period, the village dairies are closing one after the other, victims of competition, their difficulties to follow standards (especially sanitary standards) and to invest. The Gresse fruitière closed its doors in 1970, the last dairy in Cholonge in 1995. This was accompanied by the loss of family know-how and cheeses. At the end of the period, only remains the MAD in Trièves, still active today. Industrial operators collect then the producers. There are two trends in the 70s, the producers who join: the great cooperative Dauphilait became Orlac (Appendix 2) led by Fréjus Michon; private enterprises of regional size: Mestrallet (7000L/day picked up in 1976), Seinturier (5000L/day according to Beaup, 1977).
- 17 Two national groups come after into play: Besnier (now Lactalis) and Danone. Besnier bought in 1989 the Dairy of the Alps (ex-Seinturier in Gap) as well as Fromalp (company of the son-in-law of Mestrallet who had taken over the business). It closes the cheese factory of Pierre-Châtel. In competition for the acquisition of the Dairy of the Alps, Danone approached producers, and also arrives in 1989 in Trièves. At the end of this period Orlac is the most present and collects half of the milk, when Lactalis and Danone share the rest.

Interactions between value chains and territories

- 18 The competition between Danone and Besnier brings the producers to regroup in a DU (about 60 farmers) to make weight in the negotiation. Besnier finally got a third of the milk and half of the producers. But this effect "competition" in favor of producers will not last, as said E1: "We had really a plus at that time, it raised the bidding. All that unraveled then". On the Matheysine side, the producers were confronted with the fait accompli of the sale of the Mestrallet dairy to Besnier. Those who were not yet in a DU created the Pierre Percée DU in 1989, which negotiates a single contract for everyone and 1% of the price goes to DU's treasury. Besnier then "courted" the producers, the conclusion is the same: "It was really good years. [...] Ah yes, at the time, on 2 francs per liter we had to earn 20 cents more. I even think I'm below. But it did not last too long" (E2).
- 19 Thus, at the end of this period, almost all the milk collected in Sud-Isère leaves the area to be processed into generic products, without highlighting its origin, by the three largest national dairy groups. Concerns are emerging as to the region's submission to external imperatives (Guibourdenche, 1986).

From 1995 to today: control by national industrial groups and search for alternatives locally

Geography of production

- 20 The volumes that had been maintained around the dairy reference of Sud-Isère: 22 million liters (ML), will decline from the milk crisis of 2009. It is no longer just small farms that stop but also large ones (some at 1 ML). In 2016, 48 farms only deliver 18 ML. Some keep on increasing and move to milking robots, others diversify to try to better value milk and escape the stranglehold of industries, leading to a burst of production models.
- 21 Various studies of the Chamber of Agriculture from the year 95 question the perspectives (Busson, 1995, Hermier, 1999): on-farm processing or a local unit; organic milk production; recognition of a "mountain" milk; etc. A survey of producers shows that for 45% the future passes through the dairies, following the dominant model and that they appreciate the security offered by these industrial operators, while the commitment in other models seems to them risky. The first conversions to organic farming take place in the 2000s, without specific milk collection. After a first unsuccessful attempt in 2010, for lack of sufficient volumes, a collection by Biolait¹⁰ is set up in 2016 (on Sud-Isère and Hautes-Alpes), corresponding to about twenty farms for 3.5 ML expected by 2019. According to the Agence Bio, we went from 9 organic farms and 155 cows in 2010 to 14 farms and 630 cows in 2017, although today, according to our surveys, a threshold seems to be reached.

Geography of transformation

- 22 In attempts to better value milk, producers are looking to put in place or recover processing units. We can quote the attempt of the Valbonnais cooperative, on the initiative of Charles Galvin (dairy farmer in Valbonnais, engaged in various instances to defend the mountain agriculture), to produce a fermented yogurt with therapeutic

properties, the "K-philus" (Developed by Ms. Klein-Lecat in the north of France), to value all the milk of the canton. This approach lasts only two years (1997-1999) for lack of sufficient outlets. Another attempt was made by producers to take over the MAD¹¹ in 2012, which did not succeed.

- 23 Evolutions are also at work on the side of large groups. Most of the milk collected in Sud-Isère goes to supply the sites of Lactalis and Sodiaal (formerly Orlac) in Gap, and from there the south of France. The two operators have set up a collection agreement so that there is only one collector. In 2011, the Lactalis unit in Gap closed, and in 2015, Sodiaal sold its factory to La Fermière¹², a historic client (FranceAgriMer, 2018).
- 24 These agreements between "big" do not always leave room for newcomers who would change their positions, as Biolait. Sodiaal has indeed decided to finally set up an organic milk collection to keep its producers.

Interactions between value chains and territories

- 25 The weight of the Sud-Isère collection is decreasing for downstream operators, and is found drowned and mixed with the collection of other areas. In 1999, Hermier noted that the Lactalis collection of 7ML accounted for one third of the total collection for the Gap site, whereas in 2016 it falls to 4.8ML on 24ML in Gap for La Fermière, or 200ML in Rodez (where Lactalis concentrates its mountain milk), or 400 ML if it goes to the Sodiaal site at Vienne.
- 26 To face, the DUs join but have no power against the increasingly powerful industrial groups: "we have made producers' organisations -PO-, but in fact a PO within a dairy has only that client, and so no power of decision" (E1). For one of the interviewees, the change occurred at the death of Mr. Besnier in the late 90s: "he died suddenly. Afterwards, a new policy was put in place when it became Lactalis. They have done everything to break the collective contracts, and have a total control over the producers, individually" (E2). The purchase of the Gap site by La Fermière, towards which conventional production is directed, prompted producers to question: "there is a customer, there is a demand, Sodiaal sells at a good price, so producers want to get their 'piece of the pie', but in structures like this, it's not that simple" (E1). The producers of Sud-Isère have met their counterparts from the Hautes-Alpes to see what it would be possible to do together, but "Sodiaal never lets it down".

Discussion: the confrontations to histories

- 27 The adopted approach makes it possible to better understand the current situation from past evolutions, by both confrontation with one's own history and others. It makes it possible to identify the possible brakes or levers by identifying the changes of scale and the mechanisms that led to these forms of distance between value chains and territories.

Confrontation with one's own history

Change of scales and process of distancing

- 28 For a value chain to be maintained, it must rely on a minimum production of raw material, a network of actors covering the whole value chain, with profitable processing unit. In the absence of the latter, the territory falls back on a simple "production basin" by nature more fragile (Moustier *et al.*, 2010), which is now the case of South-Isère. If initially the geographers distinguished five regions, from the second period it reduced to two regions (Trièves and Matheysine). Today, Sud-Isère is associated with the Hautes-Alpes in a collection basin, the last before the Mediterranean. While history shows that Trièves and Matheysine have had disjointed dynamics, downstream operators now think of Sud-Isère and Hautes-Alpes jointly. The relevant scale no longer seems to be Sud-Isère and moves away from it. The process of distancing has taken place over time, as we have seen, with a gradual remoteness of decision-making centres and a growing dependence on external imperatives (processing units managed from elsewhere or leaving the territory; collection and sale of milk between operators, use of milk by processors who do not collect it and without direct links with producers, higher weight of industrial interests compared to cooperation, lack of territorial valorization of milk, dispersion and loss of power of POs through individual contracts).

Men's weight and territorial dynamics

- 29 The presence of the mine in Matheysine is often mentioned by respondents to explain the lack of territorial dynamics around milk production, and the difficulty of working together for Trièves and Matheysine¹³. The absence of dairy and cheese farming traditions has led Sud-Isère to become involved even more quickly in generic dairy sector. Village dairies, owned by private individuals, have not been linked to a process of appropriation of the products, by other actors of the territory, around an identity. And the cooperative Orlac quickly grew under the influence of Fréjus Michon¹⁴. This local figure pushed the direct management of cooperatives, but also oriented agricultural development on "mass production", producers identifying more with their operator than their "terroir". The territory has been strongly impregnated with this agricultural model, from the plain¹⁵.
- 30 Other actors have been involved to avoid the end of milk in Sud-Isère but have (had) trouble launching a real dynamic. Sitadel led the reflections on the future of milk and worked to set up an organic collection. Charles Galvin (R1), another local figure, worked at different political levels for mountain farming¹⁶. But locally he was not followed: "I saw the difference with the Savoie. In Isère, we once had people like Michon who were precursors, they created powerful cooperatives. They were making buses to visit the factory in Vienne. My mother had gone there: 'it's great'. A guy had explained to them: 'here is your factory, produce, produce, we take care of the rest'. It was the state of mind of the moment. And we are still on this vein, we have not come out. [...] We have done beautiful things elsewhere, but in the end, here, nothing" (R1).

Confrontation with other histories

Convergences and divergences

- 31 The diachronic approach allows a confrontation with the evolutions of other dairy basins (Napoléone *et al.*, 2015) and to specify the specificities, the bifurcations, and thus open to other futures. During the exchanges with the dairy producers, these comparisons were always very present, whether they concern Savoy or near Vercors. The latter, in the early 1990s, was in a situation similar to that of Sud-Isère: Lactalis and Sodiaal collected almost all the milk (Madelrieux and Alavoine-Mornas, 2015). The Vercors then focused on a territorialized agricultural development around the Bleu du Vercors-Sassenage cheese, a cooperative in direct management (Vercors Lait), tourism, local consumption basins (Grenoble, Valence). Developments in the Sud-Isère are closer to those of the Hautes-Alpes (Moustier *et al.*, 2010) with a rapid industrialisation of the dairy economy. Ricard (2018) distinguishes well in the South-East: the territories with high-value mountain cheeses, and the dairy territories of the agricultural revolution to which he connects several mountain basins (including Trièves and Matheysine), which have become secondary dairy cores "by lack of competitiveness, distance from factories and lack of dairy 'atmosphere'. They then gradually become margins that disappear" (p.13).

Reduced differentiation capabilities

- 32 Lockouts are important because of the dominance of powerful industrial groups, which do not easily leave room for new operators or initiatives. The "mass production", long profitable, also explains the lack of interest of the producers for proposals which aimed to re-locate the production and to differentiate it: the AOP Bleu du Vercors, the Pavé Dauphinois (Mr. Guilloteau wanted to settle in the Trièves and make his cheese, but he finally settled in the Loire and renamed his pavé "d'Affinois"), PGI (Protected Geographical Indication) St Marcellin (there was an opportunity during the elaboration of the PGI), the "mountain milk" whose idea was recovered by Lactalis according to Ch. Galvin. Various attempts of settling process unit managed by farmers have also been tried, without success, as we have seen.

Conclusion: what "local" to activate for the South-Isère?

- 33 The decline in volume may continue. Even if it remains significant, close to the Mediterranean consumption basin, there is little doubt that the collection could be questioned by the three groups (Sodiaal, Danone, Lactalis) for reasons of cost rationalisation: collection costs too high, tendency to decline in production, winter obstacle in the mountains, distance from processing units. What are the prospects then? Forney and Häberly (2016) show that "local", in initiatives involving milk producers, can be constructed as: "provenance" (the origin of the product qualifies it, in no way its characteristics, it can be a standard product); "origin" (the specificity of the place, its attachment to a tradition or identity, qualifies the product); "proximity and solidarity" (the networking of producers, their links and those to consumers are put forward). But in the Sud-Isère we are in the presence of collectives with different

visions: a "historical" a-territorialised vision where volume makes the income; a vision of solidarity around organic farming; a vision "between provenance and origin" linked to on-farm processing and direct selling. Farmers also evoke the creation of a collective processing unit or a brand (milk from mountain, Drac, Napoleon road, etc.). Even if a label can be a valuable tool (eg the recent label milk from "mountain hay" initiated in Austria), its interest lies above all in its social and territorial construction. However, the absence of a convergent vision, of collective identity or even of a leader penalises the territory, also restrained by the major dairy operators.

- 34 Will there be a reversal of history, as there have been others in the French mountains? Beaufort in the 60s or Laguiole in the 80s were for Moustier *et al.* (2010) in much more desperate situations. In the history of Sud-Isère appeared in 1930 an episode where the municipality of La Mure decreed the need to "create municipal dairies" with a milk sales service cheaper than the national average price (Galvin and Benoist, 2011). Should not this idea of 'territorial' dairy be reactivated, where milk production could be seen as a common good, both important for feeding people, for mountain landscapes and their biodiversity, for employment? We join Moustier *et al.* (2010): PDO is not everything and the role of men is much more decisive than the label itself. Other examples show that producers can manage to regain control and innovate without necessarily going through PDO approaches (Madelrieux *et al.*, 2018). The role of local actors, their ability to question and innovate will be decisive for the future of a dairy South-Isère.

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APPENDIXES

Appendix 1: birth of Dauphilait (from Martin-Noel, 1962)

Until 1937-38 the Grenoble dairy consumption had products from the region; the milkman passed through the floors with his bucket and his "ladle". This milk, coming from communes around Grenoble, was transported in drums by trucks or buses which deposited them in the three dairy centers of the time. Local manufacturers shared the market, organizing somehow the sale of raw milk, which was not under any control. In 1941, the extension of the city of Grenoble and the requirements of food hygiene led health services to make pasteurization of milk mandatory. Producers decide to organize themselves to collect, process and distribute milk from their farms. Under the impetus of Mr. Berthoux, they create March 21, 1942 the "Dairy Farm Company", which will become Dauphilait. This formula, which was similar to that of "fruitières" of Savoy, was to allow producers to control the processing and marketing of products without the burden of economic management. But the results quickly appeared insufficient, against which they could not control the validity of the manager's industrial imperatives. Almost ten years passed thus, after the foundation of the S.L.A ; Then, thanks to the formation of a new agricultural elite and under the impetus of Mr. Génin,

a farmer in Saint-Pierre-de-Mésage, the producers decided to insure themselves all the industrial and commercial operations. corresponding to the treatment and sale of their milk. Thus was born on November 1, 1951 Cooperative Agricultural Laitière of the Grenoble Region, better known under the trade name of Dauphilait. In 1962, the cooperative brings together 3942 producers from 140 municipalities around Grenoble. Every day 70,000 to 85,000L of milk arrive at the factory to be transformed into different dairy products (pasteurized milk, Swiss puffs, cream, butter, yogurts). Dauphilait refueled fresh dairy products 2/3 of the population of Grenoble and its suburbs. For out-of-department sales, it has grouped with the Lyon and St Etienne cooperatives whose sales make it possible to secure new outlets and expand into 21 departments. Dauphilait also supplies 70% of the total bottled sterilized milk exported from France to New Caledonia, Guyana, Guadeloupe and to the territories of the former French community.

Appendix 2: from Dauphilait to Orlac to Sodiaal (from Martin-Noel, 1962, Dänzer-Kantof *et al.*, 2012)

The increase in milk production and the evolution of the market led to three regional cooperatives (founded between 1945 and 1951: the La Rosière cooperative in Lyon, the Union of Saint-Etienne cooperatives, the Dauphilait cooperative in Grenoble). pool their financial resources for the implementation of new industrial means, capable of expanding their markets both nationally and for export. A new union: the Regional Cooperative Agricultural Milk Union (URLAC) was created in December 1961 under the chairmanship of Mr. Génin (president of Dauphilait). It is decided a major industrial investment in Vienna. This processing plant began to operate in 1965. The vocation of the plant is to ensure the supply of the south-east of France in full demographic expansion and Italy nearby. The high-capacity factory (800,000L / day) produces fluid milk, sterilized milk, yogurts, and butter. After a period of transition during which each cooperative retains its own legal entity within the URLAC, the merger into a single organization (O.R.L.A.C.) is carried out in early 1968. This giant cooperative has 11,353 members. Its milk collection increased from 156 ML in 1966 to 241 ML in 1971. In the same period of time, its turnover doubled and reached for the financial year 1970-1971 the sum of 234 million francs. Since its creation, Orlac has decided to focus mainly on fluid milk and fresh products, but, in the face of economic imperatives, it is teaming up with other cooperatives to better address the market. This is how S.O.D.I.M.A. is born. (Trademark Broadcasting Company) which brings together Orlac and five other major French cooperatives, which centralizes the research, design and launch of new products, while the various cooperatives retain their prerogatives of collection, manufacture and distribution. Sodima launched two national brands: "Yoplait" in 1965 for fresh products and "Candia" in 1971 for fluid milk. In 1972, after Genin's resignation, Fréjus Michon took the presidency of Orlac, which he kept until his death in 1987. That same year, Orlac had 7,000 member farmers, collecting 10% of French milk, and the Yoplait brand is present in more than forty countries (de la Fayette, 2005). In the wake of Sodima, in 1990, Orlac sold its milk processing and marketing activities to Sodiaal. It retains all "upstream" activities related to members (milk collection, technical support, etc.). Orlac collects 471 ML of milk from 3,300 producers in 16 departments, and collects milk for Sodiaal from 1990 to 2007 before blending into Sodiaal Union. Initiated in 2000, the group's reorganization culminated in 2007 with the

merger of the regional cooperative unions into a single entity, and the creation of milk basins that sometimes required the consolidation of several dairy regions.

NOTES

1. This work is part of the For and Regional Development program, funded by INRA, the Rhône-Alpes Region, Irstea and the European Union via the EAFRD within the framework of the Partnership. European for Innovation. The project was in partnership with the Sud Isère Agricultural Land and Local Development Association (Sitadel), whose objective is to integrate agricultural activity with the development of the territory with the local authorities. The organizer of the association is an employee of the Chamber of Agriculture) and in connection with Isère Conseil Elevage.
2. "Great Road" from Grenoble to Gap; railway: from Grenoble to the Mediterranean (1878), St George de Commiers to La Mure (1888).
3. The history of Matheysine is marked by the presence of anthracite mines that were exploited until the mid-1990s.
4. It favors dairy cattle, as compared to small ruminants, which would degrade mountain cover less, limiting erosion and landslides.
5. It will disappear in 1995 with the last producer (Busson, 1995).
6. At the end of the 1st world war, the milk is lacking, the producers complain of too low price, threatened by inflation, the periods of scarcity and surplus punctuate the inter-war period.
7. Eg. in the Trièves, from 1346 in 1955 to 540 in 1976. Milk yields range from 1800 to 5100L/DC/year (Beaup, 1977).
8. To "catch up", control areas were set up in 1952 in France (officially "Productivity Groups"), including one in Trièves, offering subsidies, repayable loans, intended for the purchase of seeds, fertilisers, livestock, collective or individual equipment (Masseport, 1953).
9. The first announcement of the closure of the mine takes place in 1968. The activity will then decline until the closing of the last shaft in 1997.
10. Company of the social and solidarity economy, Biolait was created in 1994 on the initiative of 6 Western producers, choosing to create their own collection and trading unit to structure the milk organic sector without excluding regions.
11. The MAD was run by the son-in-law of the founder, Mr. Cian, until 2003, when he sells, not wanting to bring the company up to standard. It was bought and managed by Mr. Zaza from 2004 to 2012, who moved to Clelles in 2007 on the RN75 (Grenoble-Sisteron) on a more accessible site, with a retail store. He expanded the range of products and set up an organic range in 2008. But the investment was too heavy and the dairy is put into receivership in 2012. It is then taken over by Mr. Girod, who buies milk to Sodiaal for conventional milk and Biolait for organic milk.
12. Agro-food company created in 1952 in Aubagne (13), specialising in upmarkt yogurts and dairy desserts. La Fermière already absorbed more than half of the 24 ML of milk collected from the 300 producers of Sud-Isère and Hautes-Alpes. Gap becomes its second production site.
13. According to one of the former agricultural advisers (C2): "In Trièves: agriculture was essential, not in Matheysine, there was the mine. It was difficult to make them work together". According to a farmer, "people have not been poor enough to really want to try out collective dynamics to get by". The Matheysine even refused an Olympic Games event in 1968!
14. Fréjus Michon (dairy farmer in Matheysine) will occupy throughout his life a large number of responsibilities in professional organizations at local, regional, national scales. In 1972, he became president of Orlac, the first president of the national interprofessional milk board in 1983. To quote La Fayette (2005): "He never ceased to commit himself to this peasant world. He wanted to help move agriculture from an individual state, now condemned, to one of

mutualisation and solidarity that was to save it. He liked to say that for the modern farmer unionism was the sword and the mutualism the shield and that farmers should not be left alone" (p.5).

15. For R3: "It was hard not to be in the cooperative, you were an outcast. You were the guy who played individual against the collective. The cooperative, for them, was the future. With it the farmers had the power. Fréjus Michon, I think he believed in it, he was in it. Except that the following has shown the limits.

16. He was president of the Departmental Federation of Agricultural Traders' Unions and in the council of the National Federation, president of the French Federation of Mountain Economy, and as such contributed to the preparation of the Mountain Law. He was Regional Councilor, Vice President of Agriculture. He created Euromontana (from the European Confederation of Agriculture).

ABSTRACTS

With the end of milk quotas, mountain producers find themselves in direct competition with all dairy producers. This reinforces the need for mountain areas to stand out from lowland areas to avoid frontal competition over mass productions. But some mountain areas, engaged in this mass production are worried, this is the case of Sud-Isère. In order to reflect on the future of dairy production in this mountain area, various stakeholders came together to question possible futures in the framework of an action research project. Interactions between the geography of production and the geography of processing, particularly the forms of interactions between dairy value chain and territories, and their evolution over time were questioned. Based on: i) an analytical framework combining works on territorial embeddedness and processes of change; ii) a system combining historical research, statistical data, field surveys and a number of meetings in the area, notably around a knowledge sharing during a workshop "historical frieze", we analyze the successive forms of embeddedness and distancing between dairy sectors and territories in the Sud-Isère. We discuss what they might be in the future, particularly by confronting the dynamics of other dairy basins.

INDEX

Keywords: dairy value chain, middle mountain, territorial embeddedness, Matheysine, Trièves

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