

# **Wine place research: getting value from terroir and provenance in premium wine value chain interventions**

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## **Disclosure Statement**

The authors declare they have no conflict of interest in relation to this manuscript and its research.

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## **Abstract**

### **Purpose of this paper**

Place is an important aspect of wine quality, contributing both distinct sensory characteristics and symbolic significance to the consumer's experience, particularly in premium wine markets. The concepts of provenance and terroir, and the processes they describe, communicate meaning and significance along the value chain from wine production to consumption. This paper aims to clarify how these concepts are defined, how they contribute to premium wine value chains, and how a greater understanding of these concepts by wine science researchers, and other actors, can enhance consumer value.

### **Design/methodology/approach**

In order to address these aims, a conceptual framework is developed, which outlines the conditions needed to fulfil the wine/place experience through the value chain. This framework resulted from discussions within a team of researchers currently undertaking a large project into place distinctiveness in Pinot Noir wines in Australia. The refinement and exploration of the concept is grounded in a multidisciplinary literature review.

### **Findings**

Through application of the framework, wine science researchers are advised to develop a knowledge co-production approach with other actors in the value chain. Doing so enables all

actors to use evidence-based storytelling to enhance the role that place has in premium wine value and consumer experience.

### **What is original/value of paper**

Overall, this paper contributes to the conversation surrounding the value of terroir and provenance, particularly as they relate to premium wine in New World wine regions. Our innovative framework is applicable for both business, and wine science researchers, especially those with decision making responsibility and associated with wine science research institutions, funding bodies, industry partnerships and consortia.

Keywords: terroir, provenance, premium wine, value chain, Australia

## 1. Introduction

In the past twenty years there has been a concerted effort to increase the size of the premium wine market in Australia, shifting industry's focus from quantity to quality and encouraging more consumers to drink wines that display regional, or place, characteristics (Lockshin and Corsi 2012; Johnson, Hasted, Ristic and Bastian 2013; Francis and Williamson 2015; WFA 2007). Recent reports from the industry's peak body indicate good progress has been made towards achieving this goal, with overall growth in both domestic and export sales skewed towards higher price points (i.e. above \$15) (Wine Australia 2017; 2018). In addition, consumers and trade appear to be gaining greater knowledge of regions and styles, and anecdotal evidence suggests the number of public wine events and masterclasses is on the rise. The Chief Executive of Australia's peak wine body calls this trend 'premiumisation', recently saying '[consumers] may be drinking less, but...they want to enjoy a quality experience' (Nancarrow and Burt, 2018).

Within the literature, place distinctiveness is regarded as a significant component of the wine consumer experience and in particular an important driver of the purchasing decisions of premium wine consumers (Beverland 2006; Johnson and Bruwer 2007; Verdonk, Wilkinson and Bruwer 2015). Several studies refer to a 'halo effect', whereby iconic wines lend other associated wines a market premium, through having similar extrinsic qualities, including place association, particularly region or country of origin (e.g. Atkin, Nowak, and Garcia 2007; D'Alessandro and Pecotich 2013; Veale 2008). Hence, place is more than just a physical location on a map—as well as being spatial, place has social, cultural and discursive qualities that greatly influence its value on wine.

In this paper, place is defined as both tangible and non-tangible geographically distinctive qualities which come together to influence one's experience—here, specifically, the

experience of premium wine consumers. In relation to wine, the French terms *provenance* and *terroir* are often used to convey the significance geographical place or physical environment of a wine for the consumer. But, they do more than just infer a connection between a place and a wine. The experience of ‘wine is full of prestige and mystery with terms like *terroir*’ (Scholer 2016, p.263), the language of wine uses terms that are endowed with significance. The terms influence and reflect ideas of sense of self, of others, prestige and belonging that influence perceptions, and hence, behaviours and actions of actors throughout the value chain.

In Australia, premium wines (commonly referred to as ‘high-end’ or ‘fine’ wines) are distinguished according to their regional characteristics, their winemaker or winemaking team, and are typically produced on smaller scale. These provenance characteristics make them very different to ‘commercial’ scale wines (also referred to as ‘bulk produced’ or ‘commodity’ wines) in terms of how they are perceived by industry and consumers. This paper discusses the concepts of provenance and *terroir* as they relate to premium wine value chains. In doing so it aims to accentuate the contributions of these concepts to value creation specifically through wine science (*wine science* here refers to the spectrum of scientific research into biophysical, social and economic dimensions of wine).

Following an initial review of highly cited literature and discussion amongst a team of wine researchers, a conceptual framework was developed for executing research at the intersections of wine and place. This framework describes a set of conditions necessary for a positive wine/place experience (‘wine/place experience’ is used here to denote the full spectrum of a consumer’s experience of wine consumption that is influenced by place). The framework is designed to support application of wine science to the place dimensions of the premium wine value chain. Overall, this paper contributes to the conversation surrounding

the value of terroir and provenance, particularly as they relate to premium wine in New World wine regions. Our innovative framework is applicable for both business, and wine researchers, especially those with decision making responsibility and associated with wine research institutions, funding bodies, industry partnerships and consortia.

## **2. Place in premium wine value chains**

### **Place and wine value**

Place (or region) of origin is an important part of a consumer's experience of premium wine, and thus greater understanding of how place interacts with the value chain will support Australia's growing premium wine sector. Consumers of wine are diverse in their lifestyles and experiences, and the attributes they look for when purchasing a wine or visiting a wine region. A seminal study of Australian wine consumers found five distinct segments of wine drinkers: 1) the conservative, wine knowledgeable wine drinker, 2) the image oriented knowledge seeking wine drinker, 3) the basic wine drinker, 4) the experimenter, highly knowledgeable wine drinker, and 5) the enjoyment oriented, social wine drinker (Johnson and Bruwer 2003). Previous work of a similar nature also suggests 21<sup>st</sup> century wine consumers are more educated and knowledgeable about wine, and seek a total experience, particularly when tasting wine at a cellar door (Bruwer 2002). Furthermore, wine consumers with high levels of expertise and knowledge have been found to spend the most money per month on wine, and consumed wine more frequently than their novice counterparts (Johnson and Bastian 2007). Additionally, 'region of origin was an important driver of wine purchases for both high and medium expertise consumers' (Johnson and Bastian 2007, p. 196).

Place distinctiveness (and the reputation of a region) is a key component of premium wine value, along with published wine ratings and grape variety. Schamel and Anderson (2003),

for example, found that cool-climate regions in Australia (more so than New Zealand) are becoming more popular with consumers and thus driving demand for certain wines and varieties. Despite concern that Australian wine might sacrifice premium place characteristics through producer freedom (for example allowing cross place blending for consistent label quality), there is nevertheless evidence of place-based qualities in wine production in the country (Anderson 2009).

In their literature review, Lockshin and Corsi (2012) found that over twenty years, wine consumer behaviour research had grown from negligible to extensive. They noted an increasing acceptance amongst academics for wine being a complex product, together with an understanding of the richness of values consumers seek from it (Lockshin and Corsi 2012). As an alcoholic beverage, wine is valued as a 'socialisation tool' or celebration adjunct, conveyor of history and culture, and for its prestige cache. Yet, a review of the wine literature (academic, grey and trade) indicates that considerable contention still surrounds the notions of place, in particular the concepts of *terroir* and *provenance*. Furthermore, some scholars have suggested that consumer understanding of 'region of origin' is also limited (McCutcheon, Bruwer and Li 2009), and hence more research in this space is needed.

These observations reflect a broader shift in agricultural research, away from quantitative dimensions of productivity to integrative value chain interventions with qualitative dimensions (Klerkx, Van Mierlo, and Leeuwis 2012). However, such work tends to 'complicate... a clear focus,' (Klerkx, Van Mierlo, and Leeuwis 2012, p. 457) leading the authors to call for more conceptual work to help address this. This is particularly pertinent in relation to conceptual studies of *terroir* and *provenance*. Within the extant literature, some authors have developed models for working with *terroir* (see, for example, Charters 2010; Spielmann and Claire 2011; Teil 2012; Wilson and Jourjon 2008) and in doing so, have

drawn conclusions on the marketing implications of terroir. Here, a conceptual model is developed to address how wine researchers can interact with terroir and provenance. But first, consideration is given to what these concepts mean.

## **Terroir and Provenance**

In the public domain, common online definitions of *terroir* refer to a distinctive character of a specific wine imparted by the unique qualities of the place (the physical environment) in which vine and varietal selection, grape growing and winemaking occurs. From a trade and consumer perspective, one of Australia's foremost wine websites states terroir covers a multitude of factors, generally understood to be all the natural conditions that affect the vines, and therefore the flavour and quality of the grape itself (Wine Companion 2018). Terroir definitions in the academic literature typically note the French origins of the word and not surprisingly, the French development of the wine/place experience has been widely written about (e.g. Barham 2003; Kramer 2008; Trubek and Bowen 2008). This literature also emphasises the connection between the appellation system and 'Old World' practices more generally. There are further complexities associated with the French term *terroir* when attempting to translate it into English. The complexity (and hence, potential for confusion) in *terroir*'s application is illustrated in Vaudour's (2002) four different types of terroir; nutriment, space, slogan and conscience. Nutriment terroir relates to plant growth and the 'taste/instrumental quality', a 'vertical relationship' between soil, plant and atmosphere. Space terroir is about territory, appellation and a 'historical geography', while slogan refers to terroir as an image advertising country life. Finally, conscience terroir relates to the qualities of country identity, ancestry and tradition (Vaudour 2002). These complex social and cultural dimensions, found along the value chain, confound clear shared understanding of



the terroir concept (Spielmann and Claire 2011). Hence, the concept of terroir is contested territory in wine research and the wine value chain (Anesi et al. 2015).

The term *provenance* also has French, provenance. The fact that both *terroir* and *provenance* are used with reference to wine speaks to the historical French influence on global wine culture. Of the two terms, *provenance* has the wider usage in the English language, but also the broader meaning. Provenance is about the authentication of an object's origins— 'where a product was produced, by whom, how and when' (Maguire 2013, p. 368). Despite the term *provenance* having a much broader usage than terroir, (i.e. provenance is often applied to a broad range of historical artefacts) its use in relation to wine seems less problematic than that of terroir.

Given these definitions, what is the contribution of these two terms and concepts to the value of premium wine, and, how and where do they contribute this value? The two terms are both central to the wine/place experience. As noted above, a distinctive terroir will reflect a unique place context. Terroir is the influence of place on the product, including both biophysical and socio-cultural characteristics, and its resulting sensory distinctiveness. For consumers of premium wine, provenance is also important. Provenance is affected through knowledge of a wine's place of origin—a confirmation of its authenticity through a process of communication to the consumer from the producer. A premium wine consumer, therefore, looks for both a unique sensory experience (i.e. terroir) and confirmation of the wine's origins (i.e. provenance).

For these experiences to occur, a consumer must be able to trust that the wine's provenance has been communicated accurately to them along the value chain. The wine/place experience then is a two-way flow of influences between the production of wine and its consumption, with an intermediary value chain conveying the wine and information about its place origins,

to the consumer. In this sense, the concepts of *terroir* and *provenance* act as conduits that convey the wine/place experience from its production, grounded in a specific place, to fulfilment of a unique experience in the final wine consumption.

The need to convey knowledge of the distinctive origins of wine through the wine value chain emerged through industrialisation and urbanisation, where it is far less common for wine consumers to drink a wine at its physical site of production (Sommers 2008). As well as this pragmatic need for confirmation, consumers also demand authentic links to a unique time and place in reaction to the modernity that brings about this separation (Outka 2012). While in the Old World wine was made purely for local consumption, it has since acquired a long history of production and sale to distant consumers, located outside its region of origin. And wine, perhaps more than most other products, and certainly historically in distinction to other alcoholic beverages (Kim and Mauborgne 2005), has established a premium by its very effort to sell its ‘traditional’ origins. Consumer knowledge of the place origins of wine is a key part of this. Thus, *provenance* becomes an important intermediary in the experience of *terroir*—*provenance* is the conveying of information about a wine’s place origins. The two concepts ‘work’ together in creating the wine/place experience (Figure 1).

<INSERT FIGURE 1 HERE>

Figure 1. The wine/place experience and a conception of how the terms *terroir* and *provenance* work in generating and sustaining this experience along the value chain.

These terms have power, and play an important role in the value chain because the wine/place experience occurs in a context of separation and distance between the wine consumer and a wine’s place of origin. In reaction to this typical trait of modernity—this separation—

consumers may seek this lost connection to place and its experience of authenticity. This paradoxical nature of the consumer demand for the provision of wine through a modern agrifood production system and a grounded authenticity has been referred to as commodified authentic, whereby the consumer is 'at once connected to a range of values roughly aligned with authenticity and yet also ... fully modern' (Outka 2012, p. 5). Juggling this paradox is a critical function of the concepts of terroir and provenance in the premium wine value chain.

## **Value chains**

After defining the concepts terroir and provenance and exploring how they are used in context of wine, attention is now turned to value chains, and the application of the concepts of terroir and provenance in a value chain context. In his seminal work Michael Porter (1985, p. 36) defined a value chain as the process occurring within a firm as its sub-units convert the inputs to the final output (i.e. products and services). His work focused on competitive advantage and as such, the idea of applying the value chain concept at an industry-wide level was considered 'too broad'. However, this broader conception has subsequently been widely adopted, and in agriculture there are several terms used in the literature that convey the idea of value chain including 'supply chain, market system, market chain, and agrifood chain' (Donovan et al. 2015, p. 15) all of which help describe the sequence of activities which occur from production through to consumption, and the various actors involved and their relationships. Similar to the western concept of a value chain, French commodity chain researchers talk about *filiere* (translated literally as thread) to describe the network of connections that are involved in a product's life, from its initial material extraction to final consumption (Raikes, Friis Jensen, and Ponte 2000). While such networks are often conceived of as producer, processor, wholesaler, retailer and consumer, in the case of wine, it is important to note the diversity of value chains or *filiere* that exist. At one end of this

spectrum, there could be a very long and complex chain, where growers and winemakers are themselves separate actors and then wholesalers, distributors, retailers and marketers are active intermediaries between the wine producer and consumers. This contrasts with more simplified or integrated systems, where a grower or winemaker sells direct to the consumer (in the case of cellar door sales), forsaking any distribution networks. In between is a variety of value chains of varying complexity. However, all wine value chains, as a minimum, will be bookended by the wine makers (growing and producing) and consumers, and almost always subject to the influence of wine culture intermediaries such as opinion leaders and wine media (see Figure 2). This broader role of wine culture is an important feature of the wine, and especially the premium wine, value chain, and invites researchers to think more broadly about the social and cultural contexts that operate in the premium wine value chain.

<INSERT FIGURE 2 HERE>

Figure 2. Example wine value chains and their relationship to the role of the concepts of terroir and provenance.

### **3. A Conceptual model of the wine/place experience in the value chain**

Within Australia and overseas, two important aspects of the value consumers place on premium wine include an authentic connection to a specific and unique place, and the associated winemaking craft that influence the creation of place distinctive wines. This combination of wine creation, distinctive sensory qualities and the consumer's knowledge of these, gives rise to the wine/place experience. From this, the following model was developed, which depicts four conditions considered necessary for premium wine consumers to have the wine/place experience they value (Figure 3). The model also shows how these necessary

conditions relate to the concepts of terroir and provenance and how they work through the value chain.

<INSERT FIGURE 3 HERE>

Figure 3. A heuristic conceptual model of necessary conditions needed to fulfil the wine/place experience through the wine value chain.

The four necessary conditions for a consumer's wine/place experience are labelled A through to D. These depict what must occur or be in place at various parts of the value chain for consumers to have a distinctive and authentic wine/place experience.

#### **Necessary Condition A—Place true winemaking**

The first and obvious condition, 'place true winemaking' is the need for a wine to be made in a distinctive place and in a way that is 'true' to that place. This is the *in situ* creation of a place distinctive wine through grape growing and winemaking, and is the first step in the premium wine value chain. In order to recreate a place distinctive wine there needs to be evidence of factors that convey the elements of a place—geology, soil, terrain, climate (for example Bramley et al. 2011)—in the wines produced, but also some consistency in the viticulture and winemaking such that that biophysical distinctiveness is expressed. However, by itself, condition A is not enough for a premium wine consumer to have the type of wine/place experience they value.

#### **Necessary Condition B—Effective provenance**

An immediately obvious other condition is that the consumer needs to know that the wine before them is indeed from a distinctive place. They need to know and have the provenance of the wine they are drinking communicated to them. For example, through consumer and

labelling laws or appellation systems. This condition is important for two reasons. First, it is possible to create similar wines from vastly different origins through cross regional blends, variations in winemaking techniques, and maybe in the future even through chemical construction. Second, because most premium wine consumers are disconnected from the place and process of winemaking, this condition gives the consumer some confidence that the wine does indeed come from a specific and authentic place.

### **Necessary Condition C—Distinctive sensory**

Interrelated with these two conditions is the third condition, ‘distinctive sensory’ whereby the taste, aroma, feel, and look of the wine must display distinctive qualities. This is elementary but critical. While it might be possible to detect distinctive wine qualities in laboratory tests, if these are not also detectable to consumers they will not contribute to the wine/place experience. A consumer being able to distinguish a unique sensory quality deriving from a distinctive quality of place true winemaking is the hallmark of the wine/place experience. Together with necessary condition A, condition C contributes the intrinsic qualities of a wine necessary for the wine/place experience to occur. This ability to experience place distinctive sensory qualities in a wine also relies on wine knowledge, the last necessary condition.

### **Necessary Condition D—Knowledge experience**

Finally, the wine consumer also needs to have some knowledge of how unique place characteristics express in sensory qualities. Meeting the expectations of this knowledge reinforces and completes the wine/place experience. Consumers acquire such knowledge through ‘experience at drinking wine as well as learning a specialized vocabulary’ (Bach 2008, p. 2). As noted earlier, the role of opinion leaders and wine media in affecting perceptions of wine quality is essential. This forms a valuable part of the wine/place

experience. There is a body of learning within the wine consumer segment, and particularly amongst the experienced and expert segments, that identifies the expected sensory qualities for wines from particular places, as well as particular varieties, vintages and other aspects of typicity (Bach 2008). These conditions can also be broken into those that relate to a wine's intrinsic qualities—its taste, feel, colour and aroma—which are given in necessary conditions A and C, and a wine's extrinsic qualities—packaging, labelling and associated marketing and presentation communications—which are given through necessary conditions B and D. The former can be described as the 'sensory value', the latter the 'meaning value'. Knowing which is important helps decide how and where in the value chain to use knowledge of what creates terroir. In addition, a key contribution of this conceptual model depicted in Figure 3, is that it emphasises both sensory values and meaning values are critical to the wine/place experience.

So, to summarise, a wine/place experience needs four necessary conditions to be in place. Terroir is created through the necessary condition A (place specific winemaking) and expressed in the distinctive sensory quality (necessary condition C). The terroir is embodied in the intrinsic qualities of the wine. However, premium wine consumers must also have some knowledge about place and its effect on the sensory qualities of a wine. This is partly learnt through a consumer's interaction with the body of wine culture and knowledge (necessary condition D). The premium wine consumer must also have confidence that the wine did indeed originate through place specific production—the *provenance* (necessary condition B) of the wine. These later two conditions are given both through the obvious extrinsic qualities of labelling and marketing, but also the broader cultural and social bodies of learning that inform how those labels and marketing are understood. These conditions are interdependent on one another. While they are described here as A, B, C and D they are not sequential. All of them must be in place for a premium wine drinker to have a wine/place

experience. This model is intended to provide a pragmatic framework to use and contribute value through wine research.

One final consideration worth noting here is vintage. While terroir conveys distinctiveness and the authenticity of a unique experience, so too does vintage. What terroir is spatially, vintage is temporally. Vintage also acts in ways similar to terroir and provenance as a marker of distinctiveness and authenticity. In the same way that they are important drivers of consumer demand for the wine/place experience, so too is vintage. In this sense there is much of the conceptual model described here that can be applied to the thinking and understanding of how wine science can contribute to the development of vintage.

#### **4. Wine science and the wine/place experience**

The conceptual model above provides a guide for thinking further about how wine science can contribute value to the premium wine value chain and thus ensure that the concepts of terroir and provenance are successfully used to add value to the industry and the wine/place experience. Although it is useful to think about how wine science can contribute to ensuring these four conditions are met, wine researchers and practitioners should note the challenges and differences in approach, which each condition requires. For example, to impact the wine/place experience, there is a need to ensure that different research specialties that tackle each condition work together (given all conditions are necessary for an effective wine/place experience). The following discussion considers how the wine/place experience can be furthered through wine science and how wine science does this across the value chain. It will start by considering how terroir and provenance work and relate to science and how this relates to consumers and experts in the premium wine value chain more generally. Then it will take a look how science and tradition interact (and can conflict), especially around the



concept of terroir. Finally, this section will consider some risks for wine science in the value chain.

### **Place, science, consumers and expertise**

Necessary condition A—place true winemaking—is where reductionist agricultural science approaches are often applied to the premium wine value chain. The work of growing and making wines in response to specific biophysical conditions is well suited to this approach. Such wine science can be justified on economic and pragmatic grounds in the tradition of linear science delivery, for example, ‘[c]hemical analysis of wine is essential in ensuring product safety and conformity to regulatory laws governing the international market, as well as understanding the fundamental aspects of grape and wine production to improve manufacturing processes’ (de Villiers et al. 2012). However, while such approaches are common in applied science, their application is not without limitations. The making of place specific wines is not just a problem of biophysical science but also a social problem. For example, the regional wine distinctiveness associated with Old World wine regions (e.g. Burgundy, Champagne, Tuscany) requires distinctive grape growing and winemaking cultures, as well as the unique biophysical conditions. Wine value derived from place or regional association requires management of this quality and ‘branding’ by actors at a regional level and dissemination through a value chain that can extend to consumers in very different social and cultural settings. Creating and enhancing value requires social coordination ‘because regional reputation is a public good’ (Schamel 2006). This requires collective action to maintain and enhance such goods (Olson 1965). From a wine science perspective this requires consideration of social and economic sciences that consider collaboration, role of networks, industry associations, and regional governance. ‘Agricultural innovation is ... not just about adopting new technologies ... it also requires a balance

amongst new technical practices and alternative ways of organizing' (Klerkx, Van Mierlo, and Leeuwis 2012). In the premium wine value chain, where wine/place experience is important, this then demands consideration of multidisciplinary approaches.

Terroir, by definition, comes into being at the first step of the value chain, at the place of vine growth and of winemaking—it is captured there in the bottle. But to convey it to a distant premium wine consumer requires all the actors along the value chain (i.e. the wine wholesalers, retailers and marketers) to know the provenance of the wine, and understand how to communicate this in an authentic and reliable manner. The bottle of wine will need to arrive with this contextual knowledge if the wine/place experience is to be optimal. That is, in addition to the wine expressing a particular sensory experience, consumers demand knowledge—the 'story' and meaning of a wine's terroir (Bach 2008; Beverland 2006; Mora and Livat 2013). Storytelling is a key component of conveying wine quality to consumers. It can add value independent of intrinsic wine qualities (Mora and Livat 2013). For this reason, it becomes important to develop and communicate this story up the value chain to the consumer.

There are significant limitations on the idea that sensory qualities alone will convey these stories. Provenance (and hence authenticity) of wine can be determined through the use of isotopic analysis (Aggarwal, Habicht-Mauche, and Juarez 2008; Almeida and Vasconcelos 2003). Such findings support the idea that distinctive characteristics can support possibility of a unique sensory quality. However, it is less clear that these intrinsic characteristics influence consumer perceptions independent of extrinsic qualities such as labels, brands or country of origin. These influences are described by Priilaid (2007) as the 'placebo effect'. This 'placebo effect' of extrinsic qualities such as labels, means communicating provenance to the consumer cannot rely on the intrinsic qualities of the wine itself but draws heavily on

communication of a wine's origin , its provenance, between actors along the value chain.

Actors along the value chain are the conduit for a wine's provenance. For a consumer to have an authentic wine/place experience, all actors along a value chain must communicate and trust each other to effectively convey the sense of authenticity. Because of extrinsic cues, tasters draw on pre-existing knowledge of places and their specific wines (Priilaid 2006; 2007). Such work highlights how bound together the sensory value, or intrinsic, necessary conditions are to the meaning value, or extrinsic, necessary conditions. There are clearly limitations to claims that can be made about sensory distinctiveness, but conversely this idea of a wine conveying place distinctive qualities, *terroir*, remains paramount to the wine/place experience. However, this research highlights the importance of the necessary condition D of knowledge experience in creating the wine consumers total wine/place experience.

Expert knowledge is a key source of wine consumer's knowledge and hence their choices and preferences (Chocarro & Cortiñas 2013). The so called 'Parker effect' is based on American wine expert Robert Parker, and how his annual grading of Bordeaux wines has had a measurable effect on wine prices (Ali, Lecocq, and Visser 2008). This influence has also been shown in Australian markets by the expert James Halliday (Schamel and Anderson 2003). Werdelmann (2014, p. 68) found that 'institutions, like wine experts, wine shows, and wine producers influence the quality perception on the market significantly' and, thereby, provide certainty to consumers to support their purchase decisions. Such opinion leaders have a critical role in the value chain. They act to fill the gap in knowledge and experience of many wine consumers creating a far greater effect of expert knowledge than might be the case if expertise, knowledge and its prestige cache were not so important.

A wine's place of origin is a key wine quality sought by consumers when making purchase decisions (Johnson & Bastian 2007). As a priority, consumers typically seek place

information when perusing wine labels and those who seek this information at higher levels of sophistication are associated with a willingness to pay a premium price for the wine (Dimara and Skuras 2005). This is consistent with Spielmann and Claire's (2011, p. 6) observation that consumers generally lack winemaking experience. As a result, many consumers probably don't even know the term *terroir*, and so rather than be able to define it, they rely on other more familiar terms such as geography, place, or climate. Consumers want to know their wine has place quality and so generalised geographical markers are used as a proxy for more detailed and complex understanding (McCutcheon, Bruwer and Li 2009). Arguably, this not such a 'sophisticated' form of wine/place understanding, but with the influence of expert knowledge noted above this broader consumer appreciation and pursuit of distinct place of origins in wines is significant. In this context then there is the potential for science to contribute to richer story telling and deepening the experience of authenticity across market segments by helping to support this desire of consumers to shift into the more sophisticated wine/place understandings and appreciation of the premium markets.

### **Tradition and modernity in wine science**

Wine scientists need to be cognisant of how place is used to contribute value to wine association with subjective qualities and experiences. In particular, science has a long standing mission to undo such subjectivities, to replace them with empirical knowledge. Yet, '*terroir* ... sanctions what cannot be measured, yet still located and savoured ... In this it is at odds with science, which demands proof by replication rather than in a shining uniqueness' (Kramer 2008, p. 225). Giddens (2013, p.145) notes that scientists (sociologists in his case) 'often suppose that ... today we live in a world from which mystery has retreated and where the way "the world works" can (in principle) be exhaustively known.' But he explains that actually this dissolution of mystery by scientific experts is only real for experts within their

own field. For everyone else the workings of the world are still 'opaque'. So while wine scientists might seek this demystification, it is not necessarily what the consumer gets. But further, it might not be what the consumer wants. For this then wine science needs to remain cognisant of the potential and value for the consumer to continue the mystery.

This subjectivity is also pursued as a reaction to the unrelenting objectivity of modernity. This also has implications for how wine is created in place and the ideas of tradition. In the case of Australia, and in the New World more generally, the rich wine/place experience valued in European terroir lacks a critical feature—an unselfconscious historical evolution. This is perhaps part of the appeal of European style terroir—but such unselfconsciousness cannot be replicated. There is a paradox at the heart of consciously attempting to replicate something which is grounded, in part at least, on unselfconsciousness. The effort then in attempting to replicate this place distinctiveness in wine requires a different approach—articulated by Paxson's (2010) concept of 'reverse engineering' of terroir. It is into this space of 'reverse engineering' that wine research in Australia should operate, if it is to progress the wine/place nexus that is valued in the premium wine market.

The tensions between the modern and the traditional (authentic) approaches that wine science should be conscious of in research is also present for consumers. In her text entitled *Consuming traditions—Modernity, Modernism, and the Commodified Authentic*, Outka (2012) notes that consumers are confronted with this paradoxical situation. However, she suggests they do not need to resolve the paradox; a satisfying consumption experience does not require it. Rather, it is at the other end of the value chain amongst the wine producers (and the researchers who work with them) that the intrinsic contradictions are struggled with and efforts are made to resolve these questions once and for all. This is where evidence-based story telling offers scope to have science act as a form of knowledge coproduction bringing

value to the premium wine consumer. Often the role of the scientist is to deliver modernist goals of efficiency, safety and reliability, but they can also contribute to meeting consumer demand for authenticity, and subjectivity, in their wine experience, by providing deeper understanding and enriching the telling of place stories.

### **Challenges and risks for wine science**

In contrast to the potential for wine science to increase premium wine markets there is an interesting paradox in the dissection of regional distinctiveness—a risk of demystifying wine, but also even undermining the market. If the factors of a region's biophysical (or indeed social) characteristics that affect a wine's unique character are understood, then there is the possibility of being able to apply that knowledge to manipulate other vine and winemaking environments in order to recreate the particular sensory experience valued of a particular place or terroir. This raises challenges for wine research to consider in designing research projects and thinking about impacts of research on place specific wine qualities. Careful thought needs to go into how findings from analytical wine science are used. In particular research funding bodies and researchers need to consider if the deconstruction of place effects on sensory experience might demystify wine and risk cheap/mass replication, undermining the premium of the wine/place experience. Conversely, as noted above, it has the potential to allow a deepening of the wine story and authentication of a wine's uniqueness. Consideration then needs to be given to how to conduct this science in a way that deepens the evidence based story telling while reducing risk to wine's mystique. These are useful considerations for wine researchers, funding bodies and grant administrators to consider.

There is another tension wine science looking into the wine/place experience must address. This is the risk Paxson (2010) notes of commodification of the terroir experience itself. Here,

the terroir experience is the same as the wine/place experience described in this paper. In her work on artisan cheeses in the US, Paxson notes that ‘terroir marketing may risk turning the concept of terroir into a commodity fetish’ (Paxson 2010, p. 444). It is a central challenge of marketing where the experience being sold is one of uniqueness and also authenticity – market success can undermine the very value being sought. Here, attention to meeting the four necessary conditions outlined in the model can be used as a guide for managing marketing such that it must maintain these conditions.

For wine researchers, there are often struggles extending and applying their technical learning into the world of winemaking, consumption and its culturally rich world of heritage, tradition and myth (Matthews 2016). In some ways, their problems are similar to that of researchers studying so called ‘wicked problems’, such as of social justice and sustainability. The problems of wine researchers can be the same, where rational and reductionist problem solving clashes with rich cultural, political and social complexity. Knowledge coproduction can be an effective way of dealing with these problems in such complex scientific environments (see for example Funtowicz and Ravetz 1993 and Pielke Jr 2007). Wine scientists already have experience of similar approaches in industry engagement and integration. As has been noted above, the quality of the wine consumer’s experience is not just attributed to what is inside the bottle, but rather a complex mix of influencing factors that include place-based stories conveyed authentically along the value chain. Here then, is the potential for knowledge coproduction to actively engage in the development of the place based story telling. Research has traditionally acted by intervening in various stages of the value chain to separate myth from fact in the wine/place experience, but it could also provide value by intervening through coproduction of the story telling dimension by embracing evidence based story telling. Myth then becomes not the enemy of science, but rather a story

to be deepened. This is central to the sophisticated wine/place experience that premium wine drinkers seek.

## 5. Conclusion

While a great deal is known about wine consumers and the science of making wine, confusion still surrounds the concepts of terroir and provenance, and how the value of place can be better used across the entire value chain. In this paper, a conceptual framework for addressing this is presented. The framework describes how the two concepts, provenance and terroir, operate in the value chain of premium wine production, highlighting how they relate and support one another—terroir is the expression of a place through a wine's sensory qualities, while provenance is the authentication of this along the value chain.

In addition, the framework sets out four necessary conditions that contribute place value to a premium wine product: A) a true place origin; B) effective provenance; C) a distinctive sensory experience and D) consumer wine knowledge and experience. For wine science to be effective in contributing to the wine/place experience it must remain cognisant of delivering on all four of these. This model can therefore act as a prompt for planning wine research and in particular to encourage multidisciplinary approaches.

Discussion of this model and its implications reveals some key areas where wine science can contribute value in the premium wine sector through specific value chain interventions.

Research in the traditional reductionist mode must remain cognisant of the need to understand and support the social and cultural networks required to develop and optimise regional distinctiveness. Further, science can be used to contribute to developing and communicating the wine/place story. Integrating social science research (including going beyond a traditional emphasis on marketing and consumer research) into wine research is part



of this. But there is also using biophysical research into wine distinctiveness itself to support this storytelling—the idea of evidence based storytelling. This is consistent with the embodiment of terroir within stories that convey meaning and value that wine consumers seek in the wine place experience. Evidence-based story telling (through applying wine science at a broader level to the entire value chain) can help communicate authentic messages about place to premium wine consumers. Exposure to and hearing these wine/place stories will enhance the sensory experience consumers have when drinking a premium wine from that place.

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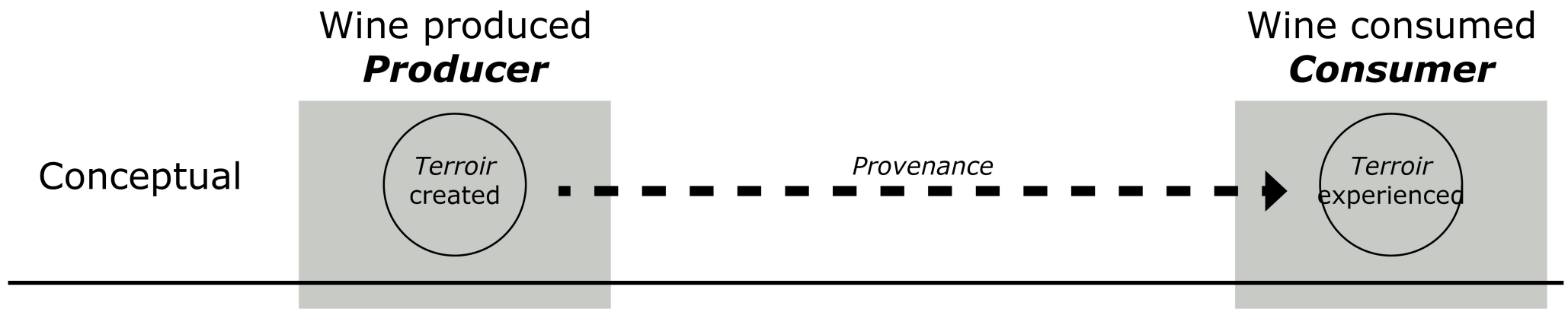


Figure 1

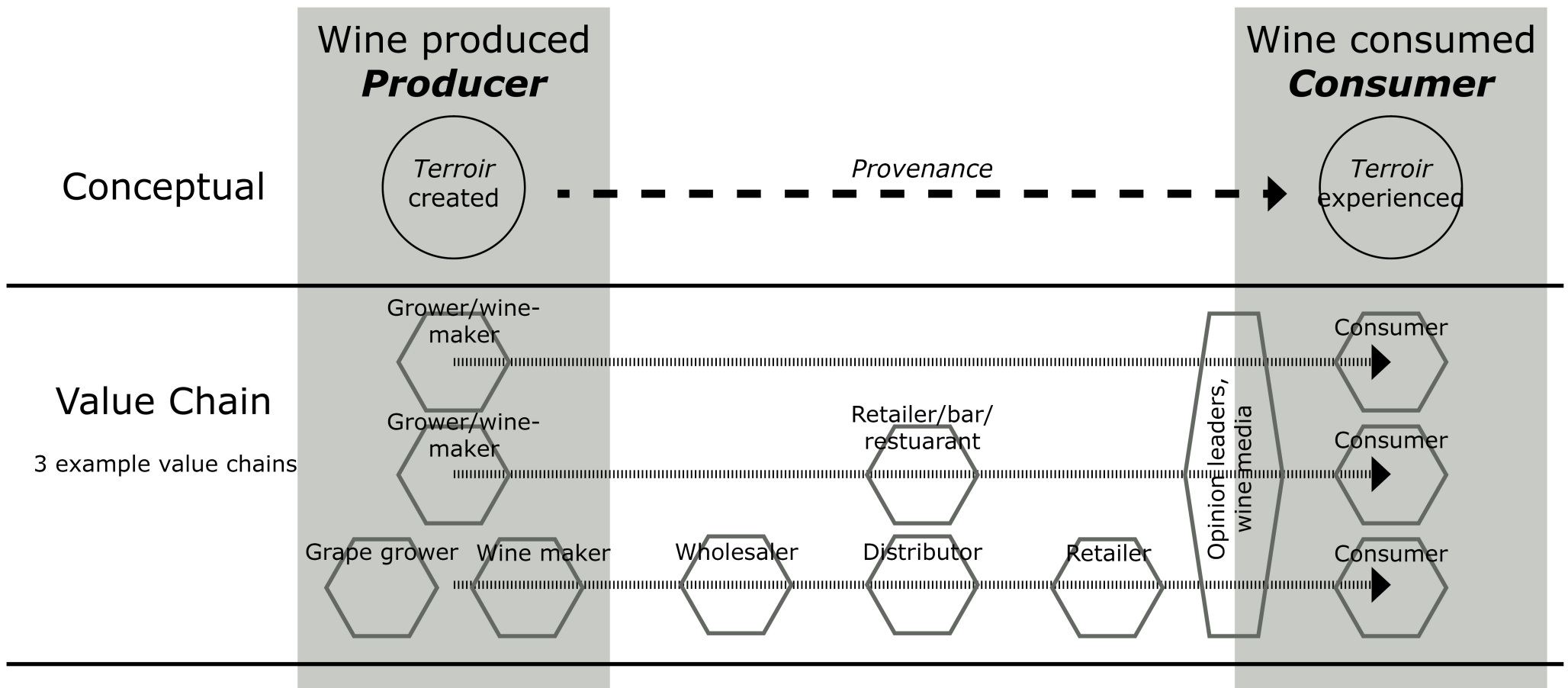


Figure 2

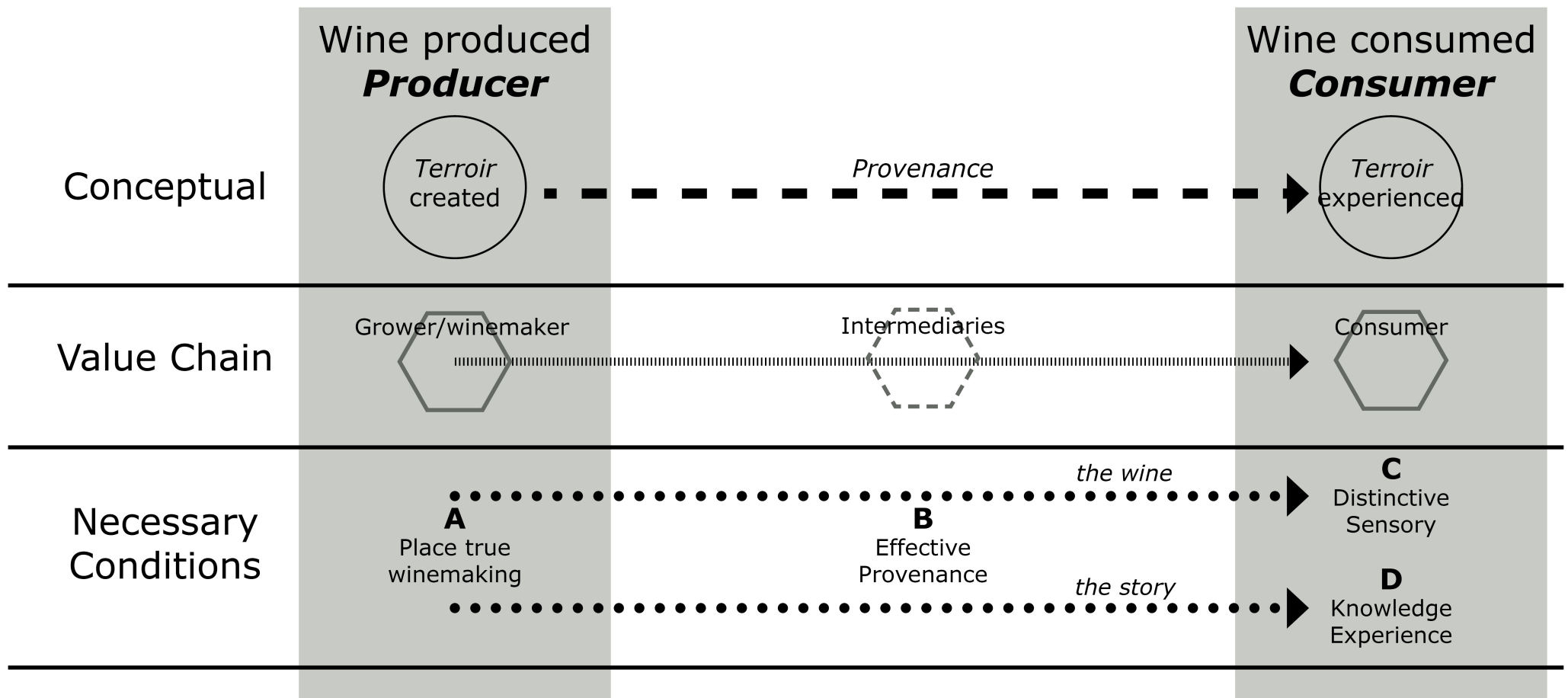


Figure 3