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Explaining Cluster Evolution from an Institutional Point of View: Evidence from a French Beverage Cluster

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Introduction

Recent contributions in economic geography and regional studies have paid much attention to understanding the dynamics of cluster evolution (e.g. Boschma and Fornahl, 2011; Iammarino and McCann 2006; Audretsch and Feldman 1996; Ter Wal and Boschma 2011). A growing niche within this literature on cluster evolution indicates that the institutional frameworks¹ within which clusters are embedded are not only outcomes of evolutionary processes on the actor and network levels, but also contribute strongly to shaping the evolution as such. There is, however, still scope for research analyzing the interplay between institutional configuration and development, firm behavior, and more aggregated outcomes in terms of growth, decline, stability and renewal of clusters (Menzel and Fornahl, 2010). This paper contributes to this field of research by analyzing how regionally defined institutions influence firm behavior (and vice versa) in clusters and how this affects the evolution of the cluster as a whole. In particular, the paper analyzes how inefficiencies in an established institutional framework of a cluster contribute to shaping the cluster today and influencing its future development, largely through opening paths for reinterpretation and redefinition of existing institutions by layering, drift and conversion (Mahoney and Thelen, 2010).

The analysis draws on a cluster in which the regional institutional framework has been very explicit (regulative) and stable over a long time period. However despite stability of formal institutions shaping the cluster and defining the rules of the game in the regional industry, there have been periods of severe change and renewal. New entrants have emerged, largely reinterpreting the formal, and by this redefining the informal rules of the game in the cluster, and gradually influencing the behavior of incumbent actors which initially were very resilient to such external influences. These empirical observations lay the foundation for the main research question addressed in this paper, namely (how) do institutions that are designed to preserve the current state of affairs in a regional cluster also influence change and renewal of the same regional cluster?

The case upon which the analysis rests is that of the town Cognac in France and its local industry. Firms in the local setting in and around Cognac have been specializing in one singular product, cognac, with strict and specific regulations regarding production techniques and processes. Despite this rigid regulatory setting, ultimately making product and process innovation nearly impossible, new and related products have emerged through firms in the local setting since the mid-1990s. Yet, the regulative institutional framework defining the regional industry remains unaltered, with the aim of preserving the established local industry.

¹ In this study institutions should be understood as generally accepted behavioral rules, not to be confused with organizations acting under and influencing such behavioral rules.

The Cognac region is a suitable and particularly interesting case for analysis of the role of institutions for cluster evolution since it displays very distinct regional features, both in terms of actors and institutional framework, and since it displays well documented and homogeneously traceable processes of institutional change and renewal. The cluster on which the study is focused includes a critical mass of actors representing the entire value chain of one core product (cognac, the beverage), and a range of related industries (e.g. vineyards, bottlers, barrel manufacturers), located within well-defined regional boundaries. In this respect it constitutes a 'schoolbook example' for assessing the dynamics (or lack of dynamics) that, according to theory, is assumed to take place in regional clusters.

Theoretical framework

Clusters are perceived as important underlying structures in regional development strategies and have also attracted a lot of attention from regional studies scholars in recent decades. Most cluster studies focus on the emerging stages of cluster evolution – how and why clusters emerge (Braunerhjelm and Feldman, 2008; Maskell and Kebir, 2006) – and to some extent on how being located in a cluster positively or negatively impacts the performance of firms (Malmberg and Power, 2005). Very few studies, however, pay attention to how and why established and mature clusters evolve and change over time, despite that such dynamic process are inherent in all regional economies (Martin, 2010).

Nevertheless, there is a growing literature on cluster evolution, which makes attempts of explaining how and why clusters evolve (Menzel and Fornahl, 2010; Boschma and Martin, 2010). By paying attention to historical specificities as well as industry characteristics, these studies conclude that it is impossible to predict where and when clusters will arise (Braunerhjelm and Feldman, 2008). Also studies of cluster evolution and growth have difficulties identifying causal relationships between observed developments, i.e. what are the causes behind an observed change in one direction or another. Local context factors such as the sectorial composition of a regional industry in combination with general development of the industry as such are described as influential and sometimes even decisive for cluster evolution (Audretsch and Feldman, 1996), yet these studies never really identify the specificities of cluster development in relation to the more general industry development (Menzel and Fornahl, 2010). Part of the described problem with low explanatory capacity with regard to such cluster dynamics have to do with a lack of regional context sensitivity, a neglect of multi-scalar impacts, and a limited attention to the role of human agency (Trippel et al, 2014).

What these studies evolve around, however, is a basic assumption that history matters, and that events in the past lay the foundation for self-reinforcing path dependent processes which in turn influence the present and future development. As stated by Martin (2010, p. 3) it is “the combination of historical contingency and the emergence of self-reinforcing effects [that] steer a regional economy along one ‘path’ rather than another”. These theories of path dependence can be traced back to classical studies in evolutionary economics by authors such as David (1985; 1986) and Arthur (1990; 1994). According to David (1985; 1986) pathways which generate self-reinforcing development processes in particular directions start as results of small historical accidents or chance events. Subsequently the self-reinforcing processes following these historical accidents are selected and become dominant and progressively locked-in because of network externalities. Both David (1985; 1986) and Arthur (1990; 1994) acknowledge that also inefficient and sub-optimal technologies and modes of production can become locked in as industry standards, and thus persist for very long periods, despite being inefficient. This study draws on such an example of a previously logical and efficient but currently increasingly inefficient mode of production in a regional cluster, and how this inefficiency in the institutional configuration contributes to shaping the cluster today and influencing its future development. In this context, the study identifies and analyzes development of new path creation which draws on but critically diverges from the established pathway.

While, as touched upon above, evolutionary economics and related disciplines such as economic geography have paid much attention to the dynamics of path dependent processes, less attention has been paid to how new paths are initiated; what causes these “historical accidents” or “chance events” in the first place (Martin and Sunley, 2006). From a social science point of view, it is of course not really satisfactory to conclude that new clusters (or new developments in clusters) “start out in a particular location more or less by chance” (Maskell and Malmberg, 2007, p. 612). Rather, since the theories upon which cluster evolution studies are based stress that history matters, they also imply that such emergences are based on anything but chance, but on previously developed, sustained and refined local capabilities, routines and institutions (Trippel et al, 2014). This argument draws on the basic assumption that new paths may be latent in old ones or spin out from existing ones (Martin, 2010), which also implies that new path creation rarely includes major, or radical, shifts.

The literature on regional cluster evolution also concludes that some regional configurations seem more enabling for such spin out processes than others (Stam and Garnsey, 2006). In order to explain such differences, there is a need for social theory addressing why some (types of) actors are able to renew themselves and thereby also influence others to do the same, under conditions of path dependence. According to Garud and Karnoe (2001), agents embedded in structures may collectively contribute to the emergence of new pathways and overcoming the barriers confronting them as

results of historically based constraints, thereby contributing to new path creation (Simme, 2012). The core question is what structural aspects enable and constrain these agents setting these dynamic processes in motion.

This focus on structural aspects enabling and constraining agency initiated change processes brings institutions to the forefront of the explanatory model. Institutions are generally defined as guidelines for social behavior, or “settled habits of thought common to the generality of men (Veblen, 1919, p. 239). As such they, by definition, influence the way actors act and to what extent and how actors are able to identify and adapt to changes in their environment (North, 2005). Institutions are thus crucial elements in a social theory explaining why some actors are able to renew themselves and influence others, thereby acting as change agents by initiating collective action in new directions. However, institutions are also among the main causes for lock-in, and most institutional studies actually focus primarily on preservation and continuity rather than change (Mahoney and Thelen, 2010). There is indeed an extensive literature explaining the ways in which institutions and economic pathways co-evolve, composing and sustaining embedded structures reinforcing path dependence (Simmie, 2012). A problem with this literature is that it mostly points to exogenous shocks as explanations to major institutional reconfigurations and change, while largely overlooking shifts based on endogenous developments in the institutional framework itself (Mahoney and Thelen, 2010).

In recent years, however, scholars have spent efforts trying to explain incremental institutional change based not only on exogenous shocks like economic crises and similar, but also on incremental processes caused by new windows of opportunities arising when ambiguity with regard to interpretation and enforcement of behavioral rules open up space for actors to implement existing rules in new ways (Mahoney and Thelen, 2010). According to this perspective, change thus takes place when key agents mindfully (or not?) deviate from the settled habits of thought. Sometimes these key agents are referred to as “institutional entrepreneurs” (Sotarauta and Pulkkinen, 2011). Such deviation thus sets in motion change processes which in turn may become path dependent (Simmie, 2012). This study identifies such deviation processes and analyzes how this spreads within the cluster.

It is though important to note that most institutions are composite entities, made up of numerous micro-level institutions and that changes among the micro-components that make up such composite structures may generate mutation and adaptation (or generate lock-in) (Martin, 2010). Inspired by historical sociology and political science, three (often interrelated) micro-level mechanisms are suggested: layering, drift and conversion. In some (rare) cases these evolutionary processes may lead to institutional displacement, i.e. a situation in which current institutions are

abandoned and replaced by new ones (Mahoney and Thelen, 2010). However, institutional displacement is very rare and not observed in the case upon which this paper is based, therefore main focus is oriented towards understanding the processes of layering, drift and conversion which are continuous processes in all evolving clusters (and societies in general).

In a concrete attempt to analytically disentangle these layering, drift and conversion processes the paper draws on Scott's (2008) conceptual model of regulative, normative and cognitive pillars of institutional frameworks. Regulative institutions (or pillars of institutions) are usually legally sanctioned and most often territorially confined. Instrumentality and conformity to rules are the main coercive mechanisms. Normative institutions are morally governed and sustained through appropriateness and social obligations in ongoing systems of social relations (such as families, communities, business networks etc). These are not necessarily territorially confined, but maintained through continuous interaction in networks and other forms of social groups, with varying geographical configuration. Cognitive institutions, understood as shared conceptions and frames through which meaning is made, are sustained by the logic of orthodoxy and taken-for-grantedness. Similar to normative institutions, the territorial dimension of these institutions are not easy to pinpoint (Scott, 2008). Some would argue that the cognitive dimension is the "deepest", since it rests on preconscious, taken for granted understandings. It is however important to note that the regulative dimension in many respects has strong coercive power and might, thus, shape the normative and cognitive dimensions, at least when, as in the case presented in this study, the regulative dimension remains stable through many generations.

Operational framework

The following section suggests an operational framework in which layering, drift, conversion (and in principle also displacement) processes are analyzed, taking the interrelatedness of different institutional pillars into account. One central aspect in such analysis is to understand the interpretative flexibility of respective institutional pillar. According to Strambach (2010) differences in this respect are defined by the forms and strength of sanctions for deviation. Institutions with fixed and forceful enforcement characteristics such as legal sanctions provide less interpretive flexibility, while institutions primarily enforced by social obligation provide a wider room for flexible interpretation. One could indeed argue that the cognitive dimension is least flexible since it is pre-consciously interpreted. Also the regulative dimension is, following Strambach's (2010) argument, in principle inflexible, however obedience may differ. The normative dimension would thus, according to these arguments, be the most flexible since this is continuously recreated through social

interaction, allowing for dynamic evolution of networks constellations (e.g. if an actor is excluded from a community due to too flexible interpretation of the normative institutions of this community, the same actor can seek acceptance in another community). These arguments hence indicate that, logically, institutional reconfiguration (layering, drift, conversion) would most likely start with the normative dimension. They also indicate that such reconfiguration is more easily initiated by outsiders or newcomers in a community since they have less at stake in the established structure and therefore less to risk by challenging established institutions. It remains to be seen however if these assumptions hold true for an empirical assessment.

Based on this operational framework (outlined in table 1 in the appendix) the study analyzes the evolution of the Cognac cluster over a period of several decades, with particular focus on the moments in history when large scale changes are identified (the 1970s and the 1990s). While the regulative framework of cognac production has remained and still remains unchanged since the early 1900s, the main analytical focus is geared towards understanding the processes of layering, drift and conversion which have taken place, and which have influenced the normative and cognitive dimensions of the institutional framework as well as firm establishment and industry orientation, with accentuated speed and impact under these transformative periods. While institutional reconfiguration is somewhat complicated to observe directly, the analysis is based on interpretations of changed behavior and thus uses these observations as indications of institutional reconfiguration.

As described in table 1, layering basically means attaching new rules to existing ones, and establishing new institutional layers within a given structure. In general, these layers change the ways the original rules had structured behavior (Schickler 2001; Thelen 2003). Instead of providing entirely new rules, layering rather involves revisions, amendments and additions to existing rules. Layering processes most commonly occur when challenging actors do not have the capacity to actually modify or change existing rules. It is an often seen process, as it is difficult for protectors of the old rules to prevent others from creating amendments or small (layered) modifications, instead of entirely rejecting the existing regulation.

Drift describes situations where the established rules do not formally change (as in conversion), but their impact is different, as external conditions significantly evolve. This can be shifts in economic or political systems, which make regulation redundant or put it into a new and diverted context. It particularly occurs when actors choose not to respond to these external changes. This inaction in fact can, over long time periods, lead to significant changes in the meaning of institutions. Drift is an important indicator for inefficiencies that have emerged over time, and that have been put into question by changes in the external environment.

Conversion is described by Mahoney and Thelen (2010) as the process of reinterpretation of existing institutions. Here, the rules remain formally the same but are enacted and interpreted in a new way. This is not primarily due to an external change of setting (as in drift), but is mainly encouraged by actors who react to endogenous ambiguities in their established institutional setting. Those actors actively exploit gaps and discontinuities in the institutional framework, and by this transform existing institutions into tools for their own purpose. Typically, such actors are institutional innovators that are particularly good at working with existing structures to craft unexpected solutions to emerging problems.

The remainder of the paper applies this framework on the Cognac cluster, with particular focus on the change processes taking place from the 1990s onwards.

Motivation, research design, methods and data

We found interest in this case through a previous study that focused on product innovation in the beverage industry which one of the authors conducted in 2010-2012. What we found particularly interesting in Cognac are the homogeneous (regulative) institutional conditions that have dominated the local cluster for a long time period and which firms have been exposed to, since local production rules were made explicit in 1909. We were also aware that major change processes had taken place in the cluster at several points in the past, of which the most marked ones occurred around the oil crisis in 1974 (concentration of firms in the cluster) and in the mid-1990s (wave of major product diversification among some local firms). Due to the homogeneity of the context and explicit regulation that applies to all firms in the cluster, institutional change processes are particularly well observable over time, and can be illustrated with examples on different levels of the cluster.

Due to the product's strong historical embeddedness in the region and the fact that many local firms are still family driven, there is thorough data available on the history of local firms, trade organizations and established product-related regulations. For 'cognac' as for its close relative 'champagne', traditional and locally-confined rules of production apply, and those rules have been well documented in local trade organizations since their first explicit establishment more than 100 years ago. In addition to a comprehensive dataset on local firms' activities today which we had access to from the previous study, we started collecting information on local regulations since their establishment, gained access to regulatory documents and collected data on the history of local trade organizations. We further sampled a range of firms that we found had undergone particularly interesting developments over the past decades within the cluster (based on our insights from the

previous study) and conducted semi-structured interviews with their current and former managers. We distinguished between firms that 1. complied (and still comply) with established local regulation, 2. worked at the fringe of that regulation (or even disrespected it at times) and 3. started rejecting local regulation since the 1990s and used their skills and resources to develop other food and beverage products. In total, we conducted 41 interviews with managers and local professionals, of which 12 interviews were followed up with further questions regarding details about the companies' historical developments. One of the authors collected the data and returned to the firms at several occasions, obtaining further information by informal conversations with local professionals in different parts of the value chain. This helped triangulating information and getting more of an in depth understanding of local developments over time.

In addition to the qualitative insights from the interviews and observations, we accessed a descriptive dataset provided by a local trade organization, including balance sheets of today's firms and cornerstone data about their development throughout the past (number of employees, annual turnover, type of products). We also tried to gain access to information on firms that disappeared in the past, but this information was more difficult to obtain in a comprehensive way. We judged that the sample of existing firms was solid enough to provide internal validity for our analysis, as the essential elements of the local industry have proved to be fairly stable and homogeneous over time. As all firms are listed in industry datasets and national tax registers, we could control that we did not miss out on essential actors in the cluster.

Case and observations

It is important to understand the historical background of the different elements of the cluster in order to judge the influence of institutions on its aggregate development. This section therefore provides a brief introduction to the case and its development over time.

Cognac's principal standardized production techniques emerged in the 17th century, when the first larger export firms were established, essentially by foreign traders frequenting the region for its salt reserves. From individual producers using distinct distillation techniques² gradually developed production norms, which local vineyards had to follow in order to fulfill the requirements of the traders. In the early 1800s, Cognac had its first boom on global markets, yielding ample enough attention to generate infringements of the label 'Cognac'. Those were regularly reported by Cognac

² In brief: for Cognac production, juice from white grapes is fermented, then double distilled in copper pot stills, before being aged in oak barrels for several years.

salesmen from foreign markets, and ultimately led to the formulation of written laws which needed to be respected by all firms producing and trading cognac. The first of these laws was passed in 1909 and defined the geographical origin of the grapes. A second one was passed in 1937 with more explicit rules regarding production techniques.

The initial intention of these regulative institutions was rather simple: it was oriented towards “those who mislead or tend to mislead the consumer” [and should protect the] quality and dignity of local products” (Coussié, 2010; p. 58; decree 1909). Despite its relatively simple foundation, the consequences of this decision were profound in the long run, as will be shown in the analysis. Table 2 in the appendix specifies the main principles of the regulations.

The AOC regulations led to the establishment of a shared identity and image among local firms, and solidified the trust of their external customers. Further, but less intended, it created a local system of exchangeable goods, allowed for an important increase in confidence by local services (such as banks and insurances), and strongly amplified localization economies. The use of the same raw material and production techniques generated similar needs and challenges among local firms, which in turn led to the creation of numerous specialized service and supply firms (e.g. coopers, cork firms, packaging firms, aroma specialists) as well as, over time, a thick set of local inter-firm organizations and public support structures. In that sense, the protection created a stable ‘comfort zone’ in which firms could focus on other central parts of their activity (such as entering new export markets, refining quality within given regulatory boundaries, building up of stocks). But, and importantly, it also created a regulatory setting that was primarily rather hostile to change of more radical and explorative nature.

The AOC law passed in 1909 and 1937 was only the written and regulative form of what already had existed locally as norms and habits among vintners, distillers, coopers and other traditional professions long before. AOC regulation made these rules explicit – and prevented insiders and outsiders from infringing the cognac label. A range of distinct normative institutions, nevertheless, have developed over time and go far beyond the sole AOC regulation. Many unwritten rules have been created and are respected among local firms and along different professions within the local system, and some of them have subsequently been included in official AOC regulation (as for instance changes in minimum age for different product categories, which is an ongoing debate).

The institutional configuration described above defines much of local development until today. One of its main features, from an industrial change perspective, is that it over time generates a range of inefficiencies that put the institutional framework (and its embedded actors) under pressure. These inefficiencies (and the reaction of incumbent firms to them over time) will be in the focus in the

analysis section as a condition for different types of institutional change. They range from limitations in the distillation period, over inefficient aging techniques, to complexities of the aging process in general. Their structure and impact will be further elaborated in the analysis section later in this paper.

Despite the inefficiencies, cognac sales have had a positive development since the 1950s. Overall, they have increased by approximately 400 % (see figure 1 in the appendix). What is interesting is to look at periods of more radical change, as in the oil crisis after 1974, and the East Asian crisis in the early 1990s.

In these moments of crisis and in the aftermath, the following aggregate developments are observed among firms in the cluster (see table 3 in the appendix):

The wave of diversification after the 1990 crisis is particularly interesting for this study. Following the crisis, a handful of firms started to diversify from the traditional cognac label and used their capabilities for different but related products (e.g. premium spirits in general). This change did not occur without resistance by established firms and organization. One of the early movers in this respect was a high-end vodka (Grey Goose), which used a lot of the local knowledge (e.g. distillation and filtering techniques, symbolic knowledge) while not following traditional cognac regulation. Grey Goose became within a few years a global market leader in its segment, and was after eight years sold to the Bacardi Martini group for 2.2 Bn USD. A range of other firms in the cluster went through similar developments, diverging from the traditional label (and its regulatory implications), and creating a distinct new path of development within the cluster. Resistance by local firms against this development was very strong, and was only slowly adopted, first by other small firms that saw the opportunity, then, much later, by the largest and most powerful players in the local setting. A sequence of institutional changes – contributing to the emergence of this new path, influencing its subsequent development and its integration into established production structures – is observed, today contributing to almost 50% in outputs of the cluster.

Analysis - periods of incremental and radical institutional change

As described above the Cognac case has, with a homogeneous and fairly static regulatory framework, created a range of inefficiencies that provide incentives to act upon or diverge from the established institutional configuration. Many features of institutions and institutional change in clusters described in the theoretical framework can be identified and isolated in the Cognac case, and allow for detailed analysis regarding the development of actors within the system, and how they influence

cluster evolution. We find particularly interesting how actors react to the observed and emerging institutional inefficiencies at different periods of time, and what aggregate outcomes this generate in the cluster. Clusters in all industries establish some forms of explicit or non-explicit institutional frameworks, in which inefficiencies emerge over time with changes that are provoked by endogenous and exogenous developments. Hence, in clusters, there are always incentives to change, while many of the established regulatory, normative and cognitive institutional pillars encourage actors to stick to what they have been doing in the past. The more mature an industry (and the inherent institutional frameworks), the stronger this conservative power of institutions seems to affect embedded actors. This has in previous studies explained many of the problems of too strong specialization and resulting lock-in (Grabher 1993; Enright 2003; Trippel 2004; Hassink 2010). What we find in the Cognac case, is that these powers are very much in place and have kept things on track along the development of the local beverage cluster. At the same time, we can isolate particular institutional developments, both in phases of incremental and of radical change.

In periods of incremental change of the industry and its local environment, in this particular case up till the early 1970s and between the mid-1970s and the early 1990s, the institutional development was characterized largely by stability, but to some extent layering and drift processes can be observed. Examples of the latter are continuous waves of rationalization processes and formation of networks and coalitions of vineyards, distillers and traders, which influence the power structure of the cluster and contribute to setting the agenda with regard to acceptance for divergence from what was outside the mainstream of the cluster. However, as already pointed out, these changes are relatively minor, even though they, taken together and in a more long-term perspective, affect the aggregate evolution of the cluster as a whole. In a way these processes lay the foundation for more thorough processes of change set in motion in a later stage.

In periods of more radical transformation, as identified during both periods of crisis outlined in figure 1, but in particular in the immediate aftermath of the 1990 crisis, more thorough conversion processes were set in motion. A concrete and very well documented example is the changed attitude towards partly breaking with traditions and entering new fields of production. These changes also had wide impact on the more aggregate development of the industry composition in the cluster, leading to today's situation when about 50% of total production value is composed by non-cognac products. Important to note is that fundamental triggers for change in the periods of both incremental and radical transformation are very similar – previously described as inefficiencies – however their impact differs because the pressure or incentives to adapt differs. When the status quo is radically challenged, as during the crises of the 1970s and the 1990s, new windows of opportunity are uncovered. To use those windows of opportunity, major cognitive change is

necessary. Whereas normative and regulatory change play a more dominant role in incremental change processes, which largely explains the long periods of stability in between the crises.

Our analysis reveals that the incremental as well as the radical changes described above can be traced back to the basic composition and interpretation of the AOC. In particular three core aspects of the AOC are worth highlighting. Firstly, the limited distillation period (point 3 in table 2) creates inefficiencies and windows of opportunities which are realized when incentives – due to external pressures – are strong enough. Cognac can only be distilled between harvest and the 31st of March of the following year. This regulation has a historical-technological background. Since the grape juice used for cognac needs to be stored in a cold location after initial fermentation and before distillation (as there would otherwise be a risk of over-fermentation), it is forbidden to distill in the months after March when outside temperatures increase significantly. Today this problem could be largely overcome by using cooling containers, but the regulation has remained the same. As a consequence, distilleries can only use their distilling equipment and knowledge in a period of five to six months per year. From the interviews with distillers, we understood that this is not a major problem when demand is high and distilleries run 24 hours, seven days a week, during the allowed distilling period. Yet, when demand is lower than normal (e.g. at times of diminishing demand on established export markets), this can cause significant competitive stress on distilleries, putting them under pressure to use their specialized knowledge and production capacity in the other months of the year. Traditionally, a large part of the staff in distilleries would work in the vineyards during the summer months, or in other related professions. However, when the crises – in particular the 1990s – hit the cognac market attempts at drawing on these unexploited capacities for other types of spirits production started to be realized, first in small scale facing heavy resistance but gradually becoming more accepted in large parts of the community.

Secondly, the aging process in oak barrels (point 4 in table 2): cognac needs to be aged in oak barrels from specific woods in France. According to local aroma specialists and cellar masters, this is to ensure the consistent quality of cognac, while it also certainly has symbolic value for its customers. The equation of the aging process is relatively simple: the volume of the liquid needs to be exposed to a certain amount of oak surface, and needs to be in indirect contact with the surrounding air in the cellar. Barrel aging is a fairly inefficient and historical way of ensuring this exposure. External competitors can use more modern techniques, for instance aging the liquid in steel tanks and using oak extracts or oak chips that provide very similar effects on the liquid. This is much more efficient in terms of precision and use of space, but would certainly interfere with the traditional image of cognac. While this inefficiency, as opposed to the distillation period, does not create a window of opportunity to the same extent, it is still seen as beneficial for new path creation since it contributes

to maintaining the exclusivity of cognac and, thus, adds to its luxury and quality image. Producers diverging from the cognac norm can thus not draw directly on this inefficiency, but their incentive to tap into the local production system is strengthened since they want their products to be associated with the luxury and authenticity of the Cognac region.

Thirdly, the defined aging periods (point 5 in table 2): cognac has a minimum aging time of two years, with age categories defined at minimum 2 years (category: VS), 4 years (VSOP) and 6 years (XO). In many cases, the cognac used is older than its minimum specified age. The aging process in general, however, makes planning of production complicated and fairly inefficient, as increases in production will only have an effect on sales in 2, 4 and 6 years (or more). For their long term finance, cognac firms are therefore strongly dependent on prognoses on five to ten years in advance, and struggle with the uncertainties such prognoses bring. Also this limitation creates incentives for alternative and/or unorthodox production since this is one strategy of spreading risks and balancing investments to cope with market fluctuations during the long aging period.

All of the above rules have, as indicated, a strong impact on the incentives and opportunities for changed behavior among firms in Cognac. However, for these incentives to have a real impact and for the opportunities to be realized, institutional change with regard to interpretation and obedience of the rules are required. The study observes that the imposed regulation creates natural tensions within the system and, in addition, makes it particularly exposed to technological and organizational changes in the industry. It also reveals that outsiders (or those locals that do not use the cognac label) are not constrained by the rules to the same extent, and have therefore more possibilities to reconfigure their production, to improve processes, and to act upon or engage in changes on markets. In other words, those actors demonstrate a higher degree of interpretive flexibility and contribute to a larger extent to the processes of layering, drift and conversion as compared to the more embedded actors which built their entire identity and competitiveness on the cognac label. This is an important part of the reason for why the change agents identified in this study are either newcomers to the region or incumbent actors which have left the region for a while and subsequently returned with new perceptions and experiences.

Table 4 in the appendix specifies the institutional change processes which are identified both as results of the incentives and opportunities which the regulations bring, and as necessary conditions for the actors' abilities to realize those opportunities. The overview compares changes on the regulative, normative and cognitive dimension with the subsequent outcomes in terms of layering,

drift, conversion (and displacement³). As touched upon above, it is important to note that in the Cognac case, due to its regulatory specificities and its status as an AOC, the regulative dimension remains largely unchanged over time (with only minor incremental changes, or legal adaptations to current requirements). Thus, main attention is geared towards changes in the normative and cognitive dimension of the institutional framework.

One of the key observations in the study is that incremental institutional change processes (layering, drift) find their main driving forces in the regulatory and normative institutional pillars, while more radical change processes (conversion, displacement) lean much more on major changes on the cognitive level (e.g. through external entrants, returning locals). Observed processes of institutional layering are consequences of power relations in the cluster, where the largest established players control regulation, while smaller and less powerful actors (in institutional terms) can only obey to the imposed structures, or create their own institutional layers within the given framework. In Cognac, this can be well observed with small and medium sized firms creating sub-labels of regulation (with often stricter rules than what the largest players could commit to), such as “single vintage” or “single estate” products – the latter meaning that the cognac produced and sold in bottles only comes from one single vintage, or even just one estate (where the largest cognac firms source their cognac from several hundred vineyards in order to produce enough quantity).

Drift mainly relates to changes in the external environment, while local regulation remains the same; the result of this being that the meaning (or purpose) of regulation changes, not by explicitly changing for itself but by being moved into a new and different context. In the cognac case, there are many examples where firms external to the cluster (and to its regulation) have been able to innovate in production techniques or product concepts (such as avoiding the complex ageing process in oak barrels), and entering new market segments or, and especially, developing higher profit margins. These changes put firms submitted to cognac regulation under significant pressure (for example, their marketing budgets become in relative terms significantly smaller than their external competitors'), and forces them to engage in incremental change within the given institutional framework, or get ready for more radical change. Many of the firms that engaged in more radical change at later stages (i.e. after the 1990s crisis) had significantly undergone processes of layering and drift in precedent years. In general, the different institutional change processes described in this section are not to be seen separate from each other, but are rather occurring simultaneously and

³ Displacement is not observed, essentially due to the fact that Cognac and its regulation have not been outcompeted by external industry forces (yet). Displacement is however still included in the table, as it may commonly occur in other cases of clusters where the established regulation, for whichever reason, does not survive and is radically replaced by new norms and patterns of behavior.

provide aggregate among firms that shape the cluster (and its institutional framework) over time (c.f. Martin, 2010).

Conversion differs in many terms from layering and drift. Where the main driving forces in the latter two were general changes in institutional conditions (and of rather incremental nature), conversion finds its driving energy in change agents with radically different mindsets (often external entrants, or local returners), that perceive the local production system in a different way and exploit windows of opportunity that the local institutional framework provides. One can, for instance, name the radically diverging products that emerged after the 1990s crisis, where a wave of foreign entrants started using local skills in a new way, particularly by producing beverage products that can be distilled in all periods of the year, also in those after the 31st of March (when cognac distillation, by regulation, needs to stop). They further recombined local skills in a way that eliminate general institutional inefficiencies in the local system (e.g. the complex aging process, constraints in terms of raw material supply), which allowed them to generate additional value that represents, today, close to 50% of production outputs of the local cluster. In the first place, established actors in the cognac cluster reacted with much skepticism and resistance to new developments. Only with time and some highly successful developments among “new” firms, local actors started adopting the new practices and accepting institutional change of more radical nature. The last ones to adopt the new practices were the largest players in the cluster, those who have the strongest power (and stake) in the old and established regulation

Conclusions

It has been argued in this paper that the institutional framework within which a regional cluster is embedded is of crucial importance for the behavior of firms in the cluster and as a consequence it is also one of the decisive factors shaping the evolution of the cluster. Yet at the same time the evolution of the cluster requires adaption of the institutional framework, since changed behavior by nature is dependent on changed perception of and obedience to behavioral rules. In other words, the rules of the game set the limits and define the possibilities for change to take place, while change in itself also influences the rules of the game. In the case of the cognac cluster and its recent evolution, which have been scrutinized in the present study, the regulative dimension of the institutional framework has been stable and largely unchanged for a very long period. Despite this there have been major changes in behavior among the actors in the cluster during the last two decades, which in turn have led to quite substantial transformation with regard to composition and orientation of the local industry. These changes have been imposed by, and generated, incremental

as well as more radical changes in the normative and cognitive dimensions of the institutional framework. Incentives and opportunities for such change are ever apparent due to the inefficiencies that come with fixed and inflexible industry regulations, while the capabilities for acting upon those incentives and realizing those opportunities differ among the actors in the cluster. While the most established and powerful incumbents display a low degree of interpretative flexibility and inclination to renew themselves and challenge established behavioral rules due to high stakes in current state of affairs, newcomers and returners are more inclined to act as change agents or “institutional entrepreneurs”.

Three interrelated processes of institutional change are identified in Cognac, very much in line with the basic assumptions of established theories in the institutional literature. Layering is the process of adding new layers to an existing institutional framework, thereby incrementally influencing its form and direction. In Cognac, this process is mainly rooted in the normative dimension of the institutional framework, when new attitudes to and interpretations of the regulation are added, which initially generates sub-groups of actors with different modes of behavior but gradually are diffused to wider parts of the cluster to become normalized. It is usually a matter of small modifications which over time generate cumulative processes. A second, and strongly related, process of institutional reconfiguration is defined as drift. It is the process in which consequences of existing institutions are adapted to changes in the exogenous environment, such as global crises or changed market conditions which generate new incentives for change within established regulations. In Cognac these are also incremental, but have important impact on the cluster since they are cumulative over time. The third process which has been identified in the present study is more radical in nature and referred to as conversion. While having its roots mainly in the cognitive dimension of the institutional framework, through actors being able to identify and exploit new windows of opportunity arising from inefficiencies in the current system, this process also feeds into the normative dimension when these new practices are being diffused to wider groups in the cluster. Thereby their adoption and diffusion also generate more large scale and aggregated outcomes of change. In principle these three interrelated processes have the potential of generating comprehensive institutional change also in the regulative dimension, in the literature referred to as displacement, yet this has not been observed in the present study. Despite quite far reaching transformation of the composition and direction in the local industry, the formal institutions defining its rules of the game have remained unaltered.

While the cognac cluster is a case with very particular characteristics due to homogenous industrial structure, clear geographical delineation, and explicit and stable regulatory framework, the main insights derived from the present study are applicable also to other industrial and geographical

contexts. The AOC regulation bears similarities with other protected labels of origin (there are numerous examples from the food and drinks industry worldwide). It is thus reasonable to expect that transformation processes in those industries would share characteristics; however the aggregated outcome in terms of product diversification and renewal may differ. Comparative studies of those cases would bring more clarity to this question. Yet, also comparative studies with less specific and regulated clusters would add to our understanding of what role strict and stable regulations have for cluster evolution. It might be the case that similar processes of layering, drift and conversion are identified in clusters with a less homogenous industrial structure and with less explicit regulations, which in that case would put established assumptions of institutional dynamics in new perspective.

Finally, with regard to policy implications, the study reveals that policy aiming to promote change and renewal in regional clusters ought to pay attention not only to technologies and markets but also, and probably more importantly, to the institutional framework of the local industry, the behavioral rules of the local actors. While incremental change could be promoted by the creation of new incentives through adaption and redefinition of established regulation, more radical transformation would require not only regulative changes but also changes in the cognitive frameworks of the actors. Such changes are triggered by inclusion of new actors in established clusters which would be stimulated by measures such as mobility schemes and openness to new entrants. Furthermore, since changes of a far reaching nature are results of cumulative processes, a main challenge for transformative policies is to identify the windows of opportunity which represents seeds for such initial minor changes. While there is a tendency among policy makers to pay most attention to opinions of the most powerful and established actors in an industry and region, such seeds for change are more likely to be found among less influential and less powerful actors since those have less stakes in the current state of affairs and hence more to gain from changed rules of the game.

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Appendix: tables and figures

	Indication layering	Indication drift	Indication conversion	Indication displacement
Condition	Challenging actors do not have the capacity to actually modify or change existing rules	External conditions significantly change, actors choose not to respond to these external changes	Emerging inefficiencies in the institutional framework	Institutional framework is outcompeted by changes in the environment, or internally replaced by a new framework
Institutional change process	Actors create new institutional layers in addition to the existing ones	Inaction of institutional actors leads to significant changes in the meaning of institutions	Actors actively exploit inefficiencies in the institutional framework	Actors exit the old framework and, if applicable, enter an entirely new one
Role of institutional pillars, and interaction between them in the change process	Gap filled by the paper (Stability of regulatory framework in the Cognac case, and homogeneity of change processes allows for specification)			
Aggregate outcomes	Revisions, amendments and additions to existing institutions, generation of multiple layers within the same system	The changed meaning of institutions creates pressures or new incentives for actors embedded in the given framework	Reinterpretation of existing institutions leads to change among challenging actors	The old framework disappears, and is replaced by a new one

Table 1. Operational framework for understanding the processes of institutional layering, drift, conversion and displacement in cluster evolution.

Specifications of product regulation in Cognac
<ol style="list-style-type: none"> 1. Grape types used (Ugni Blanc, Colombard, Folle Blanche), need to be produced locally 2. Double distillation in traditional copper-pot stills, “alambics charentais” 3. Allowed distillation period: harvest (normally in September) to 31st of march of the following year 4. Ageing in oak barrels, using French oak from the Troncais and Limousin areas (nearby Cognac) 5. Minimum age for youngest eau-de-vie used for Cognac: 2 years 6. Age categories: VS (minimum 2 years), VSOP (min 4 years), XO (min 6 years)

Table 2: Essential elements from the decrees 1909 and 1937 (from: BNIC 2014)

Phase	Type of change in environment	Consequence
1950 – 1974	Incremental	Minor institutional changes within given system
1974 market crisis	Radical	Concentration of firms (fewer, but larger firms within Cognac label), some small attempts of diversification (without long term success)
1976-1990	Incremental	Minor institutional changes within given system
1990 market crisis	Radical	Concentration of firms (within Cognac label), significant wave of diversification in subsequent years
1990-2008	Incremental	Major institutional change on normative and cognitive level
2008	Radical	Not fully observable yet

Table 3: Observed developments in the Cognac cluster from 1950 onwards.

	Indication layering	Indication drift	Indication conversion	Indication displacement
Condition	Regulation is controlled by the most influential actors in the cluster; smaller firms need to obey or exit the label	Actors decide to stick to existing regulation , while the external context undergoes significant changes (e.g. figure 1)	Regulatory inefficiencies open windows of opportunities for change agents	Regulation becomes outcompeted due to major changes in the environment (not observed in the Cognac case)
Regulative process	Established regulation remains unchanged	Established regulation remains unchanged	Established regulation remains unchanged	Established regulation remains largely unchanged
Normative process	Different labels within the cognac category emerge (e.g. single estate, single vintage, French brandy)	Changes in the beverage industry (uprating of traditional low-cost drinks)	New practice slowly becomes a norm among local firms (after cognitive change below)	New institutional framework becomes a norm and potentially leads to new regulation (not observed)
Cognitive process	Actors get comfortable with new labels, slowly adopts change on the normative and regulatory dimension	Embedded firms get under pressure, need to react to emerging changes in the environment	External actors use local production capacity and knowledge in a new way (e.g. Grey Goose)	Adaptive firms reject old rules and generate integrate an entirely new institutional framework (not observed)
Aggregate outcomes	Multitude of institutional layers emerges within the cluster over time (some staying within the given framework, others going beyond it)	Multitude of firms look into incremental change within the given framework, others become ready for more radical change	New opportunities emerge within the cluster, need for change agents to exploit them	Major shift in the cluster from one (disappearing) institutional framework to an entirely new one (not observed)

Table 4: Causes and aggregate outcomes of transformation processes in the Cognac cluster.

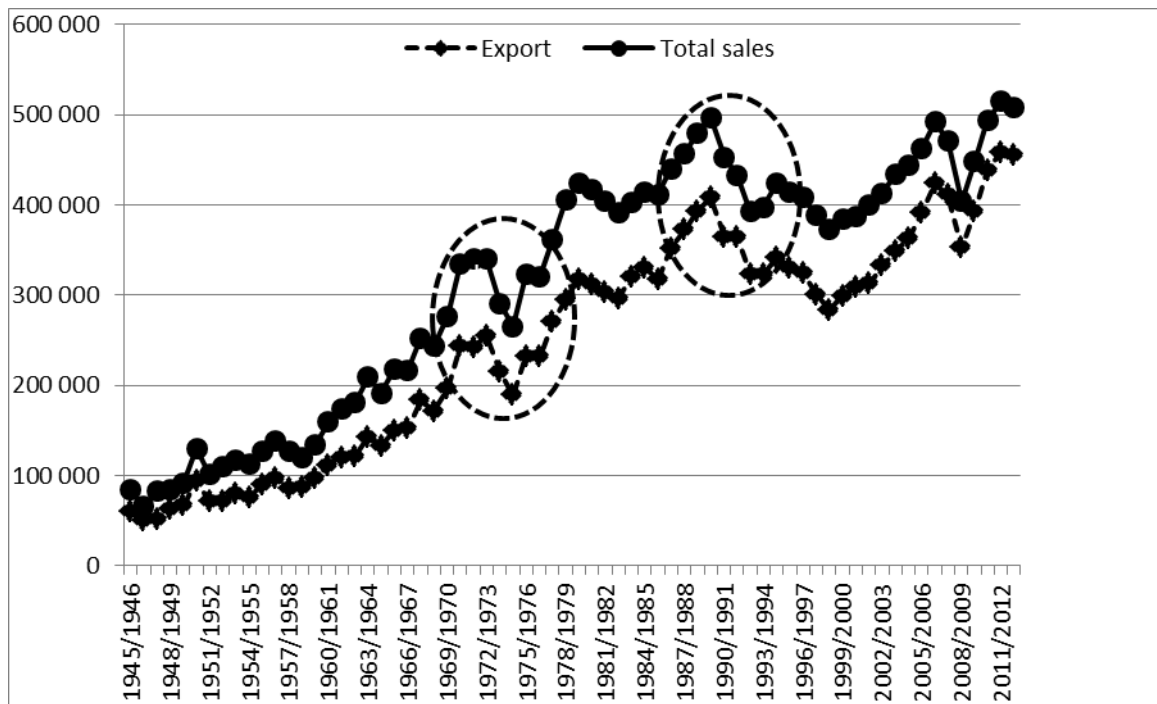


Figure 1: Development of cognac sales since 1945, with significant crises around 1974 and 1990. The latest one (2008) is of lower relevance for this study, as the aggregate outcomes in terms of cluster evolution can only fully be understood with some distance in time.