



The Social Construction of Quality in Agri-food Localized Systems (SYAL): The Case of the Montpeyroux Wine Arrangement, France

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Abstract. The approach based on localized agri-food systems (SYAL, from the French acronym) has brought about new perspectives for analysis of local productive arrangements, complementing and expanding the theoretical background of clusters and industrial districts. In addressing physical, institutional, cultural and relational factors, SYAL's approach has enabled a more dynamic view of the processes underlying the creation, resilience and evolution of these arrangements. However, studies on this topic have only focused on some of these factors. This article aims to analyse how these factors interplay and are integrated into the consolidation of productive arrangements focused on improving the quality of local products. To that end, a case study was conducted in a wine arrangement in Montpeyroux, Southern France, which found synergies, complementarities and a reinforcement process involving these factors in the genesis and configuration of the arrangement, thus showing that methodologies that consider them in an integrated way can provide a better understanding of these arrangements in general and further strengthen SYAL assumptions.

Introduction

The trend towards standardization of agricultural products driven by globalization has prompted a counter-trend of valuing products typical of a territory where the social construction of their quality turns out to strengthen economic activity and to be a competitive advantage in domestic and international markets (Goodman, 2003; Bowen and Mutersbaugh, 2014). This process takes place by means of innovations in production models that have changed from a productivist perspective towards a quality-driven rationale. Such models seek to value a territory and to meet a diversified demand for products that stand out for their contributions to environmental, social or cultural issues (Allaire and Sylvander, 1997; Schermer et al., 2011).

Hence, local clusters have increasingly become drivers of this differentiated production model that has found in collective action the primary factor driving the territory's tangible and intangible resources. In order to address such complexity,

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approaches based on a agglomeration of activities, localization, local assets and the individual action of firms that characterize the theoretical approaches to industrial districts (Marshall, 1891) and clusters (Porter, 1993, 1999) were complemented by theoretical contributions from the new economic sociology centred on actors' actions and networks (Chiffolleau and Touzard, 2014). The territory that was once seen as a mere substrate for the optimal combination of resources has come to be considered a kind of organization endowed with its own reproduction and development rationales (Pecqueur, 1996). The productive space formerly characterized as a generic resources reserve that can be appropriated, imitated and transferred in an open market came to be understood as a structure focused on the ongoing construction of specific resources and capabilities (Veltz, 1993). Analysis of productive arrangements building on this complexity came to constitute a new approach called localised agri-food systems – SYALs, *systèmes agroalimentaires localisés* (Boucher, 2006; Muchnik et al., 2008; Poméon and Fraire, 2011).

The SYAL approach appeared in France in the mid-1990s, when CIRAD researchers were seeking for a more specific framework to analyse the crisis of Latin American and African countries with regard to the food and environmental challenges faced by agri-food systems in these countries (Boucher et al., 2006). SYALs are defined as 'production and services organisations (units of agricultural production, agrifood enterprises, markets and stores, restaurants, services) linked by their characteristics and by their relationship to a specific territory' (Muchnik, 2009, p. 1). Thus, in the SYAL dynamics, the territory, products, actors and their institutions and know-how, food habits and networks would combine to produce a specific form of agri-food organization (Boucher and Reyes Gonzalez, 2013).

Within the scope of productive arrangement studies, the SYAL approach has been mobilized as a concrete object – that is, a visible set of activities over territory – or as a method to support the development of rural territories (Muchnik, 2009). Theoretically, the SYAL is a three-pronged approach: the concentration of agri-food companies in a given territory, building on the notions of clusters (Porter, 1999) and industrial districts (Becattini, 2003); quality scheme and certification of origin as 'distinctive signs of quality' assigned to a place; and the application of SYAL concepts toward the development of rural communities (Boucher and Reyes Gonzalez, 2013). The central assumptions that characterize this approach are intrinsically territory driven (Grass-Ramírez et al., 2016) as follows:

- territorial anchorage of products: production is carried out exclusively in defined geographical spaces;
- collective action in the territory: as a means that prompts the activation of territorial resources;
- the link between the quality of the product and the territory: the notion of terroir or place-linked quality;
- constitution and conservation of territorial patrimony: the historical recognition and symbolic value of agri-food products.

The most distinguishing feature of the SYAL approach in relation to the other productive-arrangement approaches is its focus on the local actors' capacity to activate territorial resources. According to Grass-Ramírez et al. (2016, p. 68):

'The most relevant feature of SYALs is their capacity to identify in the territory those resources (intrinsic and extrinsic) that are adequate to be activated through processes of collective action, which translates into an increase

in the ability for interaction between various actors that inhabit the territory, a higher institutional presence, revaluation of the patrimony, increase in the competitiveness of rural agroindustries (RA), through strategies of product differentiation, as well as the development of a set of positive externalities for the local agrifood system.'

According to Sanz Cañada and Muchnik (2011), the interdisciplinarity and multidimensionality that characterize the SYAL approach are not previously set; instead, they build on the objects of study being analysed, which calls for distinct and complementary views. Therefore, analyses based on this approach involve a different typology for categorising ties between actors, products and territories involving those related to the natural (biophysical) patrimony; those referring to cultural patrimony (lore, identity and so forth); and those relating to socio-economic and institutional networks (Sanz Cañada and Muchnik, 2011). These ties or relations are the foundation for the social construction of quality in the territory. The concept of socially constructed quality is dynamic, in that it encompasses a process that is continually subject to change and adaptation, mobilizing elements such as authenticity, health, tradition, tastes and collective platforms¹ that are negotiated continuously in the scope of the actors' networks (Winter, 2003). Alternatively, as contended by Ilbery and Kneafsey (2000), quality is a notion that is built by actors in an attempt to develop stable and lasting networks between themselves and others within the market arena.

In addition to the multidimensionality of the factors under analysis, the SYAL approach also has a multidisciplinary character, since it involves perspectives that span several sciences, such as economic geography, economic anthropology, neo-institutional social science and sociology of agriculture/food systems (Muchnik et al., 2008; Bowen and Mutersbaugh, 2014). This breadth and multidisciplinary, however, constrains the approach as regards the construction of a more delimited theoretical body or the choice of a single methodological tool that can be adopted in the analysis (Touzard, 2007; Torres Salcido, 2012). To Muchnik and Sautier, two key SYAL scholars, the SYAL approach is a theoretical body that is still in the development and construction stage, thus making it susceptible to being improved by new research methodologies, empirical experience and theoretical debate (Grass-Ramírez et al., 2016).

Despite these challenges, analysis of productive arrangements based on SYAL has provided new research perspectives that are applicable to the spatial organization of farm and livestock production, rendering it possible to assess how this organization is shaped, persists and evolves. This approach adopts a dynamic view of productive activity by acknowledging that a territory's tangible and intangible resources evolve based on the relations governing this territory, concentrating on analysis of the interaction and interdependence between the actors handling these resources. Among the elements considered in these analyses are factors associated with the physical milieu and institutions, with cultural or cognitive aspects, and with the actors' relations. Although the SYAL approach has been increasingly adopted in the study of agri-food arrangements, analysis has only focused on some of these factors, as there are very few studies that seek to integrate them in the analysis of a given object of study.

Accordingly, the aim of this article was to enter into a dialogue with SYAL's theoretical approach for understanding how physical, institutional, cultural and relational factors interact in the construction of a productive arrangement.² To this

end, we have selected a quality-oriented wine productive arrangement situated in Montpeyroux, Southern France. The research was conducted from September 2011 to January 2012 in 15 private vineyards and a cooperative that brings together 120 small winegrowers producing terroir wines.³

The text is organized into three parts. In the first part, we present the theoretical/methodological approaches and the procedures adopted in the research. Next, considering this framework, we analyse and discuss the factors that have contributed to shaping the Montpeyroux arrangement. In the last section, we discuss the interdependence of these factors in the origin, shape and persistence of this arrangement aiming to understand potential synergies and raising clues for studies using this approach.

Theoretical/Methodological Framework

Productive Arrangements and Their Dynamics

The competitive success of an arrangement depends on a set of factors not limited to localization or concentration of similar and complementary firms. This concentration is an outcome not a cause. In this sense, dynamic territories exhibit features derived from their historical and institutional contexts, as well as from local assets and relations between actors, which set platforms for action (Bagnasco, 1999). In SYAL, the territory is a historically and socially constructed space that is culturally characterized and institutionally regulated, where the effectiveness of the economic activity is influenced by relations marked by closeness and a sense of belonging (Muchnik, 2009). Thus, the territory is viewed as a set of factors and as relational space for its inhabitants, or even as unique social fabric shaped by natural resources, forms of production and market, while networks bring cohesion to its elements (Sepúlveda et al., 2003).

This space stems from market relations as well as from forms of cooperation based on trust (Pecqueur, 1992). In it, a territorial logic is based on valorizing local products with respect to their tangible (physical, productive) and intangible (tacit knowledge, norms, conventions, traditions and relational networks) assets (Perrier-Cornet and Sylvander, 2000). As regards governance structures (Williamson, 1985), territories and their products, if considered from a SYAL perspective, do not even fit in a conventional hybrid form (markets and hierarchies), since they are, characteristically, a form of governance that is external to the firms, situated within the regional institutional framework.⁴ Therefore, in these productive arrangements, production, market strategies and governance systems are better understood through analytical schemes focusing on their embeddedness in local, institutional, cultural and relational factors (Polanyi, 1983; Granovetter, 1985; Le Velly, 2012).

These forms of governance emerging from a territory can lead to innovation, which, in turn, benefits from the locality and its dynamics. It also provides the creation of decision-making and deliberation spaces, interinstitutional coordination via collective platforms, the development of the market and quality-focused strategies and new processes, building on the territory's specific resources (Boucher and Reyes Gonzalez, 2013). Hence, the combination of physical, institutional, cultural and relational factors in a territory 'constructed' by local actors may lead to the creation of baskets of specific goods and non-transferable territorial income (Bonnal et al., 2008). In these territories social actors seek to establish an image or a specific reputation

for their products, prioritizing specific markets and adopting a product differentiation strategy hinged on a 'club' rationale (Mollard et al., 2001; Pecqueur, 2009; Mascarenhas and Wilkinson, 2014). These territories are not, however, spaces exempt from relations of power. Conflicts may occur both in the collective and individual spheres. In the first, started by 'self-interested' groups seeking to impose standards onto the others and, in the latter, through strategies of individual differentiation and competition, as well as in the context of human relationships involving asymmetry of power, inequality and discrimination, among others (Feldman and Welsh, 1995; Hinrichs, 2000; Sayer, 2001). At the collective level, relative to the economic activity itself, defensive localism and clubs can characterize strategies designed to promote the local value, while seeking monopoly-driven incomes and creating entry barriers or artificially raising prices (Winter, 2003). Thus, the territory is not viewed here just as an environment of cooperation characterized by social capital, embeddedness and unifying collective platforms. Instead, it is considered as an arena where values, norms, institutions and the construction of quality are constantly negotiated, in a context where there are attitudes of collaboration and competition, imitation and differentiation, and conflict (DuPuis and Goodman, 2005).

Research Assumptions

In this work, we have sought to analyse the influence of the factors –physical, institutional, cultural and relational – on the origin and shape of the Montpeyrroux wine arrangement. This categorization was adopted to better determine, in the analysis, the influence of some proxy factors, yet without assuming any independence or anteriority of a factor over another; rather, the assumption is that they are interdependent. The four categories of factors considered in this study and their proxies were based on the authors' observations during field research and on the literature analysing the SYAL approach. This does not mean that these categories should be regarded as exhaustive or ideal, a task that would require more thorough research and a specific scope.⁵ What we intended here was to conduct an exploratory analysis of these factors that may be rejected or verified in future research.

The physical factors considered were those concerning the production environment such as the soil, type of grape, climate, localization, clustering and other landscape and natural elements that may influence, to different degrees, wine production and quality, contributing to the existence of a specific terroir. These factors may constitute constraints or opportunities, drive production strategies and have spatial and temporal influence.

Institutional factors, in turn, are related to the contingent nature of the economic action and their main effect is situated in the realm of the formal and informal rules governing it. Accordingly, we have opted to analyse the influence of rules and regulations on the production models and qualification strategies, public policies supporting the activity, technical know-how and the market.

As regards cultural factors, they reflect the whole set of collective representations, such as mental systems of perception, as well as the shared values that constitute local collective platforms. Cultural factors express, therefore, the role of collective signification in the making of the actors' goals and strategies, as well as of their motivation to cooperate or compete (DiMaggio and Powell, 1983; DiMaggio, 1997). Hence, we analysed variables such as identity, quality- or terroir-related strategies of action, motivation towards the activity, and the mobilization of tacit knowledge.

Relational factors were analysed through the adoption of the social networks approach, considering the ties between actors to form a type of relationship (actor–actor networks) or the actors' participation in some event or institution (affiliation networks). Here we discuss actor–actor networks focusing on features reflecting interpersonal relationships such as trust, advice and partnership (DiMaggio, 1997). These relational factors were mobilized building on the assumption that individuals in productive arrangements are not atomized, but develop and nurture personal relations and ties of friendship, advice and partnerships that are usually recurrent (Granovetter, 1985; Borgatti et al., 2013). Thus, trust networks act as mechanisms designed to facilitate the exchange of personal information, while ties of advice enable the transfer of refined information and the circulation of tacit and expert knowledge regarding the activity. Networks also render it possible to establish problem-solving arrangements that are conducive, at the individual level, to the building of partnerships and, collectively, to the construction of common platforms (Uzzi, 1996).

Collective action, reflecting platforms or models of production and qualification, was analysed through an affiliation network, involving relationships between actor and model/platform (Aguiar, 1991; Mascarenhas, 2007). In affiliation networks, analysis shifts from interpersonal relations to engagement by these actors in building or strengthening collective platforms. These platforms, when geared to specific territorial goals – for example, to promote a local differential – need, in turn, leaders who can convey this idea and become a reference and a source of constant motivation for the others, developing what was termed by Latour (2005) an actor-network role.

To analyse relations between actors in the Montpeyroux arrangement, some network metrics were adopted seeking to assess the degree of institutionalization or social capital of the arrangement (density, reciprocity) as well as the existing power relations (centralization, influence, prestige). In relation to these metrics, we know that the density of a network expresses the number of ties between actors as a proportion of total possible ties should all actors interrelate. Denser networks exhibit a greater level of institutionalization and actors' social capital. Reciprocity, in turn, measures the degree to which, in a relationship between two actors, there are reciprocal exchanges. Power relationships in the network are important to show the extent to which certain actors can influence the behaviour of other actors. These relationships can be measured, among other means, by indicators relating to the different types of centrality. For example, the degree of centrality reflects to what extent actors exert influence ('out-ties') or command more prestige ('in-ties') than other actors and, therefore, become key behaviour modellers. The degree to which a given actor is a node for other actors' ties reflects its level of centrality and can determine constraints, interfere in the exchange of information or condition relationships between actors whose ties depend on the central actor.

In this research, we also adopted the network approach to analyse relations across factors in the territory. This procedure is hardly usual, since this approach generally addresses social, therefore human, relations, except in rare studies (Lara-Rodriguez, 2012; Palacio, 2015). The option to use this approach to analyse the interplay between human (relations, culture, institutions) and non-human (physical) factors was prompted firstly by the consideration that the latter may exhibit agency. In that, even though dispossessed of 'will and intention', they condition or influence the actions of human beings in a territory (Latour, 2005). Accordingly, we built a matrix in which the same variables are in the columns and lines (m-by-m), with the assumption of an

asymmetric behaviour among them, i.e. if x influences y , it is not assumed a priori that y influences x . The design of the proxies of the factors and the analysis of their relations was developed from information obtained in the research, from structured observation of the authors in the territory and also based on the knowledge available on the relationship between these variables.⁶

Research Procedures

The choice for the Montpeyrroux wine arrangement as our case study was prompted by its peculiar configuration, involving, on the one hand, a specific partnership and, on the other, economic behaviour differentiated in relation to the economic context of winemaking in most of the French regions. In the case of partnership, there were 15 private wine cellars and one cooperative winery partnering around a joint strategy to promote the value of local wines. Generally, private cellars and cooperatives are local competitors. Regarding the economic context, the Montpeyrroux arrangement was characterized by investment strategies and great resilience at a time when French viticulture was facing a crisis, and investments in the winemaking industry were falling, especially in South of France.

The field research was carried out from September 2011 to January 2012 and involved all the local wine producers – that is, we worked with the whole population and not with samples. As far as the cooperative is concerned, we interviewed its board members and president, as well as five of its 120 associates. All the interviews relied on semi-structured questionnaires and specific forms to collect quantitative and network-related data. The interviews were recorded, transcribed and submitted to content analysis (Bardin, 1977) to examine the respondents' explicit and implicit behaviours and visions regarding the factors analysed herein. Content analysis was also important to raise subjective relational aspects not directly captured in the network's forms (ties, relations, points of view), in keeping with the methodology proposed by Grossetti (Grossetti and Bès, 2001; Grossetti, 2006). During the research, we moved to the territory to gain a better understanding of the daily life of the actors, as well as to facilitate structured observation procedures. In addition to the field research, at the end of the interviewing process, a participatory follow-up event was held with the respondents and other local actors to validate the research, to share some preliminary analyses and to complement and amend them where found to be necessary.

Results

History and Production Context

The name Montpeyrroux comes from the Occitan toponym Mont Peirós and means 'rocky mountain'. The city of Montpeyrroux traces its origin to the Roman period and developed in medieval times, as evidenced by the castle that has dominated the local landscape since 999. Located in southern France, 38 kilometres from Montpellier, in the Occitania region, this village⁷ has a stable population of 1,224 people (in 2011), whose main economic activity is the production of quality wines. Present in Montpeyrroux since the Roman period, viticulture extended from the late seventeenth century and established itself as of 1940. With the creation of the Montpeyrroux Artisanal Cooperative in 1950, the local production of wines steadily adopted a quality guide-

line building on a project by former members of the cooperative toward obtaining quality certification for the local production (Touzard, 2011). This initiative was further strengthened when the village obtained the appellation d'origine contrôlée label in 1982, which in turn made Montpeyrroux attractive for the establishment of private vineyards given the local wines' reputation for quality.⁸

In 2011, in addition to the cooperative, there were 15 private cellars⁹ producing quality wines from their grapes. The cooperative receives the grapes harvested (which are classified by type of terroir) by its 120 members and turns them into wine, which is sold at home and abroad (Table 1).

Concerning the characteristics of the actors involved in the wine industry, the average age of the grape growers at the time of the survey was 50.8 years (ranging from 32 to 76 years). Among the members of the cooperative, a larger share of producers was close to 60 years of age, which is likely to constitute an important restriction for the continuity of the activity, as their children do not wish to follow their parents' occupation. Private wine producers must hold a bachelor's degree in the production of grapes and wine. The members of the cooperative (grape growers), in contrast, do not need to have an academic background in grape production, as their activity is restricted to growing the grapes and delivering them to the cooperative. This partial activity in the wine business makes them dependent on the cooperative to wine production and commercialization.

Local grape cultivation extends over 792 hectares, with a production of 31 000 hectolitres of wine in 2012, 80% of which from the cooperative. In this sense, the cooperative has contributed to increasing the local supply bound for other markets, further boosting Montpeyrroux's reputation if one considers the region's installed capacity vis-à-vis the private vineyards' output and winemaking capacity. As regards the quality of the wines, 96.4% of the production of the arrangement can be considered top quality, since more than half of it (53.2%) refers to protected designation of origin (PDO) wines, certified to be from a specific terroir, and 43.2% to protected geographical indication (PGI) wines, produced with other varieties of grapes and/or not meeting the appellation rules.¹⁰

Table 1. Characteristics of the production in the Montpeyrroux wine arrangement, France, 2012.

Item	(a) Private vineyards	(b) Cooperative	Total (a+b)
Nr. of respondents	15	8	23
Grape-growing area (ha)	192.4	600.0	792.4
Beginning of wine production by respondents	1940	1950	–
Installed capacity (hectolitres)	14315	35000	49315
Wine output (hectolitres)	6,275	25000	31275
Average yield (hectolitres/ha)	29.3	41.7	39.5
Wine classification (%)			
• Protected Designation of Origin (PDO)	66.0	50.0	53.2
• Protected Geographical Indication (PGI)	27.8	47.0	43.2
• Table wines	6.2	3.0	3.6

Physical Factors

In the context of agriculture, and consequently in the production of grapes and wine, there are factors related to the environment, localization and concentration of enterprises that have a direct and indirect influence on the production and qualification strategies implemented by producers. Among the first are the characteristics related to soil, climate and topography, as well as the types of grapes, in the case of Montpeyrroux. Similarly, there are indirect factors that, however impalpable, exert actual influence on the perception of quality by consumers, such as landscape and monuments.

Regarding soil, relief and climate conditions, it was found that land productivity in the private vineyards was, on average, 29.3 hectolitres per hectare, which signals a production characteristic of low-yield vineyards, more compatible with the norms for appellation wines (PDO) (Table 2). This feature also justifies the choice made by the Montpeyrroux actors to enhance the quality of their wines at the expense of grape productivity. Similarly, the region's wavy relief (*côteaux*) and the low productivity of its soils favoured the classification of a large portion of the local soil as suitable for

Table 2. Physical factors influencing activity in the Montpeyrroux wine arrangement, France, 2012.

Factor	Meaning	Performance
Soil, relief, water and climate (p_soilcl)	Low land productivity; reinforcement of terroir	Yield in the private vineyards (hectolitres/ha): <ul style="list-style-type: none"> • minimum: 11.3 • maximum: 60.0 • average: 29.3 • standard deviation: 13.1
Landscape and monuments (p_landsc)	Reinforce the image of the region, strengthen sense of terroir, and provide economies of scale through tourism	Mentions to elements of the local environment (landscape, fauna, flora, soils, monuments/landmarks) (%): <ul style="list-style-type: none"> • cooperative: 100.0 • private vineyards: 100.0 • main mentions: Mount Baudille, the ancient castle, the stonewalls, the grape landscape, ancient paths
Localization of production (p_localiz)	Proximity to relevant markets, research centres and transport and infrastructure facilities	Approx. 38 km from: <ul style="list-style-type: none"> • Montpellier wine market • main export distribution channels • research centres and institutions linked to grape and wine production.
Types of grape (p_grape)	Only certain types of grape are permitted in qualification strategies linked to PDO/PGI	Adoption of grape varieties adapted to local edaphic and climatic conditions and in compliance with qualification scheme requirements: <ul style="list-style-type: none"> • PDO Côteaux du Languedoc: 5 types (red) • PDO Montpeyrroux: 5 types (red) • PGI Terrasses du Larzac et Pays d'Oc: 10 types (red and white)
Concentration of enterprises (p_cluster)	Concentration of enterprises linked to the production of quality wines	The concentration of production (clustering): <ul style="list-style-type: none"> • 15 wine producers and 1 cooperative

appellation wines. This was confirmed by the fact that 66% of the private vineyards' production and 50% of the cooperative's production was classified as PDO. Low productivity of the land, undulating topography and climate with wide temperature variations throughout the day also account for the development of terroirs that are suitable for PDO wines. The rugged terrain and the lack of water sources for irrigation near the city also reduce the viability of strategies of production based on high yields such as that of some PGI or table wines whose plantations are generally located in plain regions with better access to water.

Among the indirect factors, the local landscape, the relief and the existing monuments contribute to strengthening the image of the local wines by associating to them to intangible qualities linked to the origin in the consumer's perception and fostering the terroir's message. In the field research, landscape elements were considered by 100% of the producers as assets that reinforce and empower the image of terroir and contribute to the development of ecotourism in the region. As the interviews went on, we noticed a close relationship between wine producers and elements of the local landscape, particularly the flora (*garrigue*, vineyards, olive trees), local geographical features (Mount Baudille), old stone constructions (walls, roads, sheep shelters) and the ruins of the local medieval castle, a Montpeyrroux landmark, together with Mount Baudille.

Regarding the types of grapes, only a few types of grapes are allowed for PDO wines in the region. In the case of PDO Languedoc, varieties allowed include Syrah, Grenache, Mourvèdre, Cinsault and Carignan, which are better adapted to the local terroir's edaphic and climatic conditions and befitting the region's goal of producing quality red wines.¹¹ As regards geographical indications (PGI), a greater number of varieties can be cultivated for both red and white wines.

In terms of location, Montpeyrroux is close to Montpellier, a relevant wine consumption market and distribution centre to the domestic and international markets. According to the cluster and industrial district approaches, proximity to relevant markets not only enables stronger commercial ties but also the gathering of information from the demand regarding product quality and prices (White, 1981; Porter, 1999; Chiffolleau et al., 2006).

Research on clusters and industrial districts have shown that a concentration of companies focusing on the same activity favours the circulation of know-how, innovation and the establishment of institutions geared toward the territory's goals. In the case of Montpeyrroux, the clustering of 15 private wineries and a cooperative to produce quality wines in a town with little over a thousand people characterizes the local arrangement as a winemaking cluster with one particular feature: these companies came together with the cooperative driven by common goals, namely seeking quality over productivity and enhancing the reputation of the local terroir. Such concentration, besides fostering collaboration (through collective platforms), also prompts competition (regarding individual, market-driven quality and reputation strategies) and the circulation of technical (expert and managerial) and tacit knowledge between and among the arrangement's actors. The concentration of quality wine producers is also a strong sign to the markets and contributes to strengthening the region's reputation.

Institutional Factors

Among the institutional factors considered here are qualification rules, production

models, the market, public policies and the stock of knowledge focused on the activity of producing quality grapes and wines.

Concerning the qualification of wines, PDO specifications (*cahier des charges*) limit wine production to 40–50 hectolitres per hectare, which is consistent with the Montpeyrour region’s low productivity (Table 3). Therefore, even though the local edaphic and climatic resources (physical factors) prompt lower grape yields, they contribute nevertheless toward the development of a specific terroir and, subsequently, towards compliance with a quality standard (institutional factor) that, apart from offsetting these physical limitations, adds further value to the local wine.

Specific rules regarding grape-growing land or wine production in France also restrict entry into this economic activity, favouring the already-established grape producers and winemakers. Purchase of land for growing grapes and producing wine depends on official approval, whether by French government agencies or by industry-wide bodies.¹² Regarding the production of wine, this must be done over authorized land for such purpose, and those interested in the activity must hold a

Table 3. Institutional factors influencing activity in the Montpeyrour wine arrangement, France, 2012.

Factor	Meaning	Performance																											
Qualification rules (i_qualif)	Yield restriction on grape production per hectare	Maximum yield permitted (hectolitres/ha): <ul style="list-style-type: none"> • Languedoc Appellation: 50 • Montpeyrour Appellation: 42 • geographical indication (PGI) up to 90 																											
Production model (i_system)	Organic or raisonnée	Organic (%): <ul style="list-style-type: none"> • cooperative: 12.0 • private vineyards: 47.0 Raisonnée (%): <ul style="list-style-type: none"> • cooperative: 88.0 • private vineyards: 53.0 																											
Public support policies (i_policy)	Public policies and institutions supporting the grape and wine activity	Legal public system supporting and regulating quality, terroir wines and organic grape production like INAO; wine and grapes bodies, favouring: <ul style="list-style-type: none"> • research and development • sectoral organization • PDO/PGI promotion and advertising 																											
Technical knowledge (i_technic)	Relevant grape and wine production knowledge and technology base	Knowledge acquired through viticulture-related college degrees and access to knowledge of the various stages of wine production, from the cultivation of grapes to vinification process; technical orientations on grapes and wines by enologists.																											
Market (i_market)	Domestic and international markets for quality wines	For PDO and PGI wines, the prevailing strategy is ‘the best product...’ for the highest price, or for higher prices than those of table or generic wines <table border="0" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 33%;">Wine market (%)</td> <td style="width: 33%;">Private vineyards</td> <td style="width: 33%;">Cooperative</td> </tr> <tr> <td>National:</td> <td>78.4</td> <td>29.0</td> </tr> <tr> <td>• local/short market channels</td> <td>23.7</td> <td>8.0</td> </tr> <tr> <td>• dealers</td> <td>38.1</td> <td>11.0</td> </tr> <tr> <td>• hotels and restaurants</td> <td>7.2</td> <td>3.0</td> </tr> <tr> <td>• small regional markets</td> <td>2.9</td> <td>0.0</td> </tr> <tr> <td>• Internet</td> <td>0.1</td> <td>0.0</td> </tr> <tr> <td>• other</td> <td>6.4</td> <td>7.0</td> </tr> <tr> <td>International (importers/dealers):</td> <td>21.6</td> <td>71.0</td> </tr> </table>	Wine market (%)	Private vineyards	Cooperative	National:	78.4	29.0	• local/short market channels	23.7	8.0	• dealers	38.1	11.0	• hotels and restaurants	7.2	3.0	• small regional markets	2.9	0.0	• Internet	0.1	0.0	• other	6.4	7.0	International (importers/dealers):	21.6	71.0
Wine market (%)	Private vineyards	Cooperative																											
National:	78.4	29.0																											
• local/short market channels	23.7	8.0																											
• dealers	38.1	11.0																											
• hotels and restaurants	7.2	3.0																											
• small regional markets	2.9	0.0																											
• Internet	0.1	0.0																											
• other	6.4	7.0																											
International (importers/dealers):	21.6	71.0																											

college degree in this field (bachelor's degree in oenology and viticulture). In contrast, leaving the activity is limited by the land's viticultural purpose (a consideration for a prospective buyer), as farm and livestock ranching activities are not allowed. In the context of the cooperative, the associated grape growers are bound by a five-year membership contract that imposes fines on those who decide to leave the cooperative to start a private vineyard. There are restrictions even for carrying out both activities (being a private wine producer and a member of the cooperative), with a few exceptions contingent upon the context, cooperative and region. As for the wine market, marketing and advertising strategies are increasingly constrained by a specific law that prohibits advertising alcoholic beverages in France, regardless of the fact that wine consumption is a tradition that is deeply rooted in the French way of life. Accordingly, a few respondents referred to difficulties arising not only from the law restricting advertising but also from health-sector campaigns designed to reduce the consumption of alcoholic beverages, wine included.

As for the production models, the principal polarization observed among the wine producers in Montpeyrroux was about the opposition (though without causing any obvious conflict at the time of the survey) between organic or biodynamic, and *raisonnée* models of production.¹³ Organic production is carried out by 47% of the private vineyards and by 12% of cooperative members. Producers who do not fit into the organic production model consider themselves to be adopters of *raisonnée* agriculture, corresponding to 88% of the members of the cooperative and 53% of the private wineries. Producers who have declared themselves adopters of organic viticulture justified their choice due to issues related to health and conservation of nature. Their option was not primarily associated with the opening of new markets or obtaining premium prices. *Raisonnée* agriculture is based mainly on the controlled use of modern inputs (agrochemicals) and integrated control of pests and diseases.¹⁴ Producers who have declared themselves adopters of this model of production justify not having opted for organics and biodynamics because of the risk of pests and diseases and higher demand for labour to tend the vineyards. The declaration about the adoption of both production models does not necessarily mean that the vineyards are certified (organic or *raisonnée*). Here, we based our classification solely on the statements of the producers interviewed. Some of them justified their non-adherence to certification schemes as resulting from excessive paperwork to register, as well as from certification costs and the absence of incentives in terms of price and markets.

Regarding the wine market, France has experienced a drop in the domestic consumption of table wine over the last 40 years, but the production of PDO wines has substantially increased in value, and the country is still betting on its quality and terroir differentials to compete in the international market. France's strategy is hinged on producing terroir wines in a globalizing world that is following a trend towards standardization and the industrial production of wines (Garcia-Parpet, 2004). In 2015, for example, of the output of 46.7 billion hectolitres of wine, PDO wines accounted for 46%, while PGI wines accounted for 28%, thus representing more than 74% of total output (FranceAgriMer, 2016). Considering French exports of PDO and PGI products, wines accounted for 75% of the revenues in 2015. In the domestic market, even though consumption of wine has decreased in volume, quality wines enjoy a good reputation and are recognized and appreciated by consumers who can pay higher prices.

This context of quality markets benefits arrangements such as Montpeyrroux,

whose quality-driven strategy caters to market at home and abroad. In our survey, we found out that the cooperative (Bettini and Sloop, 2014), with a larger scale and diversification of supply, channelled 71% of its production to foreign markets, whereas private wineries (Chever et al., 2012) were primarily focused on the domestic market, which takes 78.4% of their production (Table 3). As regards marketing strategies, positioning the wines in terms of quality and price was overwhelmingly associated with 'a better product' for 'higher prices' or 'higher prices than those for wines from outside the terroir'.

In the context of institutional factors, public policies for the wine sector in France also favour quality strategies. Public policies and regulations governing the production of grapes and wines are distinct from those of other producing countries not only because of France's leadership as the world's largest wine producer but also because the country has been identified increasingly as a producer of quality wines from specific terroirs. Thus, France built a sound state regulatory framework for terroir-related wines, as well as specific standards designed to protect and enhance the quality of organic and traditional products (INAO, 2017).

Concerning technical/expert knowledge, this country has developed a broad and robust stock of knowledge about the production of grapes and wines, and a research, development and teaching structure dedicated to the sector. Institutions and structures were also developed and fostered to address the interests of the winemaking industry, as well as ancillary public policies such as particular credit lines and technical assistance (Boyer and Touzard, 2016).

Cultural Factors

In addition to the institutional factors influencing the construction of quality, cultural or cognitive factors have a crucial influence on actors' strategies in an arrangement. For the analysis of the Montpeyroux arrangement, we named them 'cultural factors'. In this ad hoc category, the proxies considered were local identity and reputation, personal motivations, tacit knowledge and the collective platforms focused on valorizing quality over productivity and distinguishing the local terroir.

Regarding the local identity and reputation, the ancient history of Montpeyroux, dating back to the medieval era, was cited by several respondents (Table 4) and is materialized in several local monuments and names of locations (medieval castle, church, name of city quarters) and in ceremonies and books that refer to the city's medieval past. As argued by Creissac (2011, p. 5), 'our landscape today, our customs, our uses and our Occitan language were slowly sculpted by a laborious, obscure and often anonymous people. These people deserve our attention.'¹⁵ This history contributes to strengthening the sense of identity of the local grape growers and winemakers. A good feeling about the place was informed by 100% of the respondents (Table 4), who stated they were proud to live in the region, although only 15% of them were Montpeyroux born or came from the Montpeyroux region. A shared argument by almost all interviewed during the research was the need for unity of all around a common platform to defend the reputation of local wines. Such an argument was often reflected in the expression 'we are all in the same boat'. Another collective platform mentioned by the interviewees was the maintenance of Montpeyroux as a small village focused on the production of quality wines and terroir. This idea also has been supported by municipal administrators during the last five mandates.

Besides the actors' sense of belonging and identity with the territory, attitudes of

Table 4. Cultural factors influencing activity in the Montpeyrroux wine arrangement, France, 2012.

Factor	Meaning	Performance
Local identity and reputation (c_ident)	Pride and joy of living in the place	100% of respondents claimed to have pride of living and producing in Montpeyrroux; although only 15% of the wine producers came from Montpeyrroux and region, 100% of respondents claimed to have pride of living and producing in Montpeyrroux
Quality-driven production model (c_quality)	Prioritization of the production of quality wines	Local production focused on quality (%): Protected Designation of Origin (PDO) • cooperative: current: 50.0 planned: 43.0 • private vineyards: current: 66.0 planned: 78.0 Protected Geographical Indication (PGI): • cooperative: current: 47.0 planned: 49.0 • private vineyards: current: 27.4 planned: 18.0
Local terroir value enhancement (c_terroir)	Valorization for PDO/PGI strategies and mainly for Montpeyrroux terroir appellation (Syndicat du Cru de Montpeyrroux)	Actors' engagement in the process of recognizing the Montpeyrroux terroir (%): • cooperative: 100.0 • private vineyards: 93.8
Personal motivations (c_motivat)	Motivations, views and plans from winemakers regarding enter, stay or leave the activity and about quality of their wines	Main motivations for joining a viticultural activity (%): Private vineyards: • change life/be a wine producer/own business: 46.7 • inheritance: 33.3 • search for specific wine quality: 13.3 • problems with the cooperative: 6.7 Cooperative: search for wine quality/cooperative ideal/cooperative as support for local viticulture and economy/economic sustenance for small wine grape growers Perspectives: Cooperative (%) • keep members' supply volume: 100.0 • product quality aligned with markets: 100.0 Private Vineyards (%) • continue/keep production at present level: 35.3 • improve quality of current wines: 23.5 • increase production: 17.6 • diversify types of wine produced: 17.6 • leave the activity: 5.9
Tacit knowledge (c_tacit)	On systems of production, wine assembling, and market strategies	Adaptation of practices in organic, biodynamic systems of production and the transition from conventional to raisonnée; personal know-how on wine production: 'the qualitative differential of (my) wine stems from' (%): • know-how (<i>savoir-faire</i>): 52.0 • wine blending (<i>assemblage</i>): 47.0 • quality of grape/terroir: 17.6

cooperation and competition also coexist. Cooperative behaviour occurs in the context of reaching the common goal of enhancing local reputation. As for the competitive attitudes, these occur at the individual level with the aim of differentiating one's own wine to secure quality markets. The territory is also the actors' stage for reciprocal observation of quality-scheme strategies and markets, which are learnt, imitated

or used to build differentiating elements (White, 1981; Chiffolleau et al., 2006).

Regarding personal motivations, 93.3% of respondents shared a positive and proactive feeling vis-à-vis their activity. Both the private wine producers and the cooperative strongly *identified* themselves with the production of quality wines. The actors' positive vision about local wine production was further clarified by the actors' views on the activity they perform – 86.6% regard it as 'art' or as 'exciting', despite its being considered difficult and complex. Complexity was mainly associated with the need for multiple forms of expertise in grape growing, wine production, business and marketing know-how (Table 4). When asked about their future (planned) strategies, the respondents expressed interest in continuing and expanding their activity.

Relatively to the collective platforms regarding quality, our survey detected that the production of quality wines or wines certified for their origin was shared by all actors, a fact demonstrated in practice by their option for the current production of PDO (50–66% of the producing areas) or PGI wines (47–49% of the vineyards). The proportion of PGI wines produced by the cooperative and the private vineyards reflects several causes. Among them is the absence, in some farms, of land areas that could be classified as PDO and strategies focused on the production of wines from a single variety of grape (*cépage*) or specific types of wine to meet market demand. The platform focused on valorizing Montpeyrroux's terroir wines is evident from the massive support of the local winegrowers to the Syndicat du Cru de Montpeyrroux, an association seeking to establish a PDO/appellation in Montpeyrroux.

At the collective level, tacit knowledge of the climate, soil, landscape and organic and raisonnée models of production, in addition to know-how in winemaking, is shared via personal and affiliation networks, as we shall see below. Tacit knowledge is intertwined with expert knowledge in the construction of quality strategies and for differentiation (Arévalo et al., 2016). Thus, there is an isomorphic behaviour influenced by appellation rules, ordinary (albeit mandatory) tertiary degree, consulting by enologists, the belonging to collective institutions (PDO/PGI), adoption of organic or raisonnée models and mutual observation (benchmarking). These factors act as a mechanism of homogenization of the grape growing and winemaking process, to a certain extent. However, even in a context that favours such isomorphism, there are personal strategies targeting quality distinction through differentials in grape and wine production. These differentials were attributed to specific knowledge (52% of the cases), know-how in blending (*assemblage*) of the grapes in the vinification process (47%) or specific quality of grape production due to *micro-terroir* (17.6%) (Table 4).

Relational Factors

To analyse relational factors we used as proxies interpersonal (actor-by-actor) and affiliation (actor-by-event) networks as well as the agency and mobilization process from central actors in the creation, animation and maintenance of local collective platforms.¹⁶

Concerning the interpersonal networks based on trust and advice, and partnerships, we observed a distinct behaviour both in terms of the variables reflecting social capital (network density and reciprocity) power (centralization), and influence-based relations (influence, prestige). Trust-based networks showed higher densities than those addressing technical advice and partnership, thus reflecting higher social

Table 5. Relational factors influencing activity in the Montpeyroux wine arrangement, France, 2012.

Factor	Meaning	Performance	
Actor by actor-network (r_person)	(a) Trust (friendship and kinship)	no. of ties:	63
		density:	30.0
		influence:	36.7
		prestige:	21.4
	(b) Advice (interchange of technical information)	reciprocity:	28.5
		no. of ties:	30
		density:	14.3
		influence:	84.2
	(c) Partnership (in grape and wine production)	prestige:	7.6
		reciprocity:	11.1
		no. of ties:	35
		density:	16.7
Interpersonal networks (a + b + c)	influence:	70.0	
	reciprocity:	34.6	
	no. of ties:	80	
	density:	38.1	
Actor by finality network (r_affilia)	PDO in general (AOP_OUT)	influence:	62.0
		prestige:	11.4
	PDO Montpeyroux (AOP_MONT)	reciprocity:	40.3
		no. of ties:	15/15
	PGI (IGP/VDP)	centrality:	100.0
		no. of ties:	14/15
	Raisonnée viticulture (RAISONNÉE)	centrality:	93.3
		no. of ties:	10/15
	Organic viticulture (ORGANIC)	centrality:	66.7
		no. of ties:	8/15
Actor-Network (r_ant)	Leading actor originating and influencing the process of quality wine production	centrality:	53.3
		no. of ties:	7/15
		centrality:	46.7
		The cooperative and two local private wine producers, acted as key actors-nurturing a quality driven network and supporting the proposal for the Montpeyroux' s terroir	

capital levels derived from personal relationships compared with strictly technical or productive relationships (Table 5, Figures 1–3). This finding was expected given the actors' competitive nature, despite their sharing collective platforms aimed at valorizing local wines. The advice-based network, mobilizing expert and tacit knowledges, showed a low level of reciprocity, thus demonstrating that there are certain actors with greater influence than others as regards know-how in viticulture and wine production. This network also exhibited lower density, reflecting the competitive nature of the activity (Chiffolleau and Touzard, 2014) and a tendency toward distinction-oriented behaviours in winemaking (DiMaggio and Powell, 1983). The higher influence of some actors in this network, as measured by an average centrality level of 84.2%, showed that some of them act as mentors for the others, as exemplified in Figure 2 by the actors VP03 and, to a lesser extent, by the coopera-

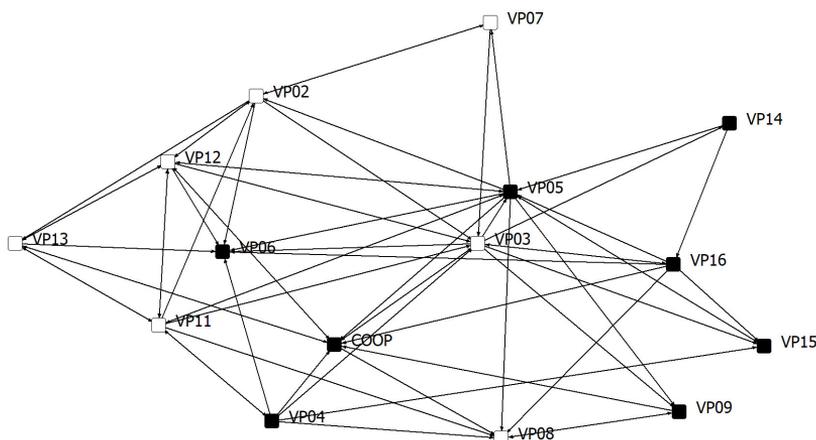


Figure 1. Network of trust among winemakers adopting models of grape production convergent with organic or raisonnée farming, in the Montpeyrroux wine arrangement, France, 2012.

Notes: actors: VP: private vineyard, COOP: cooperative; production models: □: organic, ■: raisonnée.

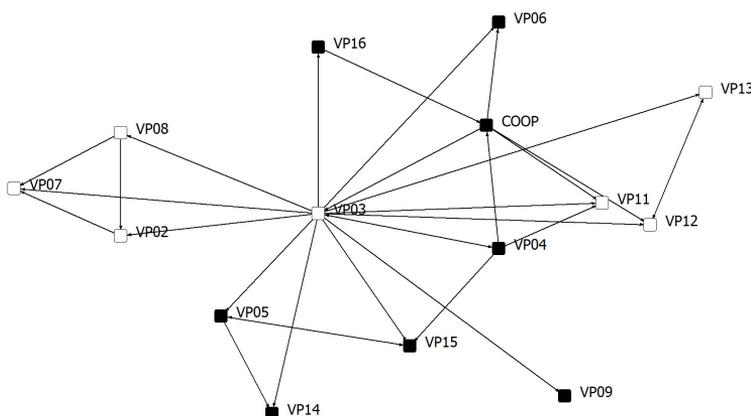


Figure 2. Network of advice among winemakers adopting models of grape production convergent with organic or raisonnée farming, in the Montpeyrroux wine arrangement, France, 2012.

Notes: actors: VP: private vineyard, COOP: cooperative; production models: □: organic, ■: raisonnée.

tive (COOP). The partnership network, though exhibiting low density, showed more reciprocity because partnerships in grape and wine production require complementarities in terms of physical assets (facilities, machinery, packaging) and knowledge (in grape growing and winemaking).

For the whole set of interpersonal relations, now conforming a network based on the three kinds of ties, we noticed that this was not enough to characterize a higher level of social capital since the ties between actors only accounted for 38% of their potential. In small networks like these, one would expect higher density (above 50%), thus exhibiting higher levels of connectivity and reciprocity. What was found

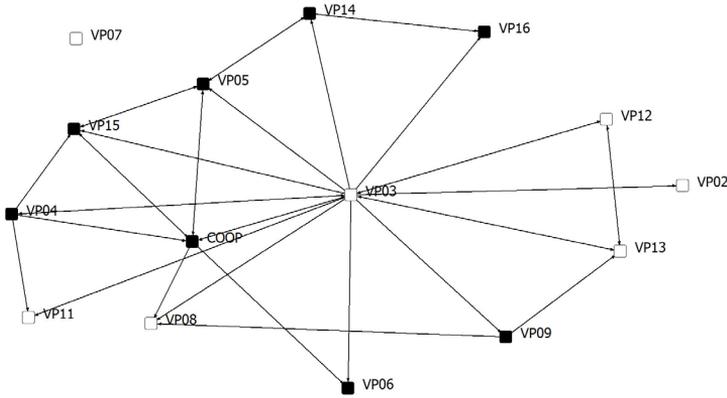


Figure 3. Network of partnership among winemakers adopting models of grape production convergent with organic or raisonnée farming, in the Montpeyroux wine arrangement, France, 2012.

Notes: actors: VP: private vineyard, COOP: cooperative; production models: □: organic, ■: raisonnée.

was that some actors (the cooperative, VP03 and VP05) wield greater power to influence the others, for the various kinds of ties analysed herein, but foremost regarding partnerships and the exchange of information. These actors' high levels of centrality do not mean, however, that they hold the information for themselves, since they are mostly sources (influence) rather than recipients (prestige), with the network showing a higher level of reciprocity, i.e. 40%. Another key aspect – which can be found in the interpersonal networks, yet is more salient in affiliation networks – is that advice-based networks and partnerships showed a greater number of ties among wine producers who adopt the same production model, whether organic or raisonnée.

In the context of the actor-by-event networks, we analysed an actor-affiliation network focused on quality-building strategies and models of production. This network encompassed actors from appellation wines in general (AOP_OUTR), the Montpeyroux appellation (AOP_MONT), PGI and other quality wines (IGP/VDP) and platforms focused on both the production models of raisonnée (RAISONNÉE) or organic (ORGANIC). For this network, we adopted metrics for quantifying actor engagement, as a number of ties and centrality. The platform of appellations wine in general (Montpeyroux included), had the higher degree of centrality and number of ties, scoring 100% (Table 5, Figure 5). That is, the goal of producing appellation wines, regardless of the appellation system (Montpeyroux or others), was supported unanimously by the actors in the arrangement. As for the platform advocating the valorization of wines made in the territory using a Montpeyroux appellation, the level of centralization and number of ties was close to that of the platform for appellation wines in general, corresponding to 93.3% of all the actors in the arrangement. The difference in percentages, in this case, is because at the time of the research one of the private winemakers did not belong to the Montpeyroux Cru Syndicat due to disagreements with the cooperative. Also, the PGI platform provided some significant levels of centrality (higher than 60%), yet still lower than the other two. This is because, for some actors in the arrangement, PGI and other quality wines are considered an alternative for soils that do not fit PDO requirements, while also intended to produce types of wine that follow specific qualification and market strategies.

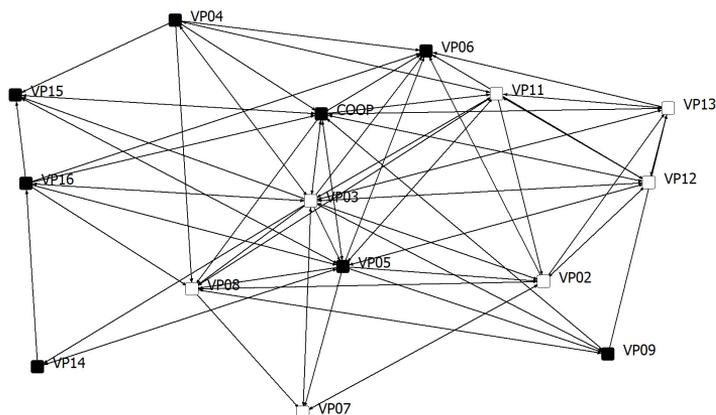


Figure 4. Network of trust, advice and partnership among winemakers adopting models of grape production convergent with organic or raisonnée farming, in the Montpeyroux wine arrangement, France, 2012.

Notes: actors: VP: private vineyard, COOP: cooperative; production models: □: organic, ■: raisonnée.

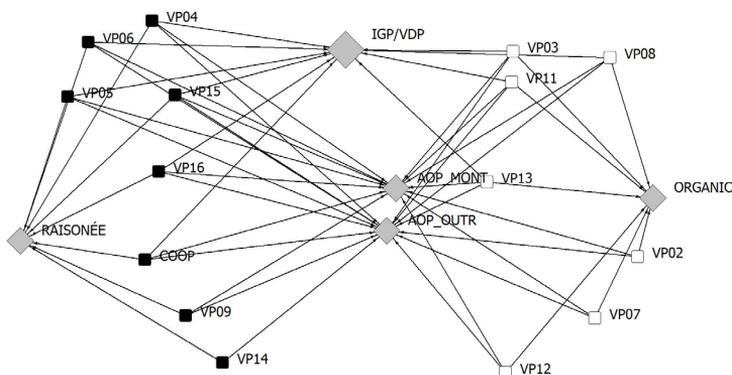


Figure 5. Network of actors' affiliation to production or qualification models in the Montpeyroux wine arrangement, France, 2012.

Notes: actors: VP: private vineyard, COOP: cooperative; production models: □: organic, ■: raisonnée; qualification models: AOP_OUTR: PDO in general, AOP_MONT: PDO Montpeyroux, IGP/VDP: PGI and other quality wines.

Considering the production models, both raisonnée and organic exhibited similar degrees of centrality, albeit lower than those of the three qualification models. Both production models not only divided the actors into two groups but also allowed a greater number of ties between their adopters, as shown in the figures of interpersonal and affiliation networks.

Hence, what we observe in analysing relational factors is that, even though personal ties of trust, advice and partnership do exist in this arrangement, their contribution to building denser network cohesion is minor. Affiliation networks linked to quality-building strategies, on the one hand, and to production models, on the other, prompted denser networks, thus they are more likely to strengthen collective

platforms that characterize the productive arrangement.

Therefore, in the context of relational factors, what stands out as the main ties uniting grape growers and winemakers are the proposals regarding quality wines and valorization of the local terroir. The latter was championed by the cooperative, through the support of two private wineries, setting up an actor-network strategy. This strategy was materialized through the creation of the Syndicat du Cru de Montpeyroux, a local association that brings together 95% of the private wineries and the cooperative, seeking the recognition of the Montpeyroux terroir as a 'village appellation'. Moreover, the cooperative was the actor that carried on the proposal for prioritizing quality over productivity that was started by one of its former presidents. The cooperative has continued to influence the local actors and to unite them around a collective goal.

The Interplay of Factors

The Montpeyroux arrangement is itself a laboratory where several factors were combined to meet the goals of the local people's collective platforms. The construction of quality was founded on shared values stemming from cognitive and relational factors translated into standards and conventions that influence the grape production and wine quality-building strategies. The negotiation over quality takes place in a context in which there is cooperation regarding shared collective values, on the one hand, and competition as regards personal differentiation strategies and markets, on the other. That is, regardless of a common territory and sense of identity, actors seek to differentiate their grapes and wine production while strengthening individual reputational strategies and market penetration (Chauvin, 2013). This differential is sought through organic and raisonnée vis-à-vis conventional production models, qualification strategies like PDO/PGI in contraposition to table wines, and individual know-how (*savoir-faire*) in selecting grape varieties, cultivating them, improving the quality of wines and developing strategies for market penetration.

Considering the variables associated with the four categories of factors analysed, some are more central and densely related to each other. From the perspective of network analysis, this became evident by their degree of centrality or the density of their relations with other equally central variables. Thus, out of the 18 variables associated with these factors, 10 variables stand out for their higher density and interrelation (core) in comparison with the less dense and with fewer interrelational ties (periphery) (Table 6, Figure 6).¹⁷ Among the most relevant and interconnected variables, three refer to relational factors (*r_affilia*, *r_ant e r_person*), representing 100% of this category, three belong to cultural factors (*c_quality*, *c_terroir e c_motivat*), representing 60% of this category, three are related to institutional factors (*i_market*, *i_qualif e i_tecnhic*), representing 60%, and only one variable is related to physical factors (*p_grape*), representing 20% of the category.

Regarding the specific influence of the factors, the physical ones such as soil, climate, landscape and grape varieties influenced the construction of rules linked to quality standards. The low productivity of the soil limits the adoption of high-yield grape varieties, and allows, therefore, the establishment of rules for a specific appellation with a lower yield per hectare, which in turn values the local product in the market. The concentration of wineries (*p_cluster*) only became significant in association with collective platforms focused on improving local wine quality and the terroir's reputation. These platforms acted as a magnet to attract new quality wineries

Table 6. Influence and interplay of principal (core) and secondary (periphery) factors and their proxies in the construction of the quality in the Montpeyrroux wine arrangement, France, 2012.

Factor proxies	Core										Periphery					Ties: 170/306					
	i_market	c_ident	c_quality	p_grape	c_motivat	i_qualif	r_person	r_affilia	i_techinc	r_ant	c_terroir	p_landsc	p_localiz	p_soilcl	c_tacit	i_system	i_policy	p_cluster	Out	In	Total
i_market			X	X	X	X		X	X	X	X	X			X	X			11	8	19
c_ident			X		X	X	X		X	X	X		X		X		X		10	8	18
c_quality	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	15	12	27
p_grape	X		X			X	X	X	X	X	X	X		X	X		X		12	10	22
c_motivat	X	X	X			X	X	X		X	X				X			X	10	12	22
i_qualif	X		X	X	X			X	X	X	X		X	X	X				11	13	24
r_person		X	X	X	X	X			X		X				X	X		X	10	8	18
r_affilia		X	X			X			X	X	X			X		X	X	X	10	14	24
i_techinc				X	X	X		X	X	X			X		X	X			9	9	18
r_ant		X		X	X	X	X		X	X	X		X					X	10	13	23
c_terroir		X	X	X	X	X		X		X				X	X				9	16	25
p_landsc	X	X							X	X								X	5	6	11
p_localiz	X		X		X		X		X	X								X	7	2	9
p_soilcl			X	X		X	X	X		X				X	X				8	8	16
c_tacit			X	X	X	X	X	X		X					X				8	9	17
i_system	X				X	X	X	X	X					X					7	10	17
i_policy			X	X		X	X	X	X	X					X				8	4	12
p_cluster	X	X			X	X	X	X	X	X	X	X	X	X					10	8	18

Notes: Factors: physical (p); institutional (i); cultural (c); relational (r). Proxies: physical: p_soilcl: soil, relief, water and climate; p_localiz: localization; p_landsc: landscape and monuments; p_grape: types of grape; p_cluster: concentration of enterprises. Institutional - i_qualif: qualification rules; i_system: production models; i_policy: public policies; i_techinc: technical knowledge; i_market: market. Cultural - c_ident: local identity; c_quality: quality driven; c_terroir: terroir valorization; c_motivat: personal motivations; c_tacit: tacit knowledge. Relational - r_person: personal networks; r_affilia: affiliation networks; r_ant: actor-network. Fitness: 73.7%; network density: 55.6%; core density: 72.7%; periphery density: 23.8%

and to reinforce the local reputation. The variable localization (p_localiz), usually considered significant in cluster and industrial district studies, did not prove as relevant to achieve the goals of constructing local quality and reputation. An example of this is that several neighbouring municipalities that are even closer to Montpellier failed to form a concentration of wineries as in the case in question.

About institutional factors, qualification rules (PDO/PGI) stand out, together with the stock of expert knowledge available on the growing of grapes and wine production, quality markets and quality-certification policies. Qualification rules also reflected productivity constraints derived from local physical factors and contributed, in turn, to reinforcing and supporting collective strategies focused on product quality and valorisation of the terroir (Belletti et al., 2017). Cultural factors, in turn, acted as ongoing motivational elements, identity reinforcement and drivers of collective actions also focused on quality-building goals. These factors contributed

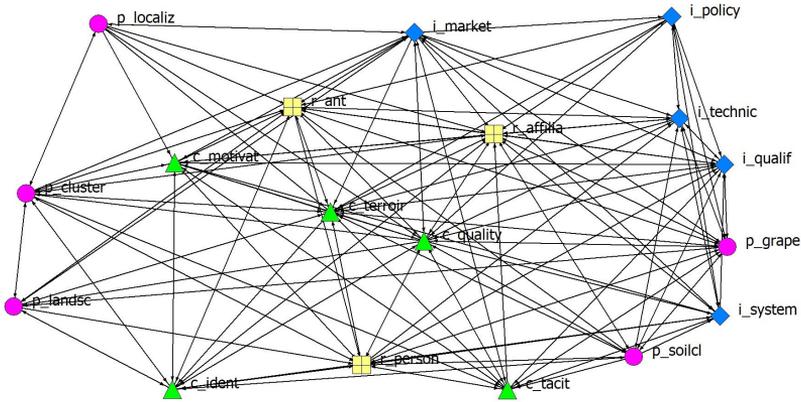


Figure 6. Interplay of factors in the construction of the quality in the Montpeyrroux arrangement, France, 2012.

Notes: factor: ●: physical, ◆: institutional, ▲: cultural, ■: relational.

to compensating for the limitations relating to physical ones through the enhancement of a specific terroir, which in turn allowed the qualitative positioning of local wines in domestic and international markets.

Concerning relational factors, personal networks acted mostly in the form of partnerships for the cultivation of grapes and vinification (equipment sharing) and on the advice networks for exchanging tacit and expert knowledge on grape cultivation in the various systems of production. They were less dense than the networks of affiliation, reflecting that there are relations of cooperation and competition in an activity where personal reputation and individual know-how influence competition strategies in quality or niche markets. Affiliation networks refer to common platforms and standards and placed greater emphasis on general quality-related collective goals and so encompassed a major number of actors. Also within the scope of relational factors, the cooperative played a key role in maintaining the proposals focused on the quality of the wines and valorization of the local terroir. Here characterized as an actor network, it acts by reinforcing cultural factors, i.e. leading and stimulating the proposal of terroir and quality wines in general and local identity, nurturing interpersonal and affiliation networks and events designed to accomplish collective platforms.

Therefore, cultural and relational factors were the main drivers of the construction of quality in the Montpeyrroux wine cluster. Both factors were instrumental in enabling negotiation and adaptation of quality and production standards (institutional factors) that considered local edaphic and climatic conditions (physical factors) in building collectively shared quality-driven proposals.

Conclusions

In light of the case, we verified that analysis of a productive arrangement based on the SYAL approach, through the integration of physical, institutional, cultural and relational factors, rendered it possible to shed light on the different facets of a research area whose complex nature would be incompletely addressed if analysed by

a unidimensional perspective by adopting only some of these factors. In the context of the factors examined, the actor's agency was reinforced by cultural or cognitive factors that contributed for the continuity of Montpeyrroux as a quality and terroir arrangement. Also, under the influence of physical and institutional factors, which can act as drivers or constraints, collective goals linked to the construction of quality were further strengthened by a relational context, through interpersonal and affiliation networks.

The social construction of quality in Montpeyrroux was prompted by collective platforms focusing on the production of quality wines and the establishment of a terroir negotiated by the actors through relational networks. Cultural and relational factors have acted to offset such local limitations as the low productivity of the soil, by building on valorizing the region's edaphic and climatic attributes favouring the establishment of a terroir (PDO) or a specific quality (PGI) and the cultivation of grape varieties (*cépages*) better adapted to the local conditions (physical factors). As regards the institutional factors, the strategic choices made by the Montpeyrroux actors are in line with the French setting, characterised by a research and development environment focused on the production of quality wines. As for markets, the French bet to export terroir wines and the existence of a domestic market that appreciates these wines contributes to strengthening the arrangement's collective platforms further.

This process of construction of quality and local reputation has already enabled Montpeyrroux actors to make some accomplishments. The main achievement has been the continuity of viticulture at a time when, in several regions in France and even in neighbouring municipalities, cooperatives have merged or are closed.¹⁸ The demise of the activity, in a region where the opportunity cost for other activities is high, would bring about adverse effects not only on the socio-economic conditions of the population but also on the vineyard landscape, a principal local tourist attraction. As for the collective platforms, a remarkable accomplishment was the approval of the Montpeyrroux sub-appellation, with a specific terroir within the Languedoc Appellation. This appellation has been recognized by INAO since 2011 and is now in the implementation phase. Another result was the quality enhancement of wines and production systems, over the last five years, in the local cooperative. The share of PDO wines has risen from 50% to 65%, while a line of wines made from organic grapes was also launched. As for the stability of the arrangement and the upholding of the shared goal of quality enhancement, in 2017 there were 22 private wineries in Montpeyrroux, 21 of them, plus the cooperative, were members of the Syndicat du Cru de Montpeyrroux.

Despite these results, the production of grapes and wine in Montpeyrroux faces several challenges. In the international market, French terroir wines face fierce competition from the so-called New World wines (varietals or from other regions). In the domestic market, decreasing household income and competition from other beverages have reduced wine consumption over the last years. As for the cooperative, the ageing of grape growers jeopardizes the supply of grapes for vinification, since the new generations are not interested in continuing their parents' activity. Private wineries, in turn, are faced with the imperative of increasingly seeking other markets, especially the foreign market, yet their low scales of production and the need to meet specific regulations to enter these markets, limit their scope of action. There is also a greater complexity involved in running these, mostly, family businesses, given the fact that private wineries must work on several fronts, from growing the grapes and

producing the wine to develop market strategies. All this brings a relevant level of complexity to the management of this business.

From a theoretical and methodological perspective, the analysis of the Montpeyrroux arrangement showed the importance of the coming together of actors' projects and motivations regarding coherent interaction nodes in the context of a quality-oriented model – terroir, appellations, valuing of the territory, continuing to be a village. The Montpeyrroux case contributes to the debate focusing on productive arrangements in general, and reinforces the theoretical assumptions of localised agri-food systems (SYALs) in particular, building on the following findings:

1. the generation of territorial quality income is the result of the collective action by valorizing tangible and intangible assets through innovation designed to construct a specific and territorial quality;
2. innovations take place under conditions where collective action is rooted in robust collective platforms, based on social capital and territorial identity, and constantly reinforced by social networks, driven by common goals.

The study has also shown that a SYAL-based analysis, leveraging on multidisciplinary and multidimensional approaches, may shed light on such complex objects of study as productive clusters and the construction of quality. Hence, even though the SYAL approach is still a theoretical body in construction, adopting its assumptions for analysing its core objects or complementing other analytical frameworks – for instance, cluster, industrial district and value chain – may be of help in understanding socio-economic processes related to agri-food systems. As for analytical methodologies, due to sampling limitations typical of case studies, the adoption of research techniques such as content analysis, structured observation and, mostly, analysis of social networks proved useful in understanding our object of study.

The case study confirms the multidimensional assumptions of the SYAL approach, yet the validity of the integrated analysis used here still needs to be tested in other situations and in different types of arrangements to assess its generalization level. In future studies analysing networks, it would be advisable to use other interpersonal variables capable both of capturing the specific power and conflict relations within productive arrangements and of measuring the influence of actors and institutions on the outside. The inclusion of economic variables associated with pricing, production costs and negotiations within the value chain may also prove useful toward a better understanding of these arrangements. Finally, though not the primary goal in this article, longitudinal comparative analysis of secondary data concerning the human development indices among the arrangement and other cities in the same region may indicate potential shared benefits afforded by the quality-driven strategies implemented.

Notes

1. Platform collective is here defined as shared values or collective projects.
2. This research has also sought to assess how these factors influence the actors' market and quality-focused strategies, but for lack of space, this analysis will be published elsewhere.
3. There are several definitions of terroir, many of them referring to the influence of edaphic and climatic factors on the quality of a given product. However, the concept of terroir adopted here is of a more dynamic and procedural character, referring both to a combination of biophysical and cultural elements (Bérard and Marchenay, 2004), as a result of a production process (Teil, 2012).
4. Here, the institutional framework comprises the set of rules, laws, and (formal and informal) regula-

- tions that influence and condition societal relations (North, 1991).
5. Defining variables more accurately for each factor would require other kinds of analyses prior to this study, such as a questionnaire-based survey of the local actors using, for instance, item response theory (Hambleton et al., 1991) or factorial analysis, which would require a range of cases, thus beyond the scope of this article, whose goal was to approach, on an exploratory basis, a categorization and the interplay between its factors, ultimately aiming to contribute some questions that might enrich SYAL research heuristics.
 6. The relationships among factors are based on our field observations, on the literature, as well as on the analysis of the responses of local actors. Additionally, we have consulted colleagues who work on the topic. That is, these relations were established from a deliberative process. In later studies, using a higher number of observations, we suggest performing factor analysis using parametric methods.
 7. In France, cities are called *villes*, and the smaller towns like Montpeyroux, *villages*.
 8. The expressions 'private vineyards', 'private cellars', 'wineries', and 'private domains' have the same meaning and are used interchangeably to distinguish private wineries from the local cooperative.
 9. In the network analysis, we considered the responses of 14 out of 15 private vineyards, since one of the producers was still in the initial stage of wine production.
 10. Wines with appellation labels in France and the European Union abide by European regulations. For more details, see INAO (2017). The protected designation of origin (PDO) is a distinction awarded to products whose authenticity and typicality arise from their geographical origin. The distinctive features of a PDO product find their origin in several factors such as the geographical context, the conditions of production, and a close association between these factors and traditional knowledge (human factors). The distinction for the protected geographical indication (PGI) is mainly based on reputation and association with a particular territory. While the production phases of a PDO must take place in one's geographical zone, PGI wines may have some of their production phases carried out outside the geographical zone of reference. Table wines (vin de table) are considered mass consumption wines and have no distinction.
 11. The designation 'Montpeyroux' is acknowledged as part of the Languedoc appellation (PDO), but the local actors' project is to turn it into a specific terroir appellation (a village appellation).
 12. An example of an entry barrier was the refusing to grant authorization for a big US businessman to establish a vineyard in Aniane, a city near to Montpeyroux, in an episode known as the 'Mondavi case'.
 13. Agriculture Raisonnée was established in France by Decree n° 2002-631 of 25 April 2002 to improve the quality of rural activities, defined as a set of agricultural practices that includes: respect for the environment, control of health risks, health and safety at work and the well-being of animals (France, 2002).
 14. Information on the production models adopted, i.e. organic or raisonnée, was based on statements from winemakers interviewed. Concerning organics, for instance, we found that there were producers at various stages of certification. It included the already certified, those in the certification process and those who declared that even though adopting the procedures required by this model of production they avoided being certified due to excessive bureaucracy and paperwork that would be required each year. Therefore, both production models here cited could be classified more precisely into two groups: (i) organic, in conversion or similar; and (ii) raisonnée or with low use of chemical inputs. The quotes in raisonnée are due to the lack of proof, at the time of the research, of winemakers certified in this production model, but who declared themselves adopters of the procedures referred to it.
 15. Free translation from the original in French: 'Notre paysage actuel, nos coutumes, nos usages et notre langue occitane, ont été lentement ciselés par un peuple laborieux, obscur et souvent anonyme. Ce peuple mérite nos attentions.' Yvon Creyssac is a local historian.
 16. Networks of affiliation (actor/event) differ in terms of meaning and metrics in relation to adjacency networks (actor/actor). What we seek to measure in the first is the degree and form in which a given event or platform engages network actors, while in the latter the focus is on the relations between actors themselves. Through the networks of affiliation, we sought to analyse to what extent the different systems of production and qualification strategies centralize actor engagement and enable relationships.
 17. The core-periphery analysis demonstrated that the network constituted by the interplay of factors is well connected – that is, the factors and their proxies presented a number of interrelationships (ties) consistent with their importance. In this sense, only a core-periphery analysis technique (Hemming) demonstrated an adequate level of fitness. The same network, if analysed by the most usual correlation procedure (CORR), would not present, for the proxies, a clear division between core and periphery, which shows that all the factors and proxies adopted were relevant to describe the studied phenomenon.
 18. Over the last three years, two important grape and wine cooperatives in the region –St. Jean de Fos

(2015) and Gignac (2017) – stopped operating; both had been producing mostly table wines.

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