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Machina ex Deus? From Distributed to Orchestrated Agency

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Abstract

In this paper, I draw on a historical case study of the Australian wine industry to explore variations in collective agency. The inductively derived process model illustrates the emergence of a new profession of scientific winemaking, which unfolds in three phases. Each phase is characterized by a distinct form of agency: distributed agency during the earliest phase, coordinated agency during later phases and orchestrated agency during consolidation. In addition to exploring the temporal shifts in agency, the study includes a detailed analysis of the early stages of distributed agency, examining how collective agency is achieved in the absence of shared intentions.

Keywords: multi-level analysis; distributed agency; coordinated agency, orchestrated agency; longitudinal research; institutional work; distributed agency

In this article, I examine the development of collective agency during the emergence and consolidation phases of institutionalization with a particular focus on the forms of agency that prevail during innovation. Emirbayer and Mische defined agency as the temporally constructed engagement of individuals with structural environments in a way that reproduces or transforms these social structures via the interplay of habit, judgment, and imagination (1998, p. 970). In addition, agency refers to the individual capacity that stems from roles, as well as the resources, rights, and obligations associated with these roles (Abdelnour, Hasselbladh, & Kallinikos, 2017). Agency can be exercised by individuals (Fligstein, 1997) or collective actors such as organizations (Greenwood, Suddaby, & Hinings, 2002) and social movements (King, 2008).

Within the neo-institutional tradition, the dominant understanding of agency is based on DiMaggio's (1988) concept of institutional entrepreneurship. Although the original definition encompassed both individuals and organized actors, later understandings of institutional entrepreneurship often focused on the former, and thus most studies have overlooked processes of collective agency (Maguire & Hardy, 2009, p. 173). Examining multiple actors or an aggregate form of actor—an organization, a community, or a social movement—requires the consideration of new issues including interest alignment, group cohesion, and coalitions (Dorado, 2005; Garud, Jain & Kumaraswamy, 2002; Hall, 2016; Lounsbury & Crumley, 2007). Prior research has concluded that collective action requires the leadership of institutional entrepreneurs who can mobilize resources and form alliances within the collective, establish agreement and induce cooperation among actors (Fligstein, 2001, p. 112; Wijen & Ansari, 2007), and produce shared meaning for others (Mead, 1934).

An increasingly common critique asserts that the theoretical perspective of institutional entrepreneurship overestimates the power and intentionality of actors. Although applications of the “great man ideology” are widely accepted, they fail to account for unintended outcomes as well as less dramatic forms of institutional dynamics. Suddaby (2010) coined the phrase “hyper-muscular actors” to describe this problem while Delmestri (2006) referred to it as *deus ex machina*. Lawrence and Suddaby (2006) sought to address this critique by introducing the concept of institutional work, defined as the purposive action of individuals and organizations aimed at creating, maintaining, and disrupting institutions (Lawrence & Suddaby, 2006, p. 215). However, institutional work requires actors to have shared intentions in order to take purposive action, and the presumed alignment of intentions is particularly problematic because the bounded

rationality of human actions (Simon, 1982) is multiplied at the collective level. In particular, the early stages of emergence, when there is no institutional reference frame, is likely a difficult time for the development of shared intentions. The lack of institutional scripts appears potentially problematic as actors seek support, mobilize resources (Battliana, 2006; Garud, Hardy, & Maguire, 2007; Zilber, 2007), find allies, form a cohesive collective (Fligstein, 2001, Lounsbury & Crumley, 2007; Suddaby & Greenwood, 2005), and create shared meanings (Suddaby & Greenwood, 2005; Zilber, 2007).

An additional limitation of the literature on collective agency is methodological. Few studies have undertaken a longitudinal analysis of institutionalization. Most studies have analyzed a single phase of the process, either emergence (Leblebici, Salacik, Copay, & King, 1991; Maguire, Hardy, & Lawrence, 2004; Navis & Glynn, 2010) or mature arrangements (Greenwood & Suddaby, 2006; Zietsma & Lawrence, 2010). However, a longitudinal analysis is necessary to gain a better understanding of the different phases and antecedents of agentic behavior.

This study seeks to address the conceptual and methodological shortcomings of the extant literature by focusing on two questions: How does agency vary across the phases of institutionalization, from emergence to consolidation? How does a collective aggregate the intentionality of its members to become an intentional collective during the early stages of emergence? To address the oversimplified characterization of actors as skillful (Fligstein, 2001) and capable (Lawrence & Suddaby, 2006) during change and emergence and their actions as purposive and intentional (DiMaggio, 1988; Lawrence & Suddaby, 2006), I draw on the concept of distributed agency (Callon & Law, 1997; Quack, 2007). Distributed agency serves as a non-monolithic notion of agency that integrates a range of interests and intentions and allows an institutional initiative to emerge without institutional leadership.

The study employs a longitudinal case-study design in the tradition of historical sociology (Abbott, 1992; Aminzade, 1992), focusing on the creation of the profession of scientific winemaking within the Australian wine industry.

Agency in Institutional Theory

The emergence of institutions involves agentic efforts of theorization (Delmestri & Greenwood, 2016; Maguire, Hardy, & Lawrence, 2004; Nigam & Ocasio, 2010; Rao, Monin, &

Durand, 2003; Weber, Heinze, & DeSoucey, 2008) and diffusion (Gabbionetta, Greenwood, Mazzola, & Minoja, 2013; Greenwood, Suddaby, & Hinings, 2002; Lounsbury, 2007; Smets, Morris, & Greenwood, 2012; Tolbert & Zucker, 1983). These processes also occur during the emergence and transformation of professions, a specific kind of institution. However, despite the agentic turn in institutional theory and the focus on micro-foundations (Powell & Colyvas, 2008), scholars have largely overlooked questions of agency during the early stages of emergence. In the following section, I address the current understanding of agency in the institutional literature and clarify three interrelated concepts: institutional work, intentionality, and purposive action. Finally, to provide an alternative perspective on agency, I introduce the concept of distributed agency.

Actors and Institutional Emergence

When a significant number of actors perceive a new opportunity, skilled actors will form alliances and create cohesion within the group, until group cohesion is strong enough to enforce a local social order (Fligstein, 2001, p. 115). Dorado (2005) questioned the rational and strategic capacity of actors and concluded that much of institutionalization occurs, instead, through partaking and convening as new forms and practices diffuse. She assumes entrepreneurship as the stimulus that initiates institutionalization, but acknowledges that agency is not always as rational as it seems. Rather than being driven by resource mobilization and opportunity, agency is often the result of following routines and sense-making.

Concerning the origin of institutional emergence, the literature suggests that peripheral actors are particularly likely to drive institutional change (Greenwood & Suddaby, 2006). Leblebici and colleagues (1991) illustrated the emergence of U.S. radio broadcasting by focusing on the role of fringe players as well as collaboration between various actors that produced agreements between disparate parties. The authors concluded that the novel technology could only become a convention after agreement had been reached, which helped solve coordination issues. One form that such collaboration between actors can take is institutional entrepreneurship (Lawrence, Hardy, & Phillips, 2002).

Lawrence, Hardy, and Phillips (2002) defined collaboration as the non-market based and non-authoritative cooperation of organizational members to initiate change. The concept of collaboration shifts the focus of analysis from powerful actors toward powerless or non-central actors. Collaboration has significant potential to trigger innovation, but the resulting innovations

do not initially generate institutional effects. Those involved in these collaborations create proto-institutions until new rules and practices diffuse beyond the context and network of the initial collaborators. Such collectives, however, are seen as legitimate and share a common goal (Guerard, Bode, & Gustafsson, 2013; Lawrence, Hardy, & Phillips, 2002). Leadership appears to be a crucial tipping point in the process of moving from proto-institution to institution (Guerard, Bode, & Gustafsson, 2013; Navis & Glynn, 2010; Wijen & Ansari, 2007). The role of leadership is particularly relevant because efforts to make changes do not go uncontested (Garud & Van de Ven, 2002), and thus require leadership by skilled institutional entrepreneurs (Perkmann & Spicer, 2007).

Actors and Consolidated Institutional Arrangements

In mature fields, the focus usually lies on maintenance. Institutions are relatively stable and self-reproducing (Jepperson, 1991; Scott, 2013). Routines and habits based on socialization reproduce patterns of social life. The concept of institutional scripts, defined as encoded cognitive and regulatory principles of behavior that are applicable in specific settings (Barley & Tolbert, 1997), provides particularly helpful insight into how routines are established and practices become uncontested. The encoding of these principles usually occurs during socialization when individuals internalize rules and appropriate patterns of behavior (Berger & Luckmann, 1991). Consequently, in mature institutional arrangements, individuals are subject to strong constraints (Barley & Tolbert, 1997). Actors who inhabit a central position can inscribe social patterns of behavior, which group members then enact and reproduce. Professions serve as an example of such central actors, embedded in a system of professional associations that fulfill advocacy roles. Such advocacy is considered an important aspect of institutional work. Associations or industry federations are actors that make claims for and represent important constituencies within an organizational field (Galvin, 2002, p. 673). Thus, professional associations generate, define, and vest rules.

All the theoretical lenses described above incorporate the notion of skillful and purposive actors who pursue an institutional agenda with a clear goal in mind. I argue that these interpretations overemphasize actors' abilities to pursue a specific agenda and persuade others to support this agenda in a way that creates a common vision. To address these limitations, I clarify the concepts of intentions and intentionality as well as the related concepts of purposeful and purposive action.

Intention and Intentionality

Lawrence and Suddaby's (2006, p. 216) original definition of institutional work builds on the work of Jepperson (1991, p. 143-145), who stated that institutions are the product of purposive action, intentional or otherwise. Lawrence, Suddaby, and Leca (2009) identified intentionality as a fundamental aspect of institutional work. For example, the authors noted that some efforts have significant institutional consequences but are not considered institutional work because these consequences were either the result of everyday acts, such as the use of language, or were unintended. The authors described intentionality as the need or desire for something to become (Lawrence, Suddaby, & Leca, 2011, p. 53). Purposive actions include only those acts characterized by a high degree of conscious intentionality (Lawrence, Suddaby, & Leca, 2009, p. 11). The wider literature usually conflates intentionality with pursuing intentions that result in purposive action. This lack of precision is problematic. The ontological foundation of the original definition of institutional work as purposive and intentional (Lawrence & Suddaby, 2006) builds upon philosophical notions of human action. Therefore, I introduce some basic philosophical principles to clarify the difference between seemingly similar terms and to identify the consequences of the conceptual ambiguity.

Intentionality does not necessarily coincide with intending or intentions (Byrne, 2006). Rather, intentionality—the “aboutness” of a mental state (Byrne, 2006) or the directedness of the mind (Searle, 1983)—concerns the awareness of something. For example, the sentence “The production of wine is a chemical process” shows intentionality but does not reveal any intentions. Despite the lack of intentions, the directedness of the mind involves certain actions. Becoming aware that winemaking is a chemical process will change the perception of the product and the production process. In other words, in this case, mental aboutness focuses on the chemical aspects of winemaking and has an influence on the making of wine. Actions will therefore be purposeful, focusing on aspects of the production rather than the final goal.

The term purposeful action refers to an action undertaken because a subject's mental state is full of determination or the action has a purpose, whereas the term purposive action refers to an action that serves a useful function or purpose (Reese, 1994, p. 75). Both purposeful and purposive actions are grounded in intentionality, but purposive action involves both the directedness of the mind and the intention of achieving a specific goal.

This distinction allows actions to have institutional effects despite the actor's intentions being different and thus permits more analytical precision in the examination of actors, their practices, and their efforts. Leveraging the variation in actors' intentions diminishes the emphasis on the rational capacity of actors. Accordingly, shared intentionality can account for institutional effects. I introduce the concept of distributed agency to explain agency based on a multiplicity of intentions.

Distributed Agency

Distributed agency (Callon & Law, 1997; Quack, 2007) refers to agency based on the multiple backgrounds and interests among the actors within a (possible) collective. This perspective allows for (1) a multi-level analysis and (2) the integration of both entrepreneurial and mundane forms of agency. The multi-level focus combines the micro and macro levels of analysis and thus overcomes the analytical separation of the two. Institutional studies usually employ a multi-level perspective that entails zooming in to study emergence and zooming out to study the diffusion of practices. As a result, institutionalization is typically portrayed as a unidirectional process. In contrast, distributed agency allows for a simultaneous analysis of activities, contributing factors, counter activities, and obstacles at all levels during all phases of institutionalization (Callon & Law, 1997). In addition, the concept sheds light on both coordinated and uncoordinated efforts.

Quack (2007) outlined a case of distributed agency in transnational lawmaking. She showed that practical problem solving and sense-making drives the actors involved in the transnational lawmaking process. Focal actors can capitalize on the results of this process to deliberately shape the law. Therefore, a diverse group of actors are involved in the lawmaking process and many of these actors are driven by their professional practices rather than strategic, long-term goals. Because the concept of distributed agency draws on interactive emergence (Granovetter, 1973), actors do not have to be aligned in their interests. Rather, interests can be distributed across levels, from practices, rules, routines, and individuals to artifacts and organizations (Callon & Law, 1997). The most intriguing aspect of this concept is that the outcomes of institutionalization are attributed to neither single individuals nor a cohesive collective and thus strategic action is less strategic and purposive than described in the extant literature on institutional entrepreneurship. Rather, in this perspective actors act within a range of frames (Callon, 1998).

To address the puzzle of how collective agency is achieved during institutional innovation and early emergence, I ask the following questions: How do the actions of a variety of actors combine to engender a new institutional arrangement? What forms of agency prevail throughout the stages of institutionalization, from the early stages of emergence to the stage of consolidation. In reference to the critique of institutional entrepreneurship as a “*deus ex machina*” (Delmestri, 2006), I argue that the institutionalization of the new profession is, first, driven by distributed agency and consolidates via orchestrated agency. In other words, the process leads to a self-reproducing system, one could say a *machina ex deus*.

Research Agenda

I study the emergence of a new professional field based on the case of scientific winemaking, exemplified by the work of Max Schubert who invented a new type of wine, Grange, at the Australian winery Penfolds in 1950. The Australian wine industry provides a suitable case for studying the emergence and consolidation of a new profession because Australia was originally regarded as a marginal and unprofessional player in the wine industry, but is now considered one of the top wine-producing countries and the leader in scientific and industrial winemaking as noted by Robert Parker Jr. (cited in Mattinson, 2007, p. 17). In addition, Australia’s main wine research center (The Australian Wine Research Institute or AWRI) is celebrated as a global hub for oenological innovation. Thus, Australia is an extreme case of the development and application of scientific principles in winemaking, which facilitates an analysis of a case that resembles an ideal type (Weber, 1968).

Methods

This study employs a qualitative methodology to better understand the early stages of emergence and develop an understanding of how forms of agency unfold over time across the phases of the institutionalization of a new profession. The case study draws on data collected during three months of fieldwork in the Australian wine industry as well as historical data. The methodology is based on grounded theory (Corbin & Strauss, 2014; Glaser & Strauss, 1967) and therefore integrates multiple sources.

Data Collection

The goal was to study the past by examining traces of evidence from historical sources and documentary evidence (Pitt, 1972). The focal data include historical material, in-depth

interviews, documents, historical books, and industry statistics (Yin, 2013). Following the methodological principles of historical sociology, I identified critical events, patterns, and temporal structures (Abbott, 1992; Aminzade, 1992). To analyze historical events and temporal dynamics, I used temporal data triangulation, integrating material from different historical times. To juxtapose historical processes and current developments, I also gathered primary data via interviews and observations.

I employed a purposeful and theoretical sampling strategy to collect the data. I obtained access to the field through a preliminary interview with one winemaker, and then purposefully expanded the sample (Patton, 2002; Suri, 2011) according to a theoretical principle (Glaser & Strauss, 1967).

I gathered empirical data from several types of sources: in-person interviews, historical documents, strategy statements, informal discussions, interviews printed in newspapers and industry journals, books on key figures, and historical and contemporary books on the history of Australian wine. In addition, I analyzed the transcript of a 1979 speech given by Max Schubert at the first Australian National University Wine Symposium in Canberra, Australia. Finally, I examined documents distributed by the Winemakers’ Federation of Australia, including the “Strategy 2025” report, and documents published by the Australian Grape-Growers Association.

Table 1: Data and Sources

Secondary Data	Historical material	Speech by Max Schubert	1
		Wine books	20
		Association reports	99
		Interviews	21
		Online blogs	2
		Primary Data	In-depth interviews
		Grape growers	2
		Critics	3
		Associations	2
		Scientists	6
	Short interviews	Associations	1
		Winemakers	1
	Field notes	At cellar doors	36
		At research institutes	4

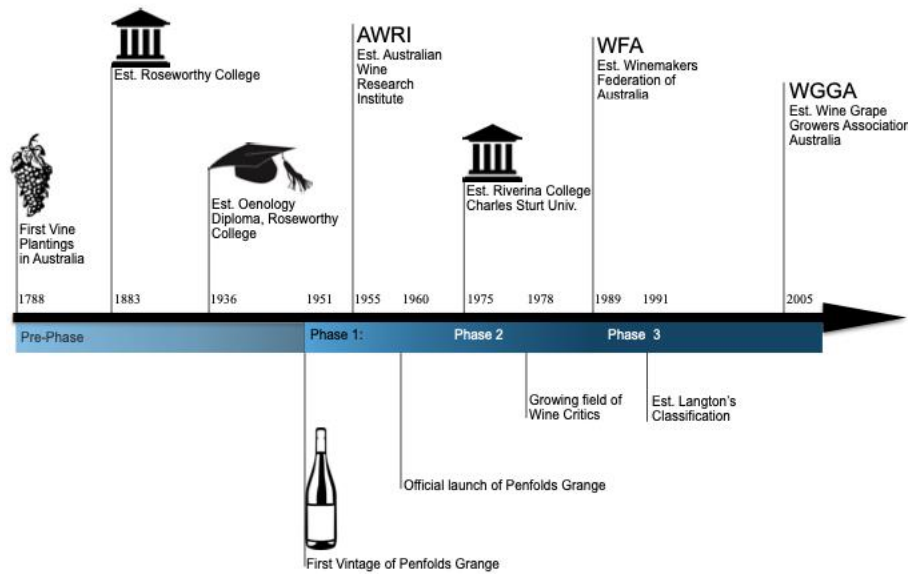
I conducted in-depth interviews lasting one to three hours and short interviews lasting approximately 30 minutes. I recorded all conversations and transcribed them verbatim, with the exception of some short interviews that could not be recorded due to ambient noise. In those cases, I took notes during and after the interview. Interviews were semi-structured or followed a

more episodic-narrative style depending on the stage of the research at the time of the interview (Flick, 2000). The interviewees included winemakers, the two most influential Australian wine critics (James Halliday and Huon Hooke), one influential international wine critic (Jancis Robinson), the presidents of the two industry bodies (the Winemakers’ Federation of Australia [WFA] and the Wine and Grape-Growers Association [WGGA]), and representatives of scientific research bodies.

Data Analysis

The data analysis followed the principles of iteration—from open to selective and axial coding (Glaser & Strauss, 1967), revising, pattern matching, and category building—to formulate logical explanations (Yin, 2013). I allowed themes to emerge until patterns crystallized. I employed data triangulation to ensure the trustworthiness of the findings (Lincoln & Guba, 1985). To identify temporal dynamics, I added temporal markers to specific events, which located the events in relation to actors, processes, and outcomes, and thus within temporal sequences.

Figure 1: Key events in the professionalization of winemaking in Australia



Findings: The Emergence of the Profession of Scientific Winemaking

Scientific winemaking is distinct from traditional winemaking, which is considered a form of craftsmanship. The following sections detail the developments in scientific winemaking, from the emergence of a novel practice to the consolidation of a new professional field. Figure 1 illustrates the sequence of events discussed in the following sections.

The phase of traditional winemaking (Phase 0 or Pre-phase) ends with the creation of Penfolds Grange. Phase 1 includes the scientization of winemaking and the subsequent establishment of a new role, the scientific winemaker. Phase 2 marks the gradual shift toward increased cooperation in the field. During Phase 3, the entire field shifted toward being organized by associations. Notably, some events (e.g., the creation of the industry body) had immediate effects, while other events (e.g., the establishment of an oenology course at Roseworthy College and the creation of the AWRI) produced effects only after a time lag, in which case the initial event and its effects occurred in different phases.

Phase 0: Pre-modern Winemaking

According to many wine professionals and historians, the origin of winemaking dates to approximately 7000 B.C. (Castro-Sowinski, 2016; McGovern, 2013). While many advances in production were introduced in the following centuries, winemaking remained predominantly a craft—a set of inherited skills, especially handicraft skills, based on traditions and developed via experience. The goal of winemaking as craft was to help nature develop its best. This philosophy still prevails today in movements such as biodynamic winemaking. Craft winemaking focus on terroir (which translates as “placeness” or “somewhereness”) as the core aspect of quality wine production, based on the belief that wine should be an expression of the specific climatic conditions, the particular parcel of land, the geographic environment, and the age of the vines. The farmer is the principal actor. In contrast to later phases, in this phase the winemaker is understood as the least influential aspect of the process.

In this context, wines derived from a certain place have a unique and characteristic flavor (Jefford, 2002) determined by nature, and the winemaker is simply a steward of nature’s offerings who engages in minimal intervention in the vineyards and the cellar. The winemaker’s partnership with nature is based on craftsmanship that has been handed down from generation to generation, including traditional skills and experience in winemaking. Because terroir determines the quality of the wine, grape growing and winemaking are considered inseparable. In Australia, winemaking knowledge arrived with the influx of European immigrants and through books on how to make wines according to French standards (e.g., books by James Busby).¹

¹ James Busby published three books on winemaking: *Treatise on the Culture of Vine*, 1825; *A Manual of Plain Directions for Planting and Cultivating Vineyards and for Making Wine in New South Wales*, 1830; and *Journal of a Tour through Some of the Vineyards of Spain and France*, 1833.

Until the mid-20th century, the traditional approach to winemaking predominated in Europe and the New World regions, including Australia. Science first began to influence winemaking in mid-19th century France through the works of Pasteur (Paul, 2002), but the process did not become thoroughly scientific until the mid-20th century when New World developments in scientific practices revolutionized the world of winemaking. These innovative practices are best exemplified by the development of Penfolds Grange, which is the epitome of a modern, high-quality wine created based on a non-terroir winemaking philosophy.

Phase 1: Innovating a New Profession

The 1950 creation of Penfolds Grange is attributed to Max Schubert, a chemistry assistant in the laboratory of Penfolds winery working to fight bacteria spoilage. When he became more deeply involved in winemaking, the winery sent him to Spain to learn the best practices of making fortified wine.² During a stopover in Bordeaux, local winemakers introduced Schubert to a process for making fine red wines with incredible maturation potential. Inspired by his experience in France, Schubert began to design a new wine from scratch upon his return to Australia (Hooke, 1994). This new wine, Penfolds Grange, was designed not on the basis of the terroir philosophy, but from a scientific perspective. Instead of focusing on the potential contributions of the terroir, Schubert focused primarily on the final product, designing the entire process of production around the desired outcome. Schubert selected grapes (first in and around the Barossa Valley and later throughout vineyards all over Australia) to find those that would express the desired flavors. After the official launch of Schubert's Grange in 1960, this novel wine won every possible tasting, exhibition, and wine show and became a testimony to the non-terroir philosophy. The 1967 vintage of Grange was the first New World wine to receive a perfect score (100 points) from wine critic Robert Parker Jr.³ This success led many winemakers, first in Australia and later across the world, to adopt a scientific winemaking philosophy.

In the decades since the introduction of Grange, the process of winemaking has become more and more scientifically and technically advanced, with winemakers seeking to control all possible influences, from nature to human elements. The use of chemistry is now standard in the winemaking process. In a 1979 speech, Schubert described his initial scientific experiments and improvisations as follows:

² Fortified wine is wine to which distilled spirits have been added, often with the intention of preserving the wine.

³ Wine reviewers, including Parker, rate wines on a 100-point scale, with a score of 100 representing a perfect wine.

The experimental hogsheads [casks of wine] were stored in underground cellars where the temperature was constant at 15°C and fermentation was completed in twelve days as previously determined. Within a month, vast differences became apparent between the experimental hogsheads and the control cask. Whereas the control wine showed all the characteristics of a good, well-made wine cast in the orthodox mould, the experimental wine was strikingly different. The volume of bouquet, comprising raw oak mixed with natural varietal fruit, was tremendous. These characteristics were also very apparent on the palate. (speech by Schubert, 1979)

While Max Schubert unarguably played a key role in the development of Grange, Penfolds' narrative that he was solely responsible for bringing about this novel wine and the scientific process of winemaking fails to account for the manifold contributions of many people that facilitated the development of this new wine. For example, Penfolds winemaker Ray Beckwith, a pioneer in pH-control in the winemaking process, played a pivotal role in this innovation. Beckwith, who had been influenced by Alan Hickinbotham⁴ during his studies at Roseworthy College, revolutionized the winemaking process by accurately controlling and stabilizing the wine, a process that historians view as a ground-breaking technique and the foundation of modern winemaking (Caillard, 2013). The following quote from Kim Brebach, a wine writer and critic, illustrates the importance of both Beckwith and Hickinbotham in the shift toward a scientific philosophy of winemaking in the Australian wine industry:

Bacterial spoilage was a huge problem until Ray Beckwith applied some serious science to Penfolds' winemaking... Andrew Caillard writes in *Penfolds—The Rewards of Patience* [that] “His interest in the performance and efficiency of winemaking yeasts lead to an important association with Alan Hickinbotham—a pivotal figure in Australian wine science and whose work in pH and malolactic fermentation would have profound generational effect [sic] on winemaking philosophy”... Beckwith built a new laboratory and a yeast propagation tank, and then persuaded Leslie Penfold Hyland to buy him an expensive pH meter with the Morton glass electrode. The rest, as they say, is history: the importance of pH in stabilising wine, the contribution to table wine quality made by the secondary malolactic fermentation... and the simple trick of lowering pH after the ‘malo’ with the addition of tartaric acid, a natural constituent of wine. (Brebach, 2014)

This quote hints at the connection between science as the new philosophy in wine production and science as the core of winemaking education. These two innovations—the emergence of new winemaking techniques and the formalization of winemaking education as a

⁴ Alan Hickinbotham founded the oenology course at Roseworthy College. His work on malolactic fermentation, among other topics, was a major influence on modern winemaking.

scientific university program—unfolded in parallel.

Phase 2: Coordinating the New Profession

Roseworthy College, which was established in Adelaide in 1883, emerged as the central coordinating actor during Phase 2. While Roseworthy was not the first institution to offer formal training in winemaking,⁵ the college transformed such training by separating the science of winemaking (oenology) from the non-scientific process of grape growing (viticulture) in 1936 (Bishop, 1980). The oenology syllabus at Roseworthy focused entirely on chemistry, microbiology, and technological innovations (Bishop, 1980). Until now, only one other major educational institution (Stellenbosch University in South Africa) has offered separate classes in oenology and viticulture.

The emergence of scientific wine production coincided with an increase in the role of science in the formal training offered at Roseworthy. The separation of oenology and viticulture was a critical shift that motivated further rationalization, specialization, and therefore professionalization in the winemaking industry. Winemakers became scientists and were increasingly isolated from the practice of viticulture. As the roles of the winemaker and the grape grower diverged, the relationship between winemakers and grape growers shifted toward a market relationship, which further fostered the distinction between them. There was a growing assumption in the industry that a scientific education in winemaking was fundamental, reflecting the separation of the new profession from traditional techniques. As illustrated in the following quotation, on-the-job training and inherited skills could no longer provide the requisite specialized knowledge.

The laboratory, the pilot winery and distillery, all the maths and science, that was really outstanding for the time. Roseworthy and Charles Sturt University leant more and more toward technical knowledge. You had to go to Roseworthy College for formal training to get somewhere in the industry (Interview, Wall).

Roseworthy was the primary training ground for scientific winemaking, diffusing the new approach throughout the Australian winemaking community (Faith, 2003, p. 54). By the mid-20th century, Roseworthy graduates were involved in the production of more than 80% of all wines in

⁵ The first formal courses in winemaking were offered at the *Weinbauschule* in Klosterneuburg, Austria in 1870, and then in Geisenheim, Germany and Montpellier, France in 1872. The first New World university to offer such training was the University of California, Davis, which began enrolling students in winemaking classes in 1880.

Australia (Bishop, 1980, p. 242).⁶ The diffusion of the novel practices, however, cannot be attributed solely to Roseworthy College. The success of Penfolds Grange was a key factor in the rise of scientific winemaking. These dual developments informed the identity of the Australian wine industry, which rests on the belief that science is the core principle of modern winemaking and the perception that Australia is the epicenter of this innovation. The director of the Australian Wine Research Institute offered an illustrative summary of this identity:

Technology in and of itself is great. It's the thing that we should be doing. It behooves [us] I think to keep doing it. Australia's been at the forefront of the scientific developments that have benefitted the entire world in the last 50 years. (Interview, Johnson)

Roseworthy College was integrated into the University of Adelaide, which paved the way for the creation of the Australian Wine Research Institute (AWRI) in 1955. The AWRI represents the scientific vanguard of winemakers on a global level. The organization's goals are to help Australian winemakers constantly improve their techniques and to spark further innovations, which will then be shared within the community. Within Australia, the AWRI serves as a scientific anchor, establishing a network for all winemakers. The institute's coordination with practitioners and scientists across the country allows for a rapid circulation of knowledge. This system facilitates innovations by integrating practices that arise from situated improvisations. At the same time, the system diffuses state-of-the-art knowledge among winemakers across the country and contextualizes best practices guidelines.

Another important role, that of the wine critic, emerged during this period. The metrification of wine quality, which allowed for more objective comparisons of wines, was foundational to this new role (Croidieu, Rüling, & Boutinot, 2016). In the 1960s, Australian wine shows, with The Royal Adelaide Wine Show at the forefront, integrated the new systematic evaluation criteria based on metric rating systems. Under the new system, judges assigned each wine a certain number of points (up to 20) based on several criteria. Because the new system allowed for easier comparability, wine shows became increasingly important (Hooke, 1994) and spread across Australia.

⁶ Later, other Australian universities established courses in oenology. For example, in 1975 Charles Sturt University launched an oenology course designed by Brian Croser at the Riverina College in Wagga Wagga (Reichl, 2006).

The use of the new metric rating system required wine judges to acquire a new set of tasting skills based on formal training. Raters learned to follow a stepwise assessment of characteristics. For each aspect of the wine—color, smell, and taste—reviewers grant a certain number of points to represent how good the wine is, whether it has some flaws or is perfectly produced. In addition, blind tastings were introduced to minimize subjective bias. The shift from open tasting to blind tasting using systematic criteria is largely attributed to Len Evans, a central figure in the Australian wine industry (Oliver, 1992). The training of raters and reviewers not only disciplined the palate toward more objective judgments, but also helped establish a community of wine specialists, which led to the emergence of the first professional wine critics during the second half of the 20th century. Global figures such as Robert Parker Jr., Jancis Robinson, Hugh Johnson, Len Evans, and James Halliday began publishing wine reviews and ratings in the 1970s.⁷ The first wine critics worked as wine journalists, publishing wine reviews and reports in regular newspapers. This phenomenon occurred almost simultaneously in Australia, Europe, and North America.

Phase 3: Consolidating the Profession

The initially loosely connected actors in the wine industry became more connected and coordinated in their efforts through the integration of science in Phase 2. During Phase 3, these interrelationships continued to intensify. In addition, new roles focused on leadership and the orchestration of agendas emerged and were mostly fulfilled by industry associations and federations. The main Australian wine industry body was established in 1989 when three organizations, the Australian Wine & Brandy Producers' Association, the Australian Winemakers' Forum, and the Wine & Brandy Co-operative Producers' Association of Australia, merged. In 1990, the organization changed its name to the Winemakers' Federation of Australia (WFA). The following quotations describe the central role of the WFA: serving as the voice of the wine industry and advocating for beneficial policies:

Clearly, in terms of political advocacy, the wine companies and the Federation is the first point of reference for anyone who wants to know what the point of view is about the wine sector. They have the dominant voice. (Interview, Stanford, WGGGA director)

⁷ Len Evans became a regular wine columnist in 1962; Jancis Robinson began to write wine reviews in 1975; James Halliday started his career as a wine judge in 1977; Robert Parker Jr.'s *Wine Advocate* launched in 1978; *Wine Spectator* magazine was launched in 1976; Huon Hooke began writing articles in *Gourmet Traveler: WINE* in 1983; *Wine Enthusiast* was launched in 1988.

We [WFA] have a policy role, so we develop a policy for the industry as a whole, and we also get actively involved in lobbying government to make sure they produce the right outcomes for the industry. (Interview, Battaglione, WFA director)

The distinction between oenology and viticulture in the educational system is also reflected among the winemakers' and grape growers' industry representatives. The WFA is a fully established industry body, lobbying for the interests of the winemaking companies, while the Wine Grape-Growers Association (WGGA), established in 2005, represents the viticulture side of the industry.⁸

Under the presidency of Brian Croser,⁹ the WFA launched *Strategy 2025*, the most influential industry development program in Australian history (Reichl, 2006) in 1996. The program infused the industry with enthusiasm and a belief in an unprecedented potential for growth. The strategy paper outlined a set of ambitious goals aimed at the entire Australian wine industry:

Directions to 2025 is a comprehensive blueprint for Australian wine to achieve a sustainable return for its 7,000-plus grape growers and 2,000-plus wine producers. (Winemakers' Federation of Australia, 2007)

The paper contains recommended strategic responses to market dynamics, highlights the role of research cooperation, and provides benchmarks for all possible metrics including statistics on sales, consumer satisfaction ratings, and cellar door visits.

Phase 3 witnessed the emergence of another new role in the industry, wine consultants. This development was facilitated by the formalization of oenology education. Croser (the WFA president mentioned above) served as a role model for these consultants (beginning in the 1970s). Wine consultants helped diffuse novel practices throughout the industry (Reichl, 2006). For example, Croser further diffused the scientific principles of anaerobic winemaking:

When Brian Croser and Tony Jordan were in partnership at Oenotec consulting, they were really big consultants. What you are getting—your wines that were biologically and chemically stable instead of oxidised or whatever else. (Interview, James Halliday)

⁸ Relative to the WFA, the WGGA is underfunded and underdeveloped.

⁹ Croser has made an enormous contribution to the Australian wine industry. He wielded significant influence as president of the WFA between 1991–93 and 1997–99 (Decanter, n.d.).

Another important milestone in the metrification of Australian wine was the classification system developed by Langton's auction house in 1991, which was based on market demand and prices. The system classifies Australian wines into five categories: *exceptional*, *outstanding*, *excellent*, *distinguished*, and non-listed wines.

An intriguing aspect of the wine industry during Phase 3 is the high degree of role multiplicity. Many actors, including Len Evans, Brian Croser, and James Halliday, occupied a variety of roles, ranging from college graduates in oenology to college lecturers, critics, consultants, industry representatives, and industry spokespeople. For example, James Halliday, the most influential Australian wine critic, is also a winemaker at Coldstream Hills in the Yarra Valley. Brian Croser was not only a winemaker at Petaluma in the Adelaide Hills, but also a wine consultant, wine lobbyist, and lecturer at Riverina College. This role overlap, which generated an intra-professional network of actors holding multiple positions in the industry, strengthened the cohesion of the new profession.

Discussion and Conclusions

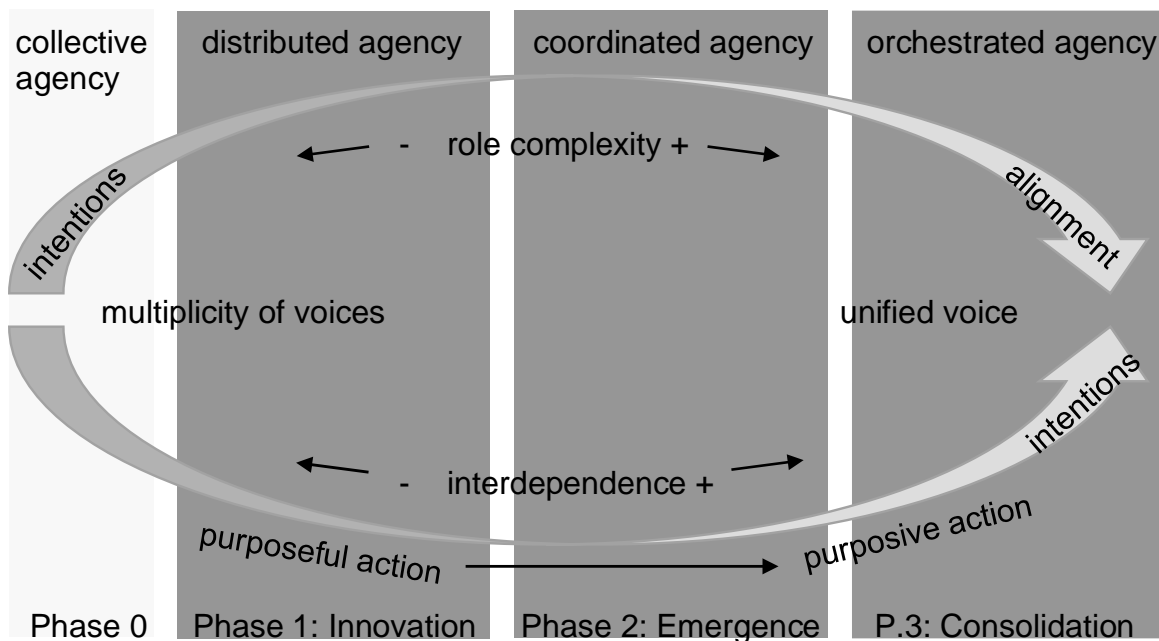
The radical shift from traditional to modern winemaking, which was marked by the separation of winemaking and farming, was facilitated by the broader societal trend toward scientization (Drori, Meyer, Ramirez, & Schofer, 2003). The separation of the two fields, in turn, allowed for the further rationalization of winemaking, which culminated in the science of oenology. The specific innovation that led to the emergence of the new profession was associated with Penfolds Grange and personified by Max Schubert (Croidieu, Rüling, & Boutinot, 2016). During this phase, role complexity increased for winemakers, who were now expected to obtain a knowledge of chemistry. Actors' intentions differed during this early period, but became more unified during the emergence and consolidation phases when organizations with a representative agenda took over leadership. Thus, actions in Phase 1 were purposeful but not purposive toward the novel profession. Consequently, studies on institutional work would not have taken Phase 1 into consideration. The shift from Phase 1 to Phase 2 was marked by the increased relevance of formal university education and research, which anchored and legitimized the novel practices. In addition, university education had a network creation effect: First, winemakers were all trained according to the same principles and, second, they could establish personal relationships (compare to Krackhardt, 2003). During Phase 2, roles developed through

coordination efforts and the anchoring in universities. In Phase 3, these roles became more complex. In addition, industry bodies began to take the lead role in formulating a mutual agenda and strategic plan for the field. Drawing on this analysis of shifts in the Australian wine industry, I formulated a grounded model of the forms of agency that characterize each phase of the institutional change process (see Figure 2). The following sub-sections discuss the shifts in agency that occurred across the phases of institutionalization and detail the early stages of institutional innovation.

Shifts in Forms of Agency

Each phase in the development of the new profession of scientific winemaker was characterized by a specific form of agency. To further describe the types of agency illustrated in Figure 2, Table 3 provides an overview of types of roles and their characteristics.

Figure 2: A grounded model of the phases of agency



The pivotal development in Phase 1 was the creation of Penfolds Grange. While Penfolds' traditional narrative attributes this development primarily to Max Schubert, a closer look at the historical material indicates that Schubert himself did not pursue this goal (Hooke, 1994). Rather, the new practices that produced Grange were the result of an uncoordinated and only loosely connected set of distributed efforts. Thus, Phase 1 was characterized by distributed agency in which many actors were motivated by a desire to employ science to meet the challenges of winemaking.

Table 2 Actors, roles and characteristics of each phase

Phases	Phase 0: Pre-modern winemaking	Phase 1: Innovation and early emergence of the new profession	Phase 2: Emergence and coordination of the profession	Phase 3: Consolidation of the profession
Emerging actors	Traditional winemaker	Prof. winemakers Wine Scientists Universities	Prof. winemakers Research institutes Wine shows & critics	Industry body Grape Growers' Assoc. Classification Wine consultants
Type of actor	Individual	Individual Collective Org.	Collective Org. Collective	Org. Org. Org. Collective
Roles	Farmers	Trained chemists Educators & researchers Anchors of the new profession	Trained oenologists Innovation hub Metritification, ambassadors of prof.	Voice for the industry Voice for suppliers Further metritification Ambassadors of prof. winemaking
Role complexity	low	medium	high	high
Role variation	homogenous	heterogeneous	heterogeneous	homogenous
Type of actions	-	Purposeful Purposeful Purposeful	Purposeful Purposive Purposive	Purposive Purposive Purposive Purposeful
Unification of voice	no	no	no	yes
Type of agency	Collective	Distributed	Coordinated	Orchestrated

Phase 2 of the professionalization process was characterized by collaboration. Lawrence, Hardy, and Phillips (2002) defined collaboration as non-market based and non-authoritative organizational cooperation. The extant literature asserts that this type of cooperation has a high potential to spur innovation (Lawrence, Hardy, & Phillips, 2002), but only if the collective is considered legitimate and the involved organizations share a common goal (Guerard, Bode, &

Gustafsson, 2013; Lawrence, Hardy, & Phillips, 2002). The current case, however, is an example of non-authoritative and non-market based collaboration *without* a mutual agenda.

Phase 2 also witnessed the emergence of an institutional infrastructure, provided by Roseworthy College as well as the proliferation of wine shows and the growing body of wine critics. Critics, in particular, are important to the development of novel fields (Khaire & Wadhvani, 2010). As the roles of the various actors crystallized, a common plan and interests emerged. The science of winemaking, oenology, emerged and became the presumptive central unifying endeavor. The increased visibility of the new profession resulting from normative diffusion through education and the emerging role of critics helped further establish the profession as unique from its predecessor, traditional winemaking.

Dorado's work (2005) on institutional partaking and convening informs the concept of coordinated agency, which characterized Phase 2. According to Dorado, much of theorization, instrumentalization, institutionalization, and diffusion is achieved through partaking and convening. Partaking engenders coordinated agency, which is achieved through the growth of connections, relationships, and interactions and reflects a shift toward self-awareness as a new profession and, thus, the pursuit of a common goal.

During Phase 3, actions became more purposive. Therefore, the actions correspond to the definition put forth by the institutional work perspective (Lawrence, Suddaby, & Leca, 2009). Phase 3 was characterized by the development of collective interests and orchestrated agency. Drawing on the work of Dorado (2005), the third phase featured the process of convening (Dorado, 2005), with industry federations taking on leadership roles. Associations or industry federations are actors with the mandate to make claims for and represent important constituencies in an organizational field (Galvin, 2002). Such advocacy is an important aspect of institutional work (Maguire, Hardy, & Lawrence, 2004; Perkmann & Spicer, 2008). Phase 3 witnessed the emergence of orchestrated agency as the industry associations took on leadership roles (Wijen & Ansari, 2007) and gave voice to the entire professional field.

Professional associations define, vest, and create rules. These rules, norms, and role expectations become encoded in institutional scripts (Barely & Tolbert, 1997). Scripts, which are a central part of the discursive actions of associations, materialize in strategy plans and industry reports. In the case of the Australian wine industry, institutional scripts provided a blueprint for the role of winemakers and thus created cohesion among the members of the new profession.

This cohesion facilitated orchestration and led to a closure of meaning and the inscription of institutional norms. The shift from coordination to orchestration occurs with the appearance of an actor who focuses on forming alliances, lobbying, and creating cohesion. Thus, in the Australian wine industry, coordinated agency paved the way for orchestrated agency. Institutional reproduction was reinforced not only by these efforts of orchestration, but also by increasing metrification, which in turn was driven by critics, wine shows, and wine classification. The institutional scripts also maintain a shared identity that revolves around the core values and principles of modernity.

Intention and Intentionality during the Early Phases of Emergence

The literature on emergence usually portrays collective institutional entrepreneurs as unified in their intentions (Rao, Monin, & Durand, 2003; Weber, Heinze, & DeSoucey, 2008; Wijen & Ansari, 2007). This portrayal is understandable because such efforts require collaboration and a common agenda, particularly when cultural codes (Rao & Giorgi, 2006) and institutional leadership (Wijen & Ansari, 2007) are applied. Prior scholarship has remained mute, however, about what occurs in the absence of unifying intentions. This study sheds light on such cases, and drawing on the analysis, I offer an alternative explanation of agency in which actors invest in institutional work without an initial alignment of intentions.

The first efforts of institutional innovation were scattered sparsely across the organizational field as winemakers incorporated science to address hygiene issues. The intention was not to create the novel profession of scientific winemaking, but simply to solve the problem of spoilage. Similarly, formal education in oenology employed science to develop better wines, not to create a novel profession. Conversely to Leblebici and colleagues (1991) and Maguire and Hardy (2009), in the case of the professionalization of winemaking, the early actors did not come from the periphery of the field but rather were central players throughout the entire process, from innovation to emergence and consolidation. Further, in contrast to the conclusions of the social movement literature (Weber, Heinze, & DeSoucey, 2008; Rao, Monin, & Durand, 2003), these actors did not have a shared belief and value system. Rather, the common reference frame of values and beliefs emerged only in later phases.

Similar to Quack's (2007) study on transnational lawmaking, the actors were not motivated by shared intentions and, thus, did not engage in purposive action toward the institutional arrangements. Also, the development of scientific winemaking unfolded at the hands

of a variety of actors following their individual professional interests. Despite having different intentions, these actors were united in their intentionality—the directedness (Searle, 1983) or aboutness of their minds (Byrne, 2006). Thus, no single institutional entrepreneur took the primary leadership role by providing a vision of the new profession. While all these actors were skillful, their skills were related to their occupational practices, not their capabilities to mobilize resources and induce cooperation (Fligstein, 1997; 2001). Their collective intentionality allowed these actors to each contribute a different piece of the puzzle. By focusing on their practices and pursuing their role-specific intentions, these actors contributed to a bigger outcome that none of them foresaw. In contrast to Quack’s (2007) findings, no focal actors (e.g., experts or lobbyists) appeared in the early stages of institutional innovation. Instead, actors did not take on coordinating roles until the second phase of professionalization.

New institutional arrangements emerge when a confluence of factors unfold over time based on the contributions of a group of actors and the practices they utilize. The dominant understanding of this process focuses on actors with the power to mobilize resources and foster a collective intention. This explanation, however, leaves the topic of non-aligned interests unexplored. To address this gap, I introduced the concept of distributed agency, a form of agency that incorporates a range of interests and intentions from a variety of actors. Distributed agency allows for a clearer understanding of the early stages of emergence, specifically the origins of new ideas that later manifest in collective action and propel instances of institutional work. In addition, while most prior studies have used a cross-sectional analytical frame to examine institutional change, the current study used a longitudinal analytical frame that allowed for a process (rather than static) view of agency. In this framework, agency takes different forms throughout the phases of institutionalization. Further, the data shed light on multiple levels of institutional processes, including the efforts of individuals, organizations, and associations. The study’s focus on multiple actors across all analytical levels and the clarification of the concepts of intention and intentionality in institutional work should facilitate an epistemologically broader and more critical research agenda that allows for a fuller understanding of agency and institutional work—an understanding that moves beyond the constraints of the current focus on purposive and intended actions.

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