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The emergence of new wine design practices: Flexitanks and the assembling of bulk wine across global rural regions

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Abstract

In this paper, we argue that the rapid expansion of exports as a share of global wine production is strongly related to the invention of flexitanks for wine transportation and the concurrent exponential growth of the bulk wine industry. Bulk wine fundamentally changes wine production, from the organisation of grape growing to the commercialisation of the final product, as it enables companies to assemble wine across the globe by establishing new connections between distant rural regions. Building on ethnographic fieldwork with New Zealand and Chilean bulk wine producers and German large-scale wineries which specialise in bulk wine blending and bottling, our aim in this paper is to investigate how these new connections are forged and sustained. Drawing on the work of Çalışkan and Callon, we consider marketisation processes to be composed of different types of framing, and we analyse three of them in respect of the bulk wine market: objectification of goods, marketising agencies, and market encounters. Through detailed analysis of one market encounter that we have called "wine design sessions," we show that German retailers align the other bulk wine agencies in a way that means they are well placed to decide on the final composition of the wines in a highly flexible accumulation scheme. It is through these wine design sessions and the practices of tasting, comparing, designing, analysing, and controlling wines that they organise the assembling and objectification of bulk wines from Chile and New Zealand (and from other countries around the globe) according to their specifications. Hence, rather than through top-down pressure, coordination in the bulk wine market is accomplished through mundane practices and mechanisms which allow for action at a distance and which connect (and sometimes disconnect) rural regions on a global stage.

KEYWORDS

Chile, globalisation of rural space, Germany, New Zealand, social studies of economisation, wine industry

1 | Introduction

Today, wine is a globalised product. While wines from regions with high reputation such as Bordeaux, Burgundy, or Tuscany have been traded intensively for centuries, trade in the low(er) priced segment has grown recently. As Anderson & Pinilla (2018, p. 4) have outlined, "exports as a share of global wine production grew from 5 percent to 15 percent between 1960 and 1990, and then to 40 percent by 2012." Through this tremendous growth, wine has turned from "being one of the world's least-traded agricultural products to one of the most traded internationally" (Anderson & Pinilla, 2018, p. 4).

In this paper, we argue that the rapid expansion of exports as a share of global wine production since the 1990s is strongly related to a socio-technical innovation that has profoundly transformed the wine industry: the flexitank. Flexitanks are bladders for the transportation of liquids that fit into standard ISO containers and, as such, enable the transportation of bulk wine through standardised global container logistics. Today, nearly 40% of the globally traded wine volume belongs to the bulk segment (our own calculations based on data from the United Nations Department of Economic and Social Affairs, 2019). The largest import market for bulk wine (and wine in general) worldwide is Germany. In 2015, more than half of Germany's wine imports belonged to the bulk segment.

On the production side, the new technology and the substantial decline in transportation costs that it entails has contributed to the rise of southern-hemisphere countries, such as New Zealand, Australia, South Africa, Argentina, or Chile, as significant wine exporters. While wine production in the pre-flexitank era – from the cultivation of grapes to the bottling of wines – had generally been concentrated in a single region, or at least the distances between the places of grape production and wine bottling were relatively short, the new technology–infrastructure–logistics complex for bulk wine has triggered a globalised practice of wine-making: the assembling of bulk wine in processes spanning distant global rural regions. Even though these developments have significantly affected the structure and functioning of global wine markets, this transformative process has received hardly any academic attention (an exception is Mariani et al., 2012).

Our aim in this paper is to close this gap and investigate how the practice of bulk wine production is created and sustained across global rural regions in Chile (Maule), New Zealand (Marlborough), and Germany (Rhineland-Palatinate). For this purpose, we build on conceptual insights from the social studies of economisation (Berndt & Böckler, 2012; Callon et al., 2002; Çalışkan & Callon, 2010; for its application in agri-food studies, see Berndt & Böckler, 2009; Ouma, 2015). This perspective has the advantage of guarding against the risk of losing sight of the practical means of global market-making (Ouma, 2015). Additionally, through its roots in actor-network theory (ANT), which it shares with other recent contributions in the field of agri-food studies (Brice, 2014; Legun & Henry, 2017; Pawson, 2018; Rosin et al., 2017), two important things can be achieved. First, an ANT-inspired perspective gives rise to a re-thinking of materiality and agency, avoiding a conceptualisation of agency as an exclusively human ability and of things as (passive) tools used by humans. From an ANT point of view, agency is considered an effect of the practice of socio-technical networks (Berndt & Böckler, 2009; Rosin et al., 2017). Second, an ANT-inspired perspective avoids picturing globalisation as an outside force that impacts on rural areas (Jones et al., 2019; Ouma, 2015; Woods, 2007).

Rather than conceptualising the global bulk wine market as pre-given, we aim to understand how it comes into being through the heterogeneous elements that create and sustain it. To study the constitution of the bulk wine market, understood as socio-technical "*agencement*" (Çalışkan & Callon, 2010, p. 9), we draw on ethnographic research undertaken in Germany, New Zealand, and Chile.[1] Germany has been chosen because of its leading role as the largest importer of bulk wine.[2] New Zealand and Chile were investigated because they represent the most highly export-oriented countries in their respective regions – an outcome of the deep neoliberal transformation of their economies since the 1990s.[3]

The paper is structured as follows. We start by contextualising the growth of the global bulk wine market as related to the rise of retailers' private-label wines. In what follows, we introduce our conceptual framework. After explaining our research methods, our analysis shifts to three types of framing that are central for the bulk wine market: (1) objectification, (2) marketising agencies (agents involved in the process of market-making), and (3) market encounters. For the sake of our argument, the core of the discussion will focus on one particular market encounter that we have called a "wine design session." As we will show, wine design sessions play a key role in the constitution of a *global* bulk wine market; that is to say, for the assembling of bulk wine across global rural regions.

In our conclusion, we argue that the specific arrangement of the bulk wine market has forged strong connections between distant wine regions. Yet despite this, the growth of the global bulk wine market has simultaneously made specific wine-producing regions increasingly replaceable, depending on a variety of regional and global market developments (and market participants' calculations and expectations underlying their perception of these developments). In the aforementioned "wine design sessions," German retailers align the other participating bulk wine agencies in a way that these retailers have the final say in (and control over) the composition of the wines, hence vesting them with powerful positions in the market.

2 | Bulk wine and the rise of retailers' private-label wines

Largely unnoticed by most wine consumers, the production and distribution of wine has undergone far-reaching reorganisation in recent years. Technological changes in the bulk wine industry in particular have enabled retail chains such as Aldi in Germany or Tesco in the UK, along with cooperating bottling companies, to develop private labels in the wine segment (which has long been common practice in other food segments). In only a few years, retailers have become significant global players in wine production and distribution (see Gwynne, 2008 for a discussion of the UK case).

Bulk wine is produced in a global production network that links a host of actors and places, ranging from grape producers from all over the world to European and US bottling companies and retail chains. This has produced new spatial configurations in viticulture (see Lewis, 2014 and Pütz et al., 2020). Additionally, as the example of New Zealand shows, the growth of bulk wine has triggered heated discussions concerning the reasons for this development, its effects on the wine industry as a whole, and (desirable) future developments (Lewis, 2014).

Wine has always been traded both in bottles and in larger barrels and casks. Bulk wine has been the dominant product in the commercial trade between the producers of basic wine and the wine-processing industry. The development and proliferation of standardised containers suitable for the transportation of liquids has entailed a massive quantitative and spatial expansion of this wine segment in recent years.

Today, a continuously growing share of global commodity logistics is geared towards 20-foot containers, which can be shipped by sea, rail, or road, and for which an extensive infrastructure consisting of reloading points (container ports and railway terminals) has been built (on containerisation, see Martin, 2013). Flexitanks are a technology that enables the transportation of liquids, increasingly including wine, in these containers. Flexitanks are bladders that hold up to 24,000 litres of wine; they can be folded and stored in a space-saving manner at the wineries, placed in 20-foot containers that are loaded onto trucks for transport, and then directly filled on the truck from cooling tanks at the wineries. After a single use, the wine recipients dispose of the bladders for reasons of hygiene. Unlike barrels or casks, flexitanks' one-time use saves costs of cleaning, and their foldable design substantially reduces storage costs. Recently, this basic technology has been complemented by technologies specific to wine, for instance, container linings that reduce temperature fluctuations and prevent odour-tainting so as to minimise any loss of quality during transport. This has made it possible to ship higher-end wines in flexitanks as well.

A flexitank container can transport approximately the same amount of wine as three containers filled with bottles. Therefore, by avoiding the transportation of the comparatively inefficient packaging, high deadweight, and additional volume of bottles, transportation costs can be reduced significantly. Consequently, the amount of bulk wine traded has increased tremendously between 2000 and 2015 and trade has significantly globalised (see Figure 1) since transportation costs as a share of production costs have declined sharply (see also Pütz et al., 2020).

To produce these wines, bottling companies as intermediaries or large retail companies themselves purchase bulk wines on the world market, which they then bottle and market. Today, retailers are the most significant sellers of wine on the world market, in terms of volume. In 2018, 78% of all wines sold in Germany were sold via discounters and supermarkets (Deutsches Weininstitut, 2019, p. 2), 46% of which were private-label brands (Arnold, 2019). In total, every third bottle of wine in Germany is thus created, bottled, and marketed by retail chains and their cooperating bottling companies. Even though many of the retailers' private-label brands end up on German supermarket shelves, others are re-exported to other parts of the world (mainly to Scandinavia, Eastern Europe, and the UK).

Most of the large German wine-bottling companies have a centuries-long history in wine production. However, the way they engage in the wine business has changed fundamentally. Most of them are located in German rural regions with a strong wine-making tradition – particularly in Rhineland-Palatinate – and originally produced and bottled wines from grapes that came from the vineyards in their surrounding areas. Most of them still produce and bottle wines from those vineyards, but compared with bulk wine bottling, this represents only a (very) small share of their business activities

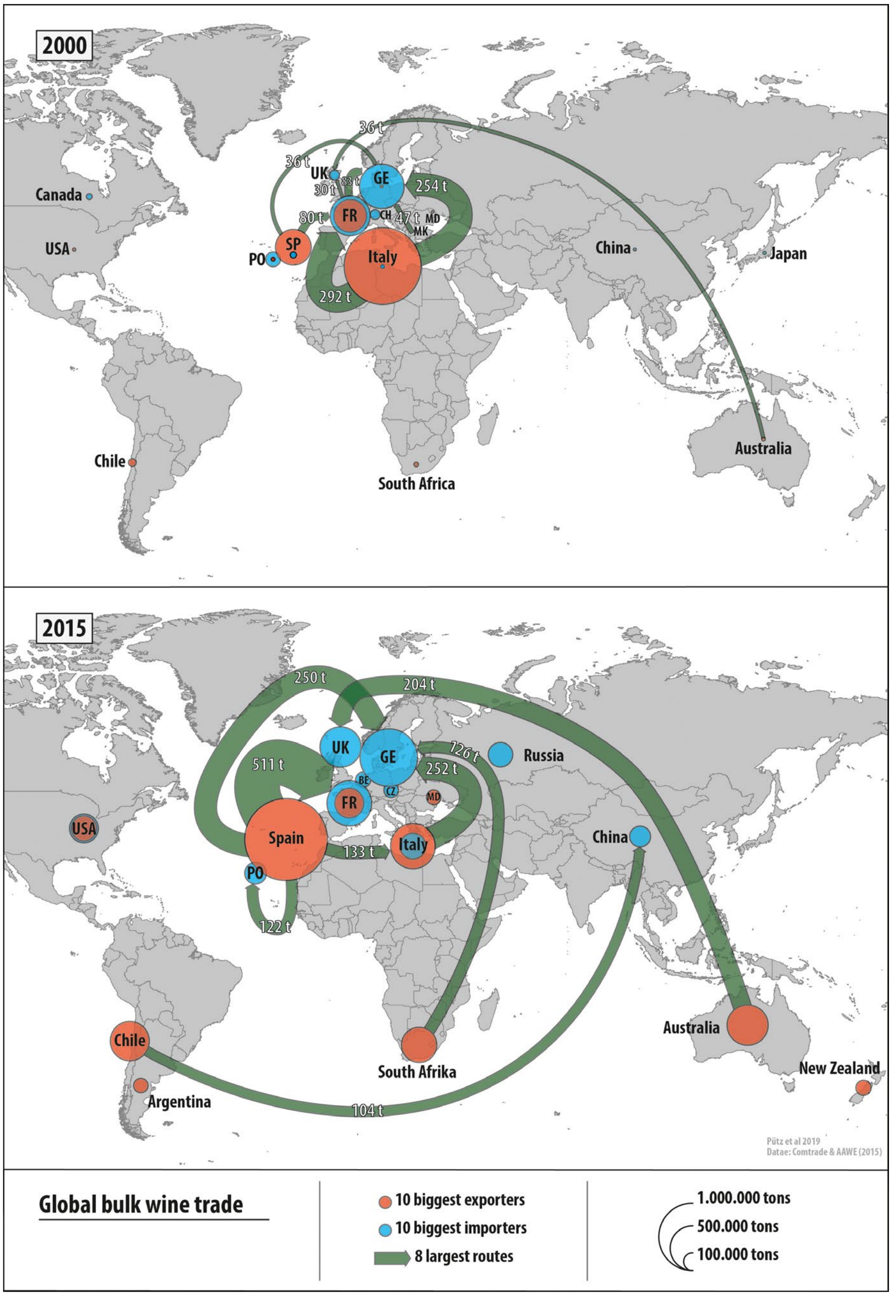

FIGURE 1 Changes in global bulk wine trade between 2000 and 2015

today. Their core activity is now designing and bottling wine for large German retailers. There are currently around 10 of these large bottling companies in Germany, some of which have a yearly capacity surpassing one million hectolitres. Nevertheless, as marketing private-label wines is exclusively in the retailers' hands, they are rarely in the spotlight and are therefore usually unfamiliar to the end consumer.

Just like these bottling companies, the new bulk wine producers that have emerged since the 1990s have built their business strategy on economies of scale. Sometimes they own a percentage of the vineyards whose grapes are processed, but normally they buy the majority of these grapes from independent grape growers. In our Chilean and New Zealand case studies, they source their grapes from various wine regions and from a variety of vineyards marked by diverging (micro-)climates and soil styles (Figure 2).

Moreover, new companies specialising in bulk wine trading have emerged. Many of the bulk wine traders are nationally based, but some of them have an international or even global reach. They are key market coordinating intermediaries, contracted by either bulk wine producers or bulk wine bottlers to find clients that sell or buy bulk wines.

FIGURE 2 400,000 litre tanks of a large Chilean bulk wine producer

3 | Conceptual framework

To investigate how the practice of bulk wine assembling is forged and sustained across global rural regions, we build on conceptual insights advanced in ANT and particularly in the interdisciplinary social studies of economisation.

Over the past 20 years, various ANT-inspired studies have focused on processes of economisation and increasingly also on markets (Berndt & Böckler, 2009, 2011, 2012; Çalışkan & Callon, 2010; Muniesa et al., 2007; Ouma, 2015). These studies are all inspired by a Callonian performative understanding of market-making processes in which markets are considered to be arrangements that are assembled in marketisation processes. Borrowing from Goffman, Callon argues that markets are realised through "framings" that, by their very nature, remain incomplete and temporary and as such are always prone to unexpected developments that may cause controversies or conflicts; these unexpected developments he calls "overflowing" (Callon, 1998; Çalışkan & Callon, 2010). As an empirical starting point for the study of marketisation processes, Çalışkan & Callon (2010, p. 5) have proposed a distinction between five types of framing. The first three, which "are closely interrelated and shape the process of marketisation in its generality" (Çalışkan & Callon, 2010, p. 16), provide the analytical structure of our paper. They are objectification, marketising agencies, and market encounters.

First, commodities have to be objectified; in order to make them tradable, they have to be disentangled from the complex relations that have produced them, attributed certain (predictable and describable) qualities and consequently become stabilised (at least temporarily). Second, markets are created through a diverse network of actors and "material, textual and socio-technical devices" (Çalışkan & Callon, 2010, p. 9) that contribute to and compete in valuing goods. In this context, agency is not considered to be a precondition of human activities but a "relational effect of the practice of sociotechnical networks" (Berndt & Böckler, 2009, p. 543) of which humans are a part. To capture this conceptually, Çalışkan & Callon denote such socio-technical networks as *agencements,* instead of using the terms arrangement or assemblage, to "stress the fact that agencies and arrangements are not separate" (Çalışkan & Callon, 2010, p. 9; see also Muniesa et al., 2007). Hence, an ANT-inspired empirical inquiry into marketisation demands "drawing up an inventory" of these "marketizing agencies" (Çalışkan & Callon, 2010, p. 8) for specific market-making processes – in our case for the bulk wine market. Third, markets are constituted through market encounters: the sites where calculating agencies and goods meet each other. In accordance with Ouma (2015, p. 43), market encounters can serve as "empirical prisms" to study marketisation processes, and his fine-grained ethnographic analysis (Ouma, 2012, 2015) of market encounters in two Ghanaian outgrower–exporter complexes has indeed convincingly demonstrated this.

Additionally, market encounters provide an excellent empirical entry point for studying power asymmetries in market *agencements* as "it is during market encounters that asymmetries [between unequally equipped market agencies] may be invoked and become effective" (Ouma, 2015, p. 43). An ANT-inspired approach demands departing from conceptualising power as an "inscribed capacity of individuals and institutions which enables them (potentially) to exercise control" (Hess, 2008, p. 454). Rather, power emerges through the heterogeneous relations that make up a certain market *agencement*, always constituted through human and non-human agencies, and it is those actors who are able to align other agencies in a way that makes it possible for them to achieve certain outcomes that can be considered powerful (Hess, 2008, p. 455; Ouma, 2015, p. 40). Because of the importance of a specific encounter for the assembling of bulk wine across global rural regions, the core of our paper will empirically analyse this one encounter in the bulk wine market, which we have decided to label a "wine design session."

4 | Objectifying bulk wine

Transforming things into tradable goods requires disentangling them from the complex relations that have produced them and attributing qualities to them (Berndt & Böckler, 2009; Callon et al., 2002; Çalışkan & Callon, 2010). In the case of wine, this is done in a variety of ways, such as through the price tags on shelves, bottle labels, or awards from wine competitions (Pütz et al., in press). Objectification processes are different for bulk wine, as these wines are no longer bottled for the final consumer in the respective wineries but are sent all over the world to become bottled by wine-bottling companies by order of large retailers. Hence, bulk wines have to be objectified at two separate, but of course strongly related, points in the process: (1) for the transaction between bulk wine-producing and bulk wine-bottling and retailing companies; and (2) for the transaction between retailers and final consumers (see also Pütz et al., 2020). As we focus on how the practice of bulk wine assembling is forged and sustained across global rural regions, it is mainly the first instance that we are interested in. For the transaction between bulk wine producers and bottling and retailing companies, wines produced in different global regions and under a very broad range of different socio-environmental circumstances have to be made "describable and predictable" (Çalışkan & Callon, 2010, p. 7), as well as "singular and comparable" (Callon et al., 2002, p. 201). This objectification is an act of framing.

Even though bulk wine may be objectified through different means (e.g., different kinds of certification), tradability is mainly achieved through chemical objectification processes. The large bulk wine producers in our New Zealand and Chilean case studies, as well as the large German wine bottlers,[4] rely on chemists as well as oenologists who analyse the wines in detail. Through chemical analysis, the wines are specified with respect to certain characteristics such as acidity, sweetness, or protein content. Generally, the bottling companies determine which chemical characteristics the wines should have and what kinds of data they need to objectify the quality of the wine. The producers then provide the necessary data, which are essential for the coordination of the market transaction since it is the basis for market orders and chemical analyses by the laboratories of the bottling companies to ensure that the delivered wines conform to the order. Similar to the process of metrification analysed by Jones et al. (2019, p. 149) in the global wool assemblage, where the varied properties of wool fibre are transferred into codes that almost exclusively make sense for specific industry professionals, those chemical data sheets play a key role in making the (varied) material properties of bulk wine calculable.[5] Hence, the data sheets of the wines are key market devices in that they make the market transaction possible.

Moreover, bottling companies demand that bulk wine producers apply certain chemical procedures to stabilise the chemical qualities of wines (to avoid them changing over time) and transfer the parameters of those fixed qualities to data sheets. As a Chilean bulk wine producer put it:

> Every client expects something different. Let's take the example of protein stabilisation: normally we take a sample of a wine and subject it to a temperature of 80° for 30 minutes. Using a device, we analyse the difference in cloudiness before and after the treatment. If this difference is lower than 1, we consider the wine stable. But we have one client who says, 'No, I want you to apply the treatment at 80° for four hours and the difference should be 0.8 before and after the treatment.' So that is what we do. (Interview with a Chilean bulk wine producer, 11 September 2018)[6]

This shows how the wine is rendered calculable and predictable (in this case, in terms of stability and cloudiness; as far as this is possible) and how it is made comparable to other bulk wines and at the same time singularised through a specific treatment.

5 | Marketising agencies

Creating markets requires calculative agency. From a socio-technical *agencement* perspective it is not humans who "hold" this agency and concurrently arrange goods but calculative agency emerges through and is distributed within those *agencements* (Ouma, 2015, p. 26). In this vein, smart phones and computers are both key socio-technical and geographical devices in the bulk wine market, because they provide (instant) data on global market development and, as such, equip market agencies with calculative capacity. The resulting calculative action has to be conceptualised as distributed between human agencies and (these) socio-technical devices.

> I talk with agents in diverse countries, use global market reports and use all those agricultural e-mails that come in constantly [...] We read all that to stay informed about the wine-growing areas. Weather reports etc.; if there was hail in Chile like three weeks ago, I get that on my mobile phone immediately. I compare that every day. You can imagine that I am online almost 24 hours, around the clock, in contact with our agents but also just me checking everything, to be able to react, depending on how the world market changes. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

The immediate and constant availability of global data not only turns the bulk wine traders and bottlers, but also the bulk wine producers, into calculative actors. As a Chilean bulk wine producer put it:

> It is not even necessary to travel. With calling and Whatsapp and your contacts all over the world, you know what is going on. For example ... Australia is out of wine stock ... They sell expensive wines to China. So China has an option to buy cheap wines [from] Spain, which [...] had a very large grape harvest [...] What about the currency exchange in China? Ah, the Yuan increased from 6.3 to 6.8. But the dollar in Chile rose from 630 to 690. So all those types of things, you have to put them into the mixer. (Interview with a Chilean bulk wine producer, 13 September 2018)

Smart phones and computers provide immediate data on (foreseen) developments in different geographical sites and as such shape certain calculations, expectations, and actions (e.g., buying, selling, or waiting), which have concrete effects for diverse wine regions. By constantly exhorting market agencies to (re-)calculate global market and price developments, these socio-technical devices play a key role in connecting (and sometimes also disconnecting) global wine regions.

6 | Market encounters: the wine design session

We will subsequently discuss exemplarily one particular market encounter, which we have decided to call a "wine design session." It plays a central role in the assembling of bulk wine *across* global rural regions. The fact that wine is a liquid that can be filled into small samples and sent all over the world (generally) without this leading to any alterations in its material properties is crucial for the organisation of wine design sessions. This being the case, bulk wines can easily be (re-)analysed chemically and tested organoleptically by actors located far away from the wine-producing areas without much effort and without high costs.

Retailers frequently contract different bottling companies for the same private labels over the years, depending on the conditions these companies offer. To do so, they launch a call for tender for the bottling of one of their private labels. Different bottling companies make an offer, and the retailers contract one winery – almost always the one offering the lowest price – to bottle the respective private label for a certain period of time, often only one year. As a wine purchaser from a large German bottling company put it:

> If you talk about bulk, you are talking about cost efficiency ... Our clients [the large German retailers] hop from one bottling company to another, depending on which one is the cheapest. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

Frequently, not even the characteristics of the wine are detailed in the tender:

> In general the products [the retailers' private-label wines] already exist; so we have to exactly match the taste profile again ... We go to the supermarket, buy it and analyse it. (Interview with a key account manager of a wine-bottling company, 05 April 2018)

The challenge is less to match the chemical properties of the taste profile but its organoleptic aspects, since the (subjective) opinions on certain wines can be highly diverse even though the chemical properties are clearly defined. This is why organoleptic testing plays a key role in two instances: in assessing the "raw material" (the bulk wines that come from different wine-producing regions around the world) and the final product – the retailers' private labels – which, if approved in organoleptic testing, are then placed on the supermarket shelves:

> We have [chemical] standard analyses. But the crucial factors are the organoleptic characteristics: the taste and smell; and we do that with our people here. That happens in the glass, samples have to be sent to us. We have a tremendous consumption and a tremendous amount of samples that come here every day from all over the world. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

Yet the wine design session is not only about organoleptically testing the wines but also, and crucially, about finding ways to blend bulk wines (slightly) differently in order to design a wine with a new or improved profile. Retailers that organoleptically evaluate their private labels, that have been created by the bulk wine bottlers, give feedback to the latter. Bulk wine bottlers evaluate the samples they receive from bulk wine traders and/or producers and are in constant exchange with them. Hence, the organisation of the bulk wine market is a highly reflexive activity, characterised by these (almost constant) feedback loops. It is the retailers and bulk wine bottlers that align the bulk wine market around the constant flow of those samples from all over the globe to their facilities, where they are then analysed, tasted, tested, and compared. By structuring the market in this way, they are able to act over distances and design and bottle wines by sourcing bulk wine from (potentially) all over the world. Through this constant practice of tasting and comparing samples, retailers and bulk wine bottlers additionally gain a specific, embodied knowledge of the global bulk wine market:

> We have Cabernet Sauvignons from all over the world here on the table. If there is, for example, something going wrong with the Cabernet Sauvignon style in Chile, we realise that much faster than someone who does not have options to compare. As concerns the market, we have an incredible overview. Because we speak and trade with them all and our suppliers usually don't. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

Some German retailers – such as the Lidl company, for example – have acquired wineries for bulk wine bottling. This gives the ability to control more directly the flexible accumulation scheme with global bulk wine suppliers, and appropriate the surplus value created in the designing and bottling process.

Due to the possibility of sending wine samples, wine design sessions are not confined to human actors being (together) in a particular place. Frequently, bulk wine producers send their samples to bulk wine traders and/or bulk wine bottlers, and the latter send them on to the respective retailers. In this case, it is the material good and information (e.g., data sheets, feedback on the respective samples) that travel around the globe while human actors stay *in situ*.

6.1 | Wine design workshops

Physical meetings between actors of the bulk wine market nevertheless remain key to wine design sessions. Here, the design of wines is organised as a more direct, collaborative process. Some of these meetings aim at collaboratively designing bulk wines, others at collaboratively designing the retailers' private labels. In the latter, retailers and bulk wine bottlers come together to organoleptically evaluate bulk wine samples or already blended wines from different samples and henceforth collaboratively design the final composition of the retailers' private labels.

The meeting between bulk wine-producing and bulk wine-bottling companies to design the bulk wine usually takes place in the bulk wine producers' winery facilities.[7] The site *where* this takes place is important in this context. Oenologists and/or bulk wine buyers from bottling companies fly to the respective wine growing regions – generally, once the wine has matured and is ready to be poured into flexitanks – and meet with the responsible staff from the bulk wine producing companies.[8] The wine bottlers will typically communicate what type of wines (e.g., in terms of grape varieties, price range, approximate taste profile) they are looking for beforehand. On the basis of this preliminary information, bulk wine producers organise what could be called "a wine design workshop":

> The great majority of our clients comes here after the harvest, and we offer them a tasting of different alternatives, and they tell us, 'I like this; I like that; I would blend this with that; I would like to make this out of that.' (Interview with a Chilean bulk wine producer, 11 September 2018)

However, deciding on the organoleptic profiles of the wines to be ordered is not the only reason why representatives from bulk wine-bottling companies travel to bulk wine-producing wineries. Rather, it is also important for them to get to know the bulk wine producers personally, the production facilities, and the respective wine-cultivation conditions. Even though wine samples travel around the world and information on developments from other parts of the globe can be accessed immediately via computers and smart phones, it is still important for actors in the bulk wine business to experience different wine-producing regions personally (and bodily).

Of course, what we have labelled as wine designing has clear limits (physical, as far as the properties of wines are concerned, as well as legal, depending on different national and supra-national regulations). While some qualities of the wines can be changed relatively easily, others cannot:

> Sometimes clients want a little bit more sugar than our wines have. That we can modify. We can also change the colour of the wines through blending. But there are other things, such as the alcohol strength, that we can't modify. (Interview with an oenologist from a Chilean bulk wine-producing cooperative, 12 September 2018)

For bulk wine producers in our Chilean and New Zealand case studies, the possibility of blending wines that come from different vineyards, sometimes even from different regions across the respective countries, is important. This practice of wine blending or choosing wines from particular areas can help to temper specific, less desired qualities and reinforce desired ones.

Whereas for the low-priced entry-level bulk wines, sweetness, colour, and certain chemical attributes (e.g., in regard to protein and tartaric stability) are key, achieving a specific organoleptic profile for higher-priced bulk wines can become a rather complex endeavour:

> What the Australians want and what the UK wants actually come from two different subregions. So, the UK likes the more southern aspect of the Awatere Valley in their flavour profile, and the Australians like more sort of the riper spectrum. That's more from the Lower Wairau [...] We don't judge. They [the bottling company] tell me what they want. I don't have to like it; I just have to make it. (Interview with an oenologist from a New Zealand bulk wine company, 18 September 2017)

As Çalışkan & Callon (2010, p. 14) maintain, market framings are always incomplete and imperfect and, as such, exposed to unexpected overflowing: trajectories that the respective framing has not foreseen. The wine design session and especially the organoleptic probing, evaluation, and monitoring of wines, which inevitably take place in very different (micro-)geographical settings, are particularly prone to overflowing:

> The organoleptic aspect is influenced by a lot of things. When do we try the wines, at 9 a.m. or 10 p.m.? In which room is the Cabernet Sauvignon placed? Is it placed next to five others that are particularly good? For that, we have a bulk wine purchaser with an oenological and commercial training. And we have wine-makers with an oenological training who travel around the world, who establish contacts with wine-makers who provide us with bulk and who know what we want and how we want it. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

Hence, because of the extreme difficulty of objectifying the taste of wine and the ever present risk of overflowing, personal contacts and the building of trust are of utmost importance in the German bulk wine market, even though long-term contracts are very rare and price sensitivity is extremely high.

6.2 | Wine design sessions, geographical origin and the (dis-)connection between global rural regions

Attaching wines to places and associating them with place-based (wine-making) knowledge and (family) production traditions is a key qualification strategy in the global wine industry (Overton et al., 2012; Overton & Murray, 2016; Pütz et al., 2020; Rainer, 2016; Rainer et al., 2019). Even though origination (Pike, 2015) is important in the bulk wine business as well, qualification through attaching wine with place works differently in this context. To discuss the importance of geographical origin for the German bulk wine market, it is useful to distinguish between retailers' medium- to higher-priced and entry-level private labels.

Most of the retailers' medium- to higher-priced private-label wines are wines that come from a particular country and frequently from the same bulk wine suppliers even in the absence of long-term contracts. For these private labels, the origin of the bulk wines is important, but it is generally reduced to the country of origin (Pütz et al., 2020). The wine labels of these brands display symbols that the final consumer should immediately associate with those countries: for instance, wine brands of New Zealand origin show a kiwi bird on their label; those from Chile show the Atacama Desert or a hummingbird. Since this kind of geographical association of private labels has been established over years, retailers usually require that the grapes' country of origin for a certain private label does not change. Otherwise they would have to indicate that on the label of the bottles. As a consequence, whenever bulk wine suppliers are replaced, this is (typically) by suppliers from the same country.

In the case of entry-level brands, (long-term) association with a certain geographical origin is of lesser significance. Sourcing bulk wines from all over the world is key to keeping bulk wine prices, and thus the bottle prices of the final wines on the supermarket shelves, as low as possible:

> We have many clients [retailers] in the 'real volumina business' that order four to five millions litres per grape variety or category of wine per year. They tell us: 'We need a certain category of wine,' for instance, white wine, 11.5% alcohol, 'proper entry-level quality'; that is pre-determined. Basically they tell us: 'Get us the best quality for the cheapest price.' So we are able to hop around globally for this client, in quotations marks ... Three years ago, we were in Spain – because of the wine price situation, this was the best option. Then there was a relatively small harvest in Spain, Italy, and all over Europe. So we went to South Africa with that product and bought before the South Africans realised what was going on in Europe. Now we are going to Italy. (Interview with a bulk wine purchaser from a German bottling company, 29 November 2018)

Hence, bulk wines used for the bottling of a certain private label wine always come from one country of origin for a certain period of time and then this country of origin – depending mainly on (expectations on) varying bulk wine price fluctuations in different countries – might change to another. In most cases, grape varieties stay the same and are indicated on the bottles' labels.

The encounter between the material good, the retailer, and the bulk wine bottler in a wine design session to decide collaboratively on the composition of the retailers' private labels is common practice for the entry-level brands as well. In this case, however, bottling companies' geographical room for manoeuvre for sourcing bulk wines expands vastly:

> At the most basic entry level, a client [retailer] simply wants Chardonnay – it does not matter at all from which New World country. In this case, I obviously check where I can get the wine customs-free, as this can be decisive for the profit margin. (Interview with a key account manager of a wine-bottling company, 05 April 2018)

Hence, bulk wine suppliers become internationally interchangeable.

This price sensitivity in the entry-level market is driving an intensive political and public discourse on bulk in New Zealand and Chile. As Lewis (2014, p. 91) observed for New Zealand, the fact that bulk wine exports grew from less than 5% in 2008 to more than 35% in 2011 has provoked intensive discussions within the wine industry concerning the reasons for this boom and particularly its implications (for a detailed discussion on the national level that we cannot provide here, see Lewis, 2014 and Lewis & Le Heron, 2018). The national industry bodies in New Zealand (New Zealand Winegrowers) and Chile (the association of Chilean wine producers know as Wines of Chile) put much effort into globally positioning their countries as quality-wine producers. Of course, this promotional activity is also beneficial for bulk wine producers. Against this backdrop, the debate focuses on whether the growth of bulk wine exports provokes reputational risks for the national wine industries. The biggest difference between Chilean and New Zealand rural regions marked by bulk wine production concerns the more uneven integration of Chilean grape growers into bulk wine production, which is strongly related to Chile's highly uneven land tenure structure (see Murray, 2006 for an in-depth discussion of rural land ownership in Chile).

Particularly in the entry-level market, bulk wine traders play an important role as intermediaries. An essential aspect of bulk wine traders' work consists of the constant observation and collection of data on prices of grapes and bulk wine in certain wine regions. Globally operating bulk wine traders put these regional data together by calculating current and assessing future global market developments. Global market reports[9] are crucial market devices; “forecasts [that] transform uncertainty into a fictitious certainty contributing to decision-making” (Beckert 2016, p. 242). They co-create a global bulk wine market by connecting and disconnecting different rural regions through global market assessment. As Çalışkan & Callon (2010, p. 17) put it:

> The process of using prices to calculate prices is a powerful mechanism for unifying markets, by the singular interdependencies that it creates between a multitude of local (potential or actual) transactions carried out or envisaged at different times.

(Global) market reports equip agencies with a calculating device that makes it possible to compare price changes constantly (actual ones and, even more importantly, expected ones) for bulk wine from all over the globe, and thereby ground decision-making in matters of buying and selling prices.

7 | Conclusion

In this article, we have shown that highly unevenly equipped agencies encounter each other in the bulk wine *agencement*. As a consequence, the risks and benefits of assembling wines across rural regions are unequally distributed between them. The specific enrolment of bulk wine producers and grape growers into the market results in bulk wine-producing regions all over the world being subjected to an industrialisation of wine production with a strong orientation towards economies of scale.

We have focused on the practices of everyday market-making and have shown that the connections and (dis-)connections between German and Chilean/New Zealand rural regions emerge and are sustained through (a set of) different routines (e.g., travelling to different wine regions, checking price developments on smart phones and testing wine samples).

Through what we have called “wine design sessions” – the comparative tasting of different wine samples with the goal of designing specific retailers’ private labels – German retailers align the other bulk wine agencies in a way that puts them in a position to decide on the final composition of the wines. It is through these wine design sessions and the invisible and routinely exercised practices of tasting, comparing, designing, analysing, and controlling wines that they can act at a distance and organise the assembling and objectification of bulk wines from Chile and New Zealand (and around the globe) according to their specifications. Thus, wine design sessions are key market encounters in a highly flexible accumulation scheme.

The distant rural regions where bulk wine producers and bottling companies are located are connected through the practice of assembling bulk wine across the globe. Yet at the same time, these connections are becoming increasingly interchangeable, at least when it comes to the entry-level market. Connections and disconnections between bulk wine-producing and bulk wine-bottling regions are dependent on (actual or anticipated) global developments (e.g., a new free-trade agreement being signed; an especially rich harvest on the other side of the world; or large fluctuations in certain currency exchange rates). In the case of entry-level bulk wines, in contrast to their medium- and higher-priced counterparts, geographical diversity and origination of the wines loses importance *vis à vis* keeping wine prices as low as possible.

Within this flexible accumulation scheme, German retailers and bottling companies impose their calculative techniques, apparatus, and specific rules on other agents in the bulk wine market. However, as our ethnographic study on the assembling of the bulk wine market across German, Chilean, and New Zealand rural regions demonstrates, this is not achieved through top-down, forceful acts. Rather, market coordination is accomplished through mundane practices and mechanisms, which allow for action at distance and connect (and sometimes disconnect) rural regions on a global stage.

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DATA AVAILABILITY STATEMENT

The data collected in support of this paper are not available for access.

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ENDNOTES

[1] In Germany, we visited facilities, did factory tours, and interviewed representatives of bulk wine-bottling companies. In New Zealand and Chile, we visited facilities, did factory tours, and interviewed representatives of wineries that produce those bulk wines, which are then imported by German bottling companies (among other global importers). Additionally, we have drawn on informal talks with bulk wine producers, bottlers, traders, and logistics service providers during the 2018 ProWein fair, the world's largest wine fair.

[2] Even though our empirical results aim to provide general insight into the functioning of the global bulk wine industry, it is important to stress that we have focused on the connections forged between German wine bottlers and New Zealand and Chilean bulk wine producers. The situation is different for other bulk wine-importing countries (such as the UK or the USA) because of different legal frameworks and development paths in the national wine industries and retail landscapes.

[3] For a much deeper discussion of New Zealand's wine industry restructuring since the adoption of the neoliberal model, see Overton & Murray (2014) and Lewis (2014); for Chile's see Overton & Murray (2011).

[4] In Germany, retail companies do not usually interact directly with bulk wine producers. Instead, bottling companies function as intermediate buyers and blend and sell the wines to retailers. This structure is slightly different, for instance, in the UK, where bottling companies mainly act as service providers to retailers or producers, which are the ones that directly coordinate the production process. The following sections concentrate on the German model.

[5] See also Ouma (2015, pp. 157–159) and Rosin et al. (2017) for a detailed account of the importance of metrification (transforming the diverse material properties of agricultural products into expert data) for the functioning of global agri-food markets.

[6] The authors translated all interviews with Chilean bulk wine producers from Spanish and with German bulk wine bottlers from German into English.

[7] There are of course other moments when bulk wine producers, traders, and bottlers meet in one place. Wine fairs such as the ProWein and particularly the yearly world bulk wine exhibition, are such occasions (for the latter see: https://www.worldbulkwine.com/en/).

[8] See Cheshire & Woods (2013) for a more general discussion of the increasing importance of (far-distance) travelling for sustaining globalized agricultural production in a neoliberal context.

[9] See, for example, the global market reports published monthly by the global bulk wine and grape broker Ciatti (https://www.ciatti.com/ciatti-reports/).

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